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EPA

National Emission Standards for Hazardous Air Pollutants

A Compilation as of December 31, 1984

EPA-340/1-85-006

National Emission Standards for Hazardous Air Pollutants

A Compilation as of December 31, 1984

by

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The Stationary Source Compliance series of reports is issued by the Office of Air, Noise, and Radiation, U.S. Environmental Protection Agency, to assist the Regional Offices in activities related to compliance with implementation plans, new source emission standards, and hazardous emission standards to be developed under the Clean Air Act. Copies of Stationary Source Compliance Reports are available - as supplies permit - from the U.S. Environmental Protection Agency, Office of Administration, General Services Division, MD-35, Research Triangle Park, North Carolina 27711, or may be obtained, for a nominal cost, from the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151.

PREFACE

This document is a compilation of the National Emission Standards for Hazardous Air Pollutants promulgated under Section 112 of the Clean Air Act, represented in full as amended. The information contained herein supersedes all previous compilations published by the U.S. Environmental Protection Agency.

The format of this document permits easy and convenient replacement of material as new standards are proposed and promulgated or existing standards are revised. Section I, an introduction to the standards, explains their purpose and interprets the working concepts that have developed through their implementation. Section II contains a "quick-look" summary of each standard, including the dates of proposal, promulgation, and any subsequent revisions. Section III is the complete standards with all amendments incorporated into the material. Section IV contains the full text of all revisions, including the preamble which explains the rationale behind each revision. Section V is all proposed amendments to the standards. To facilitate the addition of future materials, the punched, loose-leaf format was selected. This approach permits the document to be placed in a three-ring binder or to be secured by rings, rivets, or other fasteners; future revisions can then be easily inserted.

Future supplements to National Emission Standards for Hazardous Air Pollutants - A Compilation will be issued on an as-needed basis by the Stationary Source Compliance Division. Comments and suggestions regarding this document should be directed to: Standards Handbooks, Stationary Source Compliance Division (EN-341), U.S. Environmental Protection Agency, Washington, D.C. 20460.

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I. INTRODUCTION

The 1970 Amendments of the Clean Air Act are considered a landmark in the nation's efforts to control air pollution. They established the authority to control pollutants on the basis of their effects, sources, and best means of control. Section 112 of that legislation provided for establishment of National Emission Standards for Hazardous Air Pollutants, commonly referred to as NESHAPs. This manual is a compilation of those emission standards.

A hazardous air pollutant is defined as "... an air pollutant to which no ambient air quality standard is applicable and which in the judgment of the Administrator causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness". Thus, the Administrator must prescribe a NESHAP for each hazardous pollutant at a level judged to provide an ample margin of safety to protect the public health. The regulation may take the form of an emission standard or a design, equipment, work practice, or operational standard if an emission standard is not feasible. The determination that a pollutant is hazardous precedes public hearings and can be reversed only if hearing introduce contrary evidence. Acquisition of the necessary health effects data to support the establishment of a hazardous pollutant standard is difficult and time-consuming. However, this expenditure of time and effort is

necessary because the NESHAPs are unique in that they apply to both new and existing sources. All new sources are subject to control immediately upon promulgation of a standard and all existing sources are to be in compliance within 90 days of promulgation unless granted an extension. Furthermore, although costs migh be considered when determining what constitues an "ample margin of safety", such considerations are not explicitly required by Section 112.

Section 112 of the Clean Air Act defines three steps to be followed in the establishment of emission standards for hazardous pollutants. The first requirement is that the Administrator publish a list of those air pollutants for which he intends to establish emission standards. There were eleven toxic substances appraised as candidates for the first list of hazardous air pollutants: asbestos, arsenic, beryllium, cadmium, chromium, lead, mercury, nickel, polychlorinated biphenyls, polycyclic organic matter, and vanadium. Major selection criteria included (1) the severity of the associated human diseases, (2) the length of time between exposure and disease, with the longer periods considered especially dangerous, (3) the portion of the total human intake relatable to air-borne substances, and (4) the linkage between sources of emissions and reported cases of diseases attributed to the pollutant. Consultations were held with federal agencies, advisory committees, and other experts. All consulted groups recommended that the initial list be limited to asbestos, beryllium, and mercury. In addition, a National Academy of Sciences study concluded that control of asbestos be undertaken as quickly as possible, and the HEW report, "Hazards of Mercury", concluded that it was urgent to use all possible means to

reduce exposure to mercury immediately. Thus, an initial list containing asbestos, beryllium, and mercury was published in the Federal Register on March 31, 1971.

The second step in establishing standards requires that, within 180 days after an air pollutant is included on a published list, the Administrator publish proposed regulations establishing emission standards for that pollutant together with a notice of a public hearing, to be held within thirty days. Pursuant to this requirement, proposed regulations for the control of emissions of asbestos, beryllium, and mercury were published in the Federal Register on December 7, 1971.

Following the required waiting periods and public hearings, the final step, promulgation, took place on April 6, 1973. Clarifying regulations were promulgated May 3, 1974. Since then the NESHAPs have undergone several revisions, including the addition of regulations for vinyl chloride from facilities that manufacture both vinyl chloride monomer and polyvinyl chloride and the addition of benzene to the list of hazardous pollutants. In addition, investigations are underway for several pollutants to determine the optimum control option for each.

This document contains all regulations promulgated under Section 112 of the Clean Air Act, represented in full as amended. As more pollutants are investigated and new technology developed, the National Emission Standards for Hazardous Air Pollutants will continue to be updated to achieve their primary purpose of protecting the public health.

SECTION II

SUMMARY OF STANDARDS AND REVISIONS

II. SUMMARY OF STANDARDS AND REVISIONS

In order to make the information in this document more readily available, a table has been prepared which summarizes the National Emission Standards for Hazardous Air Pollutants since their inception in April 1973.

Although regulatory language is necessary to make the intent of the regulation clear, it is difficult for anyone not familiar with these terms to locate concise information. It is with this thought in mind that the following table was developed. It includes the pollutant regulated, the facilities which will be affected by the regulation, the emission standard for these facilities, and if there are sampling or monitoring requirements.

Since the NESHAP's affect both new and existing sources, all regulations become effective the day of promulgation. To cite such promulgation, refer to the volume and page of the Federal Register in which the rule appeared, i.e. 36 FR 23239, meaning volume 36, page 23239 of the Federal Register. The table gives such references for the proposal, promulgation, and subsequent revisions of the NESHAP's. The full text of all revisions and proposed revisions can be located in Sections IV and V.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
Subpart C - BERYLLIUM Proposed 12/7/71 (36 FR 23239) Promulgated 4/6/73 (38 FR 8826) Revised 8/17/77 (42 FR 41424) 3/3/78 (43 FR 8800)	Extraction plants Ceramic plants Foundries Incinerators Propellant plants Machine shops (which process alloy containing >5% beryllium)	1) 10g/24 hr. or 2) Ambient concentration in the vicinity of the stationary source of 0.01 $\mu g/m^3$, averaged over 30 day period	1) Source test 2) 3 years continuous monitoring data
Subpart D - BERRYLLIUM ROCKET MOTOR FITING Proposed 12/7/71 (36 FR 23239) Promulgated 4/6/73 (38 FR 8826) Revised 8/17/77 (42 FR 41424) 3/3/78 (43 FR 8800)	Rocket motor test sites Closed tank collection of combustion products	75 µg/min scm of air within 10 to 60 min, accumulated during 2 consecutive weeks, in area which could adversely affect public health 2 g/hr, 10 g/day	Ambient concentrations measured during and after firing or propellant disposal Continuous sampling during release
Subpart E - MERCURY Proposed 12/7/71 (36 FR 23239) Promulgated 4/6/73 (38 FR 8826) Revised 10/14/75 (40 FR 48299) 8/17/77 (42 FR 41424) 3/3/78 (43 FR 8800) 6/6/82 (47 FR 24703) 9/12/84 (49 FR 35768)	Ore processing Chlor-alkali manufacture Sludge dryers or incinerators	2300 g/24 hr 3200 g/24 hr	Source test Source test or sludge test (Sources exceeding 1600 g/day must monitor once per year)

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (Continued)

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
Subpart F - VINYL CHLORIDE			
Proposed 12/24/75 (40 FR 59532)	Ethylene dichloride manufacture	1) Ethylene dichloride purification: 10 ppm* 2) Oxychlorination reactor: 0.2 g/kg (0.0002 lb/lb) of the 100% ethylene dichloride product	Source test Continuous monitor Source test Continuous monitor
Promulgated 10/21/76 (41 FR 46560)	Vinyl chloride manufacture	10 ppm*	Source test Continuous monitor
Revised 12/3/76 (41 FR 53017) 6/7/77 (42 FR 29005) 8/17/77 (42 FR 41424) 3/3/78 (43 FR 8800) 9/8/82 (47 FR 39485)	Polyvinyl chloride manufacture		
	Reactor; stripper; mixing, weighing and holding containers; monomer recovery system	10 ppm*	Source test Continuous monitor
	Reactor opening loss	0.02 g vinyl chloride/kg (0.00002 lb vinyl chloride/lb)	Source test Continuous monitor
	Reactor manual vent	No emissions	
	Sources following stripper	For each calendar day: 1) Using stripping technology - 2000 ppm for polyvinyl chloride dispersion resins (excluding latex) 400 ppm each for other polyvinyl chloride resins (including latex) 2) Other than stripping technology - 2 g/kg (0.002 lb/lb) product for dispersion polyvinyl chloride resins (excluding latex) 0.4 g/kg (0.0004 lb/lb) product for other polyvinyl chloride resins (including latex)	Source test Source test
	Ethylene dichloride, vinyl chloride and/or polyvinyl chloride manufacture		
	Relief valve discharge	No discharge	Equipment
	Loading and unloading lines	0.0038 m^3 after each loading or unloading, or 10 ppm when contained by a control system	Source test Continuous monitor

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (Continued)

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
	Slip gauges	10 ppm from the required control system	Source test Continuous monitor
	Pump; compresser and agitator seal	10 ppm from the required control system with seals	Source test Continuous monitor
	Leakage from relief valves	Rupture disk must be installed	Equipment
	Manual venting of gases	10 ppm from a required control system	Source test Continuous monitor
	Opening of equipment	10 ppm from a required control system*	Source test Continuous monitor
	Samples (at least 10 percent by weight vinyl chloride)	Returned to system	
	Leak detection and elimination	Implementation of an approved program	Approved testing program
	Inprocess wastewater	10 ppm before discharge	Source test Continuous monitor
		* Before opening any equipment for any reason, the quantity of vinyl chloride is to be reduced so that the equipment contains no more than 2.0 percent by volume vinyl chloride or 0.0950 m^3 (25 gal) of vinyl chloride, whichever is larger, at standard temperature and pressure.	

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS, (Continued)

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
Subpart J - EQUIPMENT LEAKS (FUGITIVE EMISSION SOURCES) OF BENZENE Proposed 1/5/81 (46 FR 1165) Promulgated 6/6/84 (49 FR 23498) Revised 10/2/84 (49 FR 38946) 10/31/84 (49 FR 43647)	Pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems designed to produce or use >1,000 Mg/yr benzene	See Subpart V	See Subpart V

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (Continued)

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
Subpart M - ASBESTOS			
	Asbestos mills	No visible emissions, or meet equipment specifications	No requirement
Proposed 7/13/83 (48 FR 32126)	Roadway surfacing	Contain no asbestos except for temporary use on area of asbestos ore deposits	No requirement
Promulgated 4/5/84 (49 FR 13658) Revised 6/21/84 (49 FR 25453)	Manufacturing of products containing asbestos (textiles; cement; fire-proofing and insulating materials; friction products; paper, millboard, felt; floor tiles; paints, coatings, caulks, adhesives, sealants; plastic and rubber materials; chlorine; shotgun shells; asphaltic concrete)	No visible emissions, or meet equipment specifications	No requirement
	Demolition and renovation >80 m pipe, covered or coated >15 m^2 duct, boiler, tank, reactor, turbine, furnance, or structural member, covered or coated	No emissions to outside air; Friable materials removed, wetted, or particles mechanically collected	No requirement No requirement
	Spraying friable asbestos 1) Materials applied to equipment or machinery with >1% asbestos on dry weight basis	No visible emissions, or meet equipment specifications	
	2) Materials sprayed on buildings, structures pipes, conduits	Materials must contain <1% asbestos on dry weight basis	No requirement
	Fabricating (cement building products; friction products; cement or silicate board for ventilation hoods; ovens; electrical panels; lab furniture; marine construction; flow controls for molten metal industry	No visible emissions, or meet equipment specifications	No requirement
	Friable insulating materials	Contain no asbestos	No requirement
	Waste disposal	No visible emissions Deposit at acceptable disposal sites	No requirement
	Waste disposal sites	Design and work practice requirements No visible emissions	No requirement

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS, (Continued)

Pollutant	Affected facilities	Emission standard	Sampling or monitoring requirement
Subpart V - EQUIPMENT LEAKS (FUGITIVE EMISSION SOURCES)			
	Pumps	No leakage (instrument reading <10,000 ppm)*	Monthly leak detection and repair program
	Compressors	Meet equipment specifications*	No requirement
Proposed 1/5/81 (46 FR 1165)	*Pressure relief devices*	*No detectable emissions*	*No requirement*
	Sampling connection systems	No VHAP emissions Meet equipment specifications	No requirement
Promulgated 6/6/84 (49 FR 23498)	Open-ended valves or lines	Meet equipment specifications	No requirement
	Valves	No leakage (instrument reading <10,000 ppm)*	Monthly leak detection and repair program
Revised 10/2/84 (49 FR 36946) 10/31/84 (49 FR 43647)	Pressure relief devices in liquid service and flanges and other connectors	No leakage (instrument reading <10,000 ppm)	No requirement
	Product accumulator vessels	Meet equipment specifications	No requirement
	Closed vent systems	No detectable emissions	No requirement
	Control systems: Vapor recovery systems Enclosed combustion devices Flares	 Operate at 95% efficiency Operate at 95% efficiency No visible emissions	 No requirement No requirement No requirement

* May be designated for no detectable emissions

SECTION III

NATIONAL EMISSION STANDARD FOR HAZARDOUS AIR POLLUTANTS

Title 40—Protection of Environment

CHAPTER 1—ENVIRONMENTAL PROTECTION AGENCY

SUBCHAPTER C—AIR PROGRAMS

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS [1]

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Method 104—Reference method for determination of beryllium emissions from stationary sources.
Method 105—Method for determination of mercury in wastewater treatment plant sewage sludges.[7]
Method 106—Determination of vinyl chloride from stationary sources.[28]
Method 107—Determination of vinyl chloride of inprocess wastewater samples, and vinyl chloride content of polyvinyl chloride resin, slurry, wet cake, and latex samples.[28]

Method 107A—Determination of Vinyl Chloride Content of Solvents, Resin-Solvent Solution, Polyvinyl Chloride Resin, Resin Slurry, Wet Resin, and Latex Samples [71]

Appendix C.—Quality Assurance Procedures [70]

Authority: Sections 112 and 301(a) of the Clean Air Act, as amended [42 U.S.C. 7412, 7601(a)], and additional authority as noted below.

Subpart A—General Provisions

§ 61.01 Applicability.

The provisions of this part apply to the owner or operator of any stationary source for which a standard is prescribed under this part.

§ 61.02 Definitions.[52]

The terms used in this part are defined in the Act or in this section as follows:

"Act" means the Clean Air Act (42 U.S.C. 1857 et seq.).

"Administrator" means the Administrator of the Environmental Protection Agency or his authorized representative.

"Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference or equivalent method but which has been demonstrated to the Administrator's satisfaction to, in specific cases, produce results adequate for his determination of compliance.

"Commenced" means, with respect to the definition of "new source" in section 111(a)(2) of the Act, that an owner or operator has undertaken a continuous program of construction or modification or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of construction or modification.

"Compliance schedule" means the date or dates by which a source or category of sources is required to comply with the standards of this part and with any steps toward such compliance which are set forth in a waiver of compliance under § 61.11.

"Construction" means fabrication, erection, or installation of an affected facility.

"Effective date" is the date of promulgation in the Federal Register of an applicable standard or other regulation under this part.

"Equivalent method" means any method of sampling and analyzing for an air pollutant which has been demonstrated to the Administrator's satisfaction to have a consistent and quantitatively known relationship to the reference method, under specified conditions.

"Existing source" means any stationary source which is not a new source.

"Modification" means any physical change in, or change in the method of operation of, a stationary source which increases the amount of any hazardous air pollutant emitted by such source or which results in the emission of any hazardous air pollutant not previously emitted, except that:

(a) Routine maintenance, repair, and replacement shall not be considered physical changes, and

(b) The following shall not be considered a change in the method of operation:

(1) An increase in the production rate, if such increase does not exceed the operating design capacity of the stationary source;

(2) An increase in hours of operation.

"New source" means any stationary source, the construction or modification of which is commenced after the publication in the Federal Register of proposed national emission standards for hazardous air pollutants which will be applicable to such source.

"Owner or operator" means any person who owns, leases, operates, controls, or supervises a stationary source.

"Reference method" means any method of sampling and analyzing for an air pollutant, as described in Appendix B to this part.

"Standard" means a national emission standard for a hazardous air pollutant proposed or promulgated under this part.

"Startup" means the setting in operation of a stationary source for any purpose.

"Stationary source" means any building, structure, facility, or installation which emits or may emit any air pollutant which has been designated as hazardous by the Administrator.

(Sec. 112, 301(a), Clean Air Act as amended (42 U.S.C. 7412 and 7601(a)))

§ 61.03 Units and abbreviations.[42]

Used in this part are abbreviations and symbols of units of measure. These are defined as follows:

(a) System International (SI) units of measure:

A = ampere
g = gram
Hz = hertz
J = joule
K = degree Kelvin
kg = kilogram
m = meter
m^3 = cubic meter
mg = milligram = 10^{-3} gram
mm = millimeter = 10^{-3} meter
Mg = megagram = 10^6 gram
mol = mole
N = newton
ng = nanogram = 10^{-9} gram
nm = nanometer = 10^{-9} meter
Pa = pascal
s = second
V = volt
W = watt
Ω = ohm
μg = microgram = 10^{-6} gram

(b) Other units of measure:

°C = degree Celsius (centigrade)
cfm = cubic feet per minute
cc = cubic centimeter
d = day
°F = degree Fahrenheit
ft^2 = square feet
ft^3 = cubic feet
gal = gallon
in = inch
in Hg = inches of mercury
in H_2O = inches of water
l = liter
lb = pound
lpm = liter per minute
min = minute
ml = milliliter = 10^{-3} liter
oz = ounces
psig = pounds per square inch gage
°R = degree Rankine
μl = microliter = 10^{-6} liter
v/v = volume per volume
yd^2 = square yards
yr = year

(c) Chemical nomenclature:

Be = beryllium
Hg = mercury
H_2O = water

(d) Miscellaneous:

act = actual
avg = average
I.D. = inside diameter
M = molar
N = normal
O.D. = outside diameter
% = percent
std = standard

(Sections 112 and 301(a) of the Clean Air Act, as amended [42 U.S.C. 1857c-7 1857g(a)].)

§ 61.04 Address.[4,95]

(a) All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted in duplicate to the appropriate Regional Office of the U.S. Environmental Protection Agency to the attention of the Director of the Division indicated in the following list of EPA Regional Offices.

Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Director, Air Management Division, U.S. Environmental Protection Agency, John F. Kennedy Federal Building, Boston, Massachusetts 02203

Region II (New Jersey, New York, Puerto Rico, Virgin Islands), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Federal Office Building, 26 Federal Plaza, New York, New York 10278

Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106

Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Director, Air and Waste Management Division, U.S. Environmental Protection

Agency, 345 Courtland Street, NE., Atlanta, Georgia 30365

Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air Management Division, U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago Illinois 60604

Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1210 Elm Street, Dallas, Texas 75270

Region VII (Iowa, Kansas, Missouri, Nebraska), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 324 East 11th Street, Kansas City, Missouri 64106

Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado 80295

Region IX (American Samoa, Arizona, California, Guam, Hawaii, Nevada), Director, Air Management Division, U.S. Environmental Protection Agency, 215 Fremont Street, San Francisco, California 94105

Region X (Alaska, Idaho, Oregon, Washington), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, Washington 98101

DELEGATION STATUS OF NATIONAL EMISSION STANDARDS FOR HAZARDSOUS AIR POLLUTANTS (NESHAPS) IN REGION VIII [108]

Subpart	State					
	Colorado	Montana	North Dakota	South Dakota	Utah	Wyoming
A General provisions	(*)		(*)		(*)	
B Asbestos	(*)		(*)		(*)	
C Beryllium	(*)		(*)		(*)	
D Beryllium rocket motor firing	(*)		(*)		(*)	
E Mercury	(*)		(*)		(*)	
F Vinyl chloride	(*)		(*)		(*)	

*Indicates delegation.

(b) Section 112(d) directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce the national emission standards for hazardous air pollutants for stationary sources located in such State. All information required to be submitted to EPA under paragraph (a) of this section, must also be submitted to the appropriate State Agency of any State to which this authority has been delegated (provided, that each specific delegation may exempt sources from a certain federal or State reporting requirement). The appropriate mailing address for those States whose delegation request has been approved is as follows:

(A) [Reserved]

(B) State of Alabama, Air Pollution Control Division, Air Pollution Control Commission, 645 S. McDonough Street, Montgomery, Alabama 36104.[25]

(C) [Reserved]

(D) Arizona: Arizona Department of Health Services, 1740 West Adams Street, Phoenix, Arizona 85007.[30,48,67,73,74, 81,92,110]

Maricopa County Department of Health Services, Bureau of Air Pollution Control, 1825 East Roosevelt Street, Phoenix, Ariz. 85006.

Pima County Health Department, Air Quality Control District, 151 West Congress, Tucson, Ariz. 85701.

(E) Program Administrator, Air and Hazardous Materials Division, Arkansas Department of Pollution Control and Ecology, 8001 National Drive, Little Rock, Arkansas 72209.[59, 65,102]

(F) California.[8,18,20 21,24 29, 31,48,58,68,73,81,85, 86,93 101]

Amador County Air Pollution Control District, P.O. Box 430, 810 Court Street, Jackson, CA 95642

Bay Area Air Pollution Control District, 939 Ellis Street, San Francisco, Calif. 94109

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAPS)							
POLLUTION CONTROL DISTRICT	Asbestos	Beryllium	Beryllium Rocket Motor Firing	Mercury	Vinyl Chloride		
POLLUTANT CATEGORY	B	C	D	E	F		
DEL NORTE					*		
FRESNO	*	*	*	*			
GREAT BASIN	*	*	*	*			
HUMBOLDT					*		
KERN	*				*		
KINGS	*	*	*	*			
LOS ANGELES	*	*	*	*			
MENDOCINO					*		
MERCED	*	*	*	*			
MODOC	*	*	*	*			
MONTEREY BAY	*	*	*	*			
NORTHERN SONOMA							
SAN BERNARDINO	*	*	*	*			
SAN DIEGO	*				*		
SAN JOAQUIN	*	*	*	*	*		
TRINITY					*		
TULARE	*	*	*	*	*	*	8/30/79
VENTURA						+	11/19/76
YOLO-SOLANO	+			+			

Butte County Air Pollution Control District, P.O. Box 1229, 316 Nelson Avenue, Oroville, CA 95965

Calaveras County Air Pollution Control District, Government Center, El Dorado Road, San Andreas, CA 95249

Colusa County Air Pollution Control District, 751 Fremont Street, Colusa, CA 95952

El Dorado Air Pollution Control District, 330 Fair Lane, Placerville, CA 95667

Fresno County Air Pollution Control District, 1221 Fulton Mall, Fresno, CA 93721.

Glenn County Air Pollution Control District, P.O. Box 351, 720 North Colusa Street, Willows, CA 95988

Great Basin Unified Air Pollution Control District, 157 Short Street, Suite 6, Bishop, CA 93514.

Imperial County Air Pollution Control District, County Services Building, 939 West Main Street, El Centro, CA 92243

Kern County Air Pollution Control District, 1601 H Street, Suite 250, Bakersfield, CA 93301.

Kings County Air Pollution Control District, 330 Campus Drive, Hanford, CA 93230

Lake County Air Pollution Control District, 256 North Forbes Street, Lakeport, CA 95453

Lassen County Air Pollution Control District, 175 Russell Avenue, Susanville, CA 96130

Madera County Air Pollution Control District, 135 West Yosemite Avenue, Madera, Calif. 93637.

Mendocino County Air Pollution Control District, County Courthouse, Ukiah, Calif. 94582.

Mariposa County Air Pollution Control District, Box 5, Mariposa, CA 95338

Merced County Air Pollution Control District, P.O. Box 471, 248 East 15th Street, Merced, CA 95340

Modoc County Air Pollution Control District, 202 West 4th Street, Alturas, CA 96101

Monterey Bay Unified Air Pollution Control, 1164 Monroe Street, Suite 10, Salinas, CA 93906.

Nevada County Air Pollution Control District, H.E.W. Complex, Nevada City, CA 95959

North Coast Unified Air Quality Management District, 5630 South Broadway, Eureka, CA 95501

Northern Sonoma County Air Pollution Control District, 134 "A" Avenue, Auburn, CA 95448

Placer County Air Pollution Control District, 11491 "B" Avenue, Auburn, CA 95603

Plumas County Air Pollution Control District, P.O. Box 480, Quincy, CA 95971

San Bernardino County Air Pollution Control District, 15579-8th, Victorville, CA 92392

Sacramento County Air Pollution Control District, 3701 Branch Center Road, Sacramento, Calif. 95827.

San Diego County Air Pollution Control District, 9150 Chesapeake Drive, San Diego, Calif. 92123.

San Joaquin County Air Pollution Control District, 1601 East Hazelton Street (P.O. Box 2009), Stockton, Calif. 95201.

San Luis Obispo County Air Pollution Control District, P.O. Box 637, San Luis Obispo, CA 93406

Santa Barbara County Air Pollution Control District, 315 Camino del Rimedio, Santa Barbara, CA 93110.

Shasta County Air Pollution Control District, 2650 Hospital Lane, Redding, CA 96001

Sierra County Air Pollution Control District, P.O. Box 286, Downieville, CA 95936

Siskiyou County Air Pollution Control District, 525 South Foothill Drive, Yreka, CA 96097

South Coast Air Quality Management District, 9150 Flair Drive, El Monte, CA 91731

Stanislaus County Air Pollution Control District, 1030 Scenic Drive, Modesto, CA 95350

Sutter County Air Pollution Control District, Sutter County Office Building, 142 Garden Highway, Yuba City, CA 95991

Tehama County Air Pollution Control District, P.O. Box 38, 1760 Walnut Street, Red Bluff, CA 96080

Tulare County Air Pollution Control District, County Civic Center, Visalia, CA 93277

Tuolumne County Air Pollution Control District, 9 North Washington Street, Sonora, CA 95370

Ventura County Air Pollution Control District, 800 South Victoria Avenue, Ventura, CA 93009

Yolo-Solano Air Pollution Control District, P.O. Box 1006, 323 First Street, #5, Woodland, CA 95695

(G) State of Colorado, Colorado Air Pollution Control Division, 4210 East 11th Avenue, Denver, Colorado 80220.[9]

(H) State of Connecticut, Department of Environmental Protection, State Office Building, Hartford, Connecticut 06115.[16,83]

(I) State of Delaware (for asbestos, beryllium, mercury and vinyl chloride):

Delaware Department of Natural Resources and Environmental Control, Tatnall Building, P.O. Box 1401, Dover, Delaware 19901[46,63]

(J) [reserved]

(K) Bureau of Air Quality Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.[77,116]

(L) State of Georgia, Environmental Protection Division, Department of Natural Resources, 270 Washington Street, S.W., Atlanta, Georgia 30334.[19]

(M)

Hawaii Department of Health, 1250 Punchbowl Street, Honolulu, HI 96813

Hawaii Department of Health (mailing address), Post Office Box 3378, Honolulu, HI 96801[84]

(O) [Reserved]

State of Indiana, Indiana Air Pollution Control Board, 1330 West Michigan Street, Indianapolis, Indiana 46206.[26,104]

(Q) Iowa Department of Environmental Quality, Henry A. Wallace Building, 900 East Grand, Des Moines, Iowa 50316.[60,94]

(R) [Reserved]

(S) Division of Air Pollution Control, Department for Natural Resources and Environmental Protection, U.S. 127, Frankfort, Ky. 40601.[45]

(T) Secretary, Louisiana Department of Natural Resources, P.O. Box 44066, Baton Rouge, Louisiana 70804.[77,90]

(U) State of Maine, Department of Environmental Protection, State House, Augusta, Maine 04330.[11,83]

(V) State of Maryland, Bureau of Air Quality and Noise Control, Maryland State Department of Health and Mental Hygiene, 201 West Preston Street, Baltimore, Maryland 21201.[54]

(W) Commonwealth of Massachusetts: Massachusetts Department of Environmental Quality Engineering, Division of Air Quality Control, One Winter Street, Boston, MA 02108.[17,83]

(X) State of Michigan, Air Pollution Control Division, Michigan Department of Natural Resources, Stevens T. Mason Building, 7th Floor, Lansing, Michigan 48926.[12]

(Y) Minnesota Pollution Control Agency, Division of Air Quality, 1935 West County Road B-2, Roseville, Minn. 55113.[44]

(Z) Bureau of Pollution Control, Department of Natural Resources, P.O. Box 10385, Jackson, Mississippi 39209.[61,114]

(AA) Missouri Department of Natural Resources, Post Office Box 1368.[55] Jefferson City, Missouri 65101.[88]

(BB) State of Montana, Department of Health and Environmental Sciences, Cogswell Building, Helena, Mont. 59601.[41]

(CC) State of Nebraska, Nebraska Department of Environmental Control, P.O. Box 94877, State House Station, Lincoln, Nebraska 68509.[57]

Lincoln-Lancaster County Health Department, Division of Environmental Health, 2200 St. Marys Avenue, Lincoln, Nebraska 68502.[72]

(DD) Nevada.[48,69,73,74,106,111]

Clark County, County District Health Department, Air Pollution Control Division, 625 Shadow Lane, Las Vegas, Nev. 89106.

Washoe County District Health Department, Division of Environmental Protection 10 Kirman Avenue, Reno, Nev. 89502.

Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, 201 South Fall Street, Carson City, NV 89710

(EE) State of New Hampshire: New Hampshire Air Resources Agency, Health and Welfare Building, Hazen Drive, Concord, NH 03301.[83]

(FF)—State of New Jersey: New Jersey Department of Environmental Protection John Fitch Plaza, P.O. Box 2807, Trenton, New Jersey 08625.[39,75]

(GG) Director, New Mexico Environmental Improvement Division, Health and Environment Department, P.O. Box 968, Crown Building, Santa Fe, New Mexico 87504.[76]

(HH) New York: New York State Department of Environmental Conservation, 50 Wolf Road, Albany, New York 12233, attention: Division of Air Resources.[6,87,109]

(II) North Carolina Environmental Management Commission, Department of Natural and Economic Resources, Division of Environmental Management, P.O. Box 27687, Raleigh, North Carolina 27611. Attention: Air Quality Section.[32]

(JJ) State of North Dakota, State Department of Health, State Capitol, Bismarck North Dakota 58501.[27]

(KK) State of Ohio—[53,104,105]

Medina, Summit and Portage Counties; Director, Air Pollution Control, 177 South Broadway, Akron, Ohio 44308.

Stark County; Director, Air Pollution Control Division, Canton City Health Department, City Hall Annex Second Floor, 218 Cleveland Avenue S.W., Canton, Ohio 44702.

Butler, Clermont, Hamilton and Warren Counties; Director, Southwestern Ohio Air Pollution Control Agency, 2400 Beekman Street, Cincinnati, Ohio 45214.

Cuyahoga County; Commissioner, Division of Air Pollution Control, Department of Public Health and Welfare, 2735 Broadway Avenue, Cleveland, Ohio 44115.

Belmont, Carroll, Columbiana, Harrison, Jefferson, and Monroe Counties; Director, North Ohio Valley Air Authority (NOVAA), 814 Adams Street, Steubenville, Ohio 43952.

Clark, Darke, Greene, Miami, Montgomery, and Preble Counties; Supervisor, Regional Air Pollution Control Agency (RAPCA), Montgomery County Health Department, 451 West Third Street, Dayton, Ohio 45402

Lucas County and the City of Rossford (in Wood County); Director, Toledo Pollution Control Agency, 26 Main Street, Toledo, Ohio 43605.

Adams, Brown, Lawrence, and Scioto Counties; Engineer-Director, Air Division, Portsmouth City Health Department, 728 Second Street, Portsmouth, Ohio 45662.

Allen, Ashland, Auglaize, Crawford, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Marion, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Van Wert, Williams, Wood (except City of Rossford), and Wyandot Counties; Ohio Environmental Protection Agency, Northwest District Office, Air Pollution Group 1035 Devlac Grove Drive, Bowling Green, Ohio 43402.

Ashtabula, Holmes, Lorain, and Wayne Counties; Ohio Environmental Protection Agency, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Athens, Coshocton, Gallia, Guernsey, Hocking, Jackson, Meigs, Morgan, Muskingum, Noble, Perry, Pike, Ross, Tuscarawas, Vinton, and Washington Counties; Ohio Environmental Protection Agency, Southeast District Office, Air Pollution Group, 2195 Front Street, Logan, Ohio 43138.

Champaign, Clinton, Highland, Logan, and Shelby Counties; Ohio Environmental Protection Agency, Southwest District Office, 7 East Fourth Street, Dayton, Ohio 45402.

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Morrow, Pickaway, and Union Counties; Ohio Environmental Protection Agency, Central District Office, Air Pollution Group, 361 East Broad Street, Columbus, Ohio 43215.

Geauga and Lake Counties; Lake County General Health District, Air Pollution Control, 105 Main Street, P.O. Box 490 Painesville, Ohio 44077

Mahoning and Trumbull Counties; Mahoning-Trumbull Air Pollution Control, Metropolitan Tower, Room 404, 1 Federal Plaza West, Youngstown, Ohio 44503

(LL) State of Oklahoma, Oklahoma State Department of Health, Air Quality Service, P.O. Box 53551, Oklahoma City, Oklahoma 73152.[62]

(i) Oklahoma City and County: Oklahoma City-County Health Department, 1000 Northeast 10th Street, Oklahoma City, Oklahoma 73152.[98]

(ii) Tulsa County: Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.[82]

(MM) State of Oregon, Department of Environmental Quality, 1234 SW Morrison Street, Portland, Oregon 97205.[14]

(viii) Lane Regional Air Pollution Authority, 1244 Walnut Street, Eugene, Oregon 97403.[64]

(NN) (i) City of Philadelphia: [25,78,103] Philadelphia Department of Public Health, Air Management Services, 500 S. Broad Street, Philadelphia, Pennsylvania 19146.

(ii) Commonwealth of Pennsylvania: Department of Environmental Resources, Post Office Box 2063, Harrisburg, Pennsylvania, 17120.

(iii) Allegheny County: Allegheny County Health Department, Bureau of Air Pollution Control, 301 Thirty-ninth Street, Pittsburgh, Pennsylvania, 15201.

(OO) State of Rhode Island: Rhode Island Department of Environmental Management, 204 Cannon Building, Davis Street, Providence, RI 02908.[50,83]

(PP) State of South Carolina, Office of Environmental Quality Control, Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina 29201.[3]

(QQ) [Reserved] [107]

(RR) Division of Air Pollution Control, Tennessee Department of Public Health, 256 Capitol Hill Building, Nashville, Tennessee 37219[56,114]

(SS) State of Texas, Texas Air Control Board, 6330 Highway 290 East, Austin, Texas 78723.[51,80]

(TT) [reserved]

(UU) State of Vermont: Vermont Agency of Environmental Conservation, Air Pollution Control, State Office Building, Montpelier, VT 05602.[83]

(VV) Commonwealth of Virginia, Virginia State Air Pollution Control Board, Room 1106, Ninth Street Office Building, Richmond, Virginia 23219.[75]

(WW) (i) Washington; State of Washington, Department of Ecology, Olympia, Washington 98504.

(ii) Northwest Air Pollution Authority, 207 Pioneer Building, Second and Pine Streets, Mount Vernon, Washington 98273

(iii) Puget Sound Air Pollution Control Agency, 410 West Harrison Street, Seattle Washington 98119.

(iv) Spokane County Air Pollution Control Authority, North 811 Jefferson, Spokane Washington 99201.

(v) Yakima County Clean Air Authority, County Courthouse, Yakima, Washington 98901.[4,10]

(vi) Olympic Air Pollution Control Authority, 120 East State Avenue, Olympia, Washington 98501.

(vii) Southwest Air Pollution Control Authority, Suite 7601 H, NE Hazel Dell Avenue Vancouver, Washington 98665.[13]

(XX) State of West Virginia: Air Pollution Control Commission, 1558 Washington Street, East, Charleston, West Virginia 25311.[115]

(YY) Wisconsin—Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, Wisconsin 53707.[37,104]

(ZZ) [Reserved]

(AAA) [Reserved]

(BBB)—Commonwealth of Puerto Rico Commonwealth of Puerto Rico Environmental Quality Board, P.O Box 11785, Santurce, P.R. 00910.[43]

(CCC) U.S. Virgin Islands: U.S. Virgin Islands Department of Conservation and Cultural Affairs, P.O. Box 578, Charlotte Amalie, St. Thomas, U.S. Virgin Islands 00801.[22]

(Secs. 101, 110, 111, 112 and 301 of the Clean Air Act, as amended, 42 U.S.C. 1857, 1857c-5, and 1857g.)

§ 61.05 Prohibited activities.

(a) After the effective date of any standard prescribed under this part, no owner or operator shall construct or modify any stationary source subject to such standard without first obtaining written approval of the Administrator in accordance with this subpart, except under an exemption granted by the President under section 112(c)(2) of the act. Sources, the construction or modification of which commenced after the publication date of the standards proposed to be applicable to such source, are subject to this prohibition.

(b) After the effective date of any standard prescribed under this part, no owner or operator shall operate any new source in violation of such standard except under an exemption granted by the President under section 112(c)(2) of the act.

(c) Ninety days after the effective date of any standard prescribed under this part, no owner or operator shall operate any existing stationary source in violation of such standard, except under a waiver granted by the Administrator in accordance with this subpart or under an exemption granted by the President under section 112(c)(2) of the act.

(d) No owner or operator subject to the provisions of this part shall fail to report, revise reports, or report source test results as required under this part.

§ 61.06 Determination of construction or modification.

Upon written application by an owner or operator, the Administrator will make a determination of whether actions taken or intended to be taken by such owner or operator constitute construction or modification or the commencement thereof within the meaning of this part. The Administrator will within 30 days of receipt of sufficient information to evaluate an application, notify the owner or operator of his determination.

§ 61.07 Application for approval of construction or modification.

(a) The owner or operator of any new source to which a standard prescribed under this part is applicable shall, prior to the date on which construction or modification is planned to commence, or within 30 days after the effective date in the case of a new source that already has commenced construction or modification and has not begun operation, submit to the Administrator an application for approval of such construction or modification. A separate application shall be submitted for each stationary source.

(b) Each application shall include:

(1) The name and address of the applicant.

(2) The location or proposed location of the source.

(3) Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including a description of any equipment to be used for control of emissions. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of such calculations.

§ 61.08 Approval by Administrator.

(a) The Administrator will, within 60 days of receipt of sufficient information to evaluate an application under § 61.07, notify the owner or operator of approval or intention to deny approval of construction or modification.

(b) If the Administrator determines that a stationary source for which an application pursuant to § 61.07 was submitted will, if properly operated, not cause emissions in violation of a standard, he will approve the construction or modification of such source.

(c) Prior to denying any application for approval of construction or modification pursuant to this section, the Administrator will notify the owner or operator making such application of the Administrator's intention to issue such denial, together with:

(1) Notice of the information and findings on which such intended denial is based, and

(2) Notice of opportunity for such owner or operator to present, within such time limit as the Administrator shall specify, additional information or arguments to the Administrator prior to final action on such application.

(d) A final determination to deny any application for approval will be in writing and will set forth the specific grounds on which such denial is based. Such final determination will be made within 60 days of presentation of additional information or arguments, or 60 days after the final date specified for presentation, if no presentation is made.

(e) Neither the submission of an application for approval nor the Administrator's granting of approval to construct or modify shall:

(1) Relieve an owner or operator of legal responsibility for compliance with any applicable provision of this part or of any other applicable Federal, State, or local requirement, or

(2) Prevent the Administrator from implementing or enforcing this part or taking any other action under the act.

§ 61.09 Notification of startup.

(a) Any owner or operator of a source which has an initial startup after the effective date of a standard prescribed under this part shall furnish the Administrator written notification as follows:

(1) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days prior to such date.

(2) A notification of the actual date of initial startup of the source within 15 days after such date.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.10 Source reporting and waiver request.

(a) The owner or operator of any existing source, or any new source to which a standard prescribed under this part is applicable which had an initial startup which preceded the effective date of a standard prescribed under this part shall, within 90 days after the effective date, provide the following information in writing to the Administrator:

(1) Name and address of the owner or operator.

(2) The location of the source.

(3) The type of hazardous pollutants emitted by the stationary source.

(4) A brief description of the nature, size, design, and method of operation of the stationary source including the operating design capacity of such source. Identify each point of emission for each hazardous pollutant.

(5) The average weight per month of the hazardous materials being processed by the source, over the last 12 months preceding the date of the report.

(6) A description of the existing control equipment for each emission point.

(i) Primary control device(s) for each hazardous pollutant.

(ii) Secondary control device(s) for each hazardous pollutant.

(iii) Estimated control efficiency (percent) for each control device.

(7) A statement by the owner or operator of the source as to whether he can comply with the standards prescribed in this part within 90 days of the effective date.

(b) The owner or operator of an existing source unable to operate in compliance with any standard prescribed under this part may request a waiver of compliance with such standard for a period not exceeding 2 years from the effective date. Any request shall be in writing and shall include the following information:

(1) A description of the controls to be installed to comply with the standard.

(2) A compliance schedule, including the date each step toward compliance will be reached. Such list shall include as a minimum the following dates:

(i) Date by which contracts for emission control systems or process modifications will be awarded, or date by which orders will be issued for the purchase of component parts to accomplish emission control or process modification;

(ii) Date of initiation of onsite construction or installation of emission control equipment or process change;

(iii) Date by which onsite construction or installation of emission control equipment or process modification is to be completed; and

(iv) Date by which final compliance is

to be achieved.

(3) A description of interim emission control steps which will be taken during the waiver period.

(c) Changes in the information provided under paragraph (a) of this section shall be provided to the Administrator within 30 days after such change, except that if changes will result from modification of the source, as defined in § 61.02 (j), the provisions of § 61.07 and § 61.08 are applicable.

(d) The format for reporting under this section is included as Appendix A of this part. Advice on reporting the status of compliance may be obtained from the Administrator.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.11 Waiver of compliance.

(a) Based on the information provided in any request under § 61.10, or other information, the Administrator may grant a waiver of compliance with a standard for a period not exceeding 2 years from the effective date of such standard.

(b) Such waiver will be in writing and will:

(1) Identify the stationary source covered.

(2) Specify the termination date of the waiver. The waiver may be terminated at an earlier date if the conditions specified under paragraph (b) (3) of this section are not met.

(3) Specify dates by which steps toward compliance are to be taken; and impose such additional conditions as the Administrator determines to be necessary to assure installation of the necessary controls within the waiver period, and to assure protection of the health of persons during the waiver period.

(c) Prior to denying any request for a waiver pursuant to this section, the Administrator will notify the owner or operator making such request of the Administrator's intention to issue such denial, together with:

(1) Notice of the information and findings on which such intended denial is based, and

(2) Notice of opportunity for such owner or operator to present, within such time limit as the Administrator specifies, additional information or arguments to the Administrator prior to final action on such request.

(d) A final determination to deny any request for a waiver will be in writing and will set forth the specific grounds on which such denial is based. Such final determination will be made within 60 days after presentation of additional information or arguments, or 60 days after the final date specified for such presentation, if no presentation is made.

(e) The granting of a waiver under this section shall not abrogate the Administrator's authority under section 114 of the act.

§ 61.12 Emission tests and monitoring.

(a) Emission tests and monitoring shall be conducted and reported as set forth in this part and Appendix B to this part.

(b) The owner or operator of a new source subject to this part, and at the or operator of an existing source subject to this part, shall provide or cause to be provided, emission testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to such source.

(2) Safe sampling platform(s).

(3) Safe access to sampling platform(s).

(4) Utilities for sampling and testing equipment.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.13 Waiver of emission tests.

(a) Emission tests may be waived upon written application to the Administrator if, in his judgment, the source is meeting the standard, or if the source is operating under a waiver of compliance or has requested a waiver of compliance.

(b) If application for waiver of the emission test is made, such application shall accompany the information required by § 61.10. The appropriate form is contained in Appendix A to this part.

(c) Approval of any waiver granted pursuant to this section shall not abrogate the Administrator's authority under the act or in any way prohibit the Administrator from later canceling such waiver. Such cancellation will be made only after notice is given to the owner or operator of the source.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.14 Source test and analytical methods.

(a) Methods 101, 101A, 102, and 104 in Appendix B to this part shall be used for all source tests required under this part, unless an equivalent method or an alternative method has been approved by the Administrator.[66]

(b) Method 103 in Appendix B to this part is hereby approved by the Administrator as an alternative method for sources subject to § 61.32(a) and § 61.42 (b).

(c) The Administrator may, after notice to the owner or operator, withdraw approval of an alternative method granted under paragraphs (a), (b) or (d) of this section. Where the test results using an alternative method do not adequately indicate whether a source is in compliance with a standard, the Administrator may require the use of the reference method or its equivalent.[7]

(d) Method 105 in Appendix B to this part is hereby approved by the Administrator as an alternative method for sources subject to § 61.52(b).[7]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.15 Availability of information.[23]

The availability to the public of information provided to, or otherwise obtained by, the Administrator under this part shall be governed by Part 2 of this chapter.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.16 State authority.

(a) The provisions of this part shall not be construed in any manner to preclude any State or political subdivision thereof from:

(1) Adopting and enforcing any emission limiting regulation applicable to a stationary source, provided that such emission limiting regulation is not less stringent than the standards prescribed under this part.

(2) Requiring the owner or operator of a stationary source, other than a stationary source owned or operated by the United States, to obtain permits, licenses, or approvals prior to initiating construction, modification, or operation of such source.

(Sec. 116, Clean Air Act as amended (42 U.S.C. 7416)). [40,47]

§ 61.17 Circumvention.[7]

No owner or operator subject to the provisions of this part shall build, erect, install, or use any article machine, equipment, process, or method, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous dilutants to achieve compliance with a visible emissions standard, and the piecemeal carrying out of an operation to avoid coverage by a standard that applies only to operations larger than a specified size.

§ 61.18 Incorporations by reference.[89]

The materials listed below are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register on the date listed. These materials are incorporated as they exist on the date of the approval, and a notice of any change in these materials will be published in the Federal Register. The materials are available for purchase at the corresponding address noted below, and all are available for inspection at

the Office of the Federal Register, Room 8401, 1100 L Street, N.W., Washington, D.C. and the Library (MD–35), U.S. EPA, Research Triangle Park, North Carolina.

(a) The following material is available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; or University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

(1) ASTM D737–75, Standard Test Method for Air Permeability of Textile Fabrics, incorporation by reference (IBR) approved January 27, 1983 for § 61.23(a).

(2) ASTM D 1193–77, Standard Specification for Reagent Water, IBR approved for Method 101, par. 6.1.1; Method 101A, par. 6.1.1; Method 104, par. 3.1.2.[89]

(3) ASTM D 2986–71 (Reapproved 1978), Standard Method for Evaluation of Air, Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test, IBR approved for Method 103, par. 2.1.3; Method 104, par. 3.1.1.[89]

(4) ASTM D 2267–68 (Reapproved 1978), Aromatics in Light Naphthas and Aviation Gasolines by Gas Chromatography, IBR approved June 6, 1984, for § 61.245(d)(1).[97]

(5) ASTM D 2382–76, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved June 6, 1984, for § 61.245(e)(3).[97]

(6) ASTM D 2504–67 (Reapproved 1977), Noncondensable Gases in C_3 and Lighter Hydrocarbon Products by Gas Chromatography, IBR approved June 6, 1984, for § 61.245(e)(3).[97]

Subpart C—National Emission Standard for Beryllium

§ 61.30 Applicability.

The provisions of this subpart are applicable to the following stationary sources:

(a) Extraction plans, ceramic plants, foundries, incinerators, and propellant plants which process beryllium ore, beryllium, beryllium oxide, beryllium alloys, or beryllium-containing waste.

(b) Machine shops which process beryllium, beryllium oxides, or any alloy when such alloy contains more than 5 percent beryllium by weight.

§ 61.31 Definitions.

Terms used in this subpart are defined in the act, in subpart A of this part, or in this section as follows:

(a) "Beryllium" means the element beryllium. Where weights or concentrations are specified, such weights or concentrations apply to beryllium only, excluding the weight or concentration of any associated elements.

(b) "Extraction plant" means a facility chemically processing beryllium ore to beryllium metal, alloy, or oxide, or performing any of the intermediate steps in these processes.

(c) "Beryllium ore" means any naturally occurring material mined or gathered for its beryllium content.

(d) "Machine shop" means a facility performing cutting, grinding, turning, honing, milling, deburring, lapping, electrochemical machining, etching, or other similar operations.

(e) "Ceramic plant" means a manufacturing plant producing ceramic items.

(f) "Foundry" means a facility engaged in the melting or casting of beryllium metal or alloy.

(g) "Beryllium-containing waste" means material contaminated with beryllium and/or beryllium compounds used or generated during any process or operation performed by a source subject to this subpart.

(h) "Incinerator" means any furnace used in the process of burning waste for the primary purpose of reducing the volume of the waste by removing combustible matter.

(i) "Propellant" means a fuel and oxidizer physically or chemically combined which undergoes combustion to provide rocket propulsion.

(j) "Beryllium alloy" means any metal to which beryllium has been added in order to increase its beryllium content and which contains more than 0.1 percent beryllium by weight.

(k) "Propellant plant" means any facility engaged in the mixing, casting, or machining of propellant.

§ 61.32 Emission standard.

(a) Emissions to the atmosphere from stationary sources subject to the provisions of this subpart shall not exceed 10 grams of beryllium over a 24-hour period, except as provided in paragraph (b) of this section.

(b) Rather than meet the requirement of paragraph (a) of this section, an owner or operator may request approval from the Administrator to meet an ambient concentration limit on beryllium in the vicinity of the stationary source of 0.01 $\mu g/m^3$, averaged over a 30-day period.

(1) Approval of such requests may be granted by the Administrator provided that:

(i) At least 3 years of data is available which in the judgment of the Administrator demonstrates that the future ambient concentrations of beryllium in the vicinity of the stationary source will not exceed 0.01 $\mu g/m^3$, averaged over a 30-day period. Such 3-year period shall be the 3 years ending 30 days before the effective date of this standard.

(ii) The owner or operator requests such approval in writing within 30 days after the effective date of this standard.

(iii) The owner or operator submits a report to the Administrator within 45 days after the effective date of this standard which report includes the following information:

(*a*) Description of sampling method including the method and frequency of calibration.

(*b*) Method of sample analysis.

(*c*) Averaging technique for determining 30-day average concentrations.

(*d*) Number, identity, and location (address, coordinates, or distance and heading from plant) of sampling sites.

(*e*) Ground elevations and height above ground of sampling inlets.

(*f*) Plant and sampling area plots showing emission points and sampling sites. Topographic features significantly affecting dispersion including plant building heights and locations shall be included.

(*g*) Information necessary for estimating dispersion including stack height, inside diameter, exit gas temperature, exit velocity or flow rate, and beryllium concentration.

(*h*) A description of data and procedures (methods or models) used to design the air sampling network (i.e., number and location of sampling sites).

(*i*) Air sampling data indicating beryllium concentrations in the vicinity of the stationary source for the 3-year period specified in paragraph (b)(1) of this section. This data shal be presented chronologically and include the beryllium concentration and location of each individual sample taken by the network and the corresponding 30-day average beryllium concentrations.

(2) Within 60 days after receiving such report, the Administrator will notify the owner or operator in writing whether approval is granted or denied. Prior to denying approval to comply with the provisions of paragraph (b) of this section, the Administrator will consult with representatives of the statutory source for which the demonstration report was submitted.

(c) The burning of beryllium and/or beryllium-containing waste, except propellants, is prohibited except in incinerators, emissions from which must comply with the standard.

§ 61.33 Stack sampling.

(a) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator required to comply with § 61.32(a) shall test emissions from his source,

(1) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(2) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(b) The Administrator shall be notified at least 30 days prior to an emission test so that he may at his option observe the test.

(c) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in any 24-hour period. Where emissions depend upon the relative frequency of operation of different types of processes, operating hours, operating capacities, or other factors, the calculation of maximum 24-hour-period emissions will be based on that combination of factors which is likely to occur during the subject period and which result in the maximum emissions. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until a new emission level has been estimated by calculation and the results reported to the Administrator.

(d) All samples shall be analyzed and beryllium emissions shall be determined within 30 days after the source test. All determinations shall be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determination.

(e) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.34 Air sampling.

(a) Stationary sources subject to § 61.32(b) shall locate air sampling sites in accordance with a plan approved by the Administrator. Such sites shall be located in such a manner as is calculated to detect maximum concentrations of beryllium in the ambient air.

(b) All monitoring sites shall be operated continuously except for a reason-

able time allowance for instrument maintenance and calibration, for changing filters, or for replacement of equipment needing major repair.

(c) Filters shall be analyzed and concentrations calculated within 30 days after filters are collected. Records of concentrations at all sampling sites and other data needed to determine such concentrations shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(d) Concentrations measured at all sampling sites shall be reported to the Administrator every 30 days by a registered letter.

(e) The Administrator may at any time require changes in, or expansion of, the sampling network.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

38 FR 8826, 4/6/73 (1)

as amended

42 FR 41424, 8/17/77 (40)
43 FR 8800, 3/3/78 (47)

Subpart D—National Emission Standard for Beryllium Rocket Motor Firing

§ 61.40 Applicability.

The provisions of this subpart are applicable to rocket motor test sites.

§ 61.41 Definitions.

Terms used in this subpart are defined in the Act, in Subpart A of this part, or in this section as follows:

(a) "Rocket motor test site" means any building, structure, facility, or installation where the static test firing of a beryllium rocket motor and/or the disposal of beryllium propellant is conducted.

(b) "Beryllium propellant" means any propellant incorporating beryllium.

§ 61.42 Emission standard.

(a) Emissions to the atmosphere from rocket-motor test sites shall not cause time-weighted atmospheric concentrations of beryllium to exceed 75 microgram minutes per cubic meter of air within the limits of 10 to 60 minutes, accumulated during any 2 consecutive weeks, in any area in which an effect adverse to public health could occur.

(b) If combustion products from the firing of beryllium propellant are collected in a closed tank, emissions from such tank shall not exceed 2 grams per hour and a maximum of 10 grams per day.

§ 61.43 Emission testing—rocket firing or propellant disposal.

(a) Ambient air concentrations shall be measured during and after firing of a rocket motor or propellant disposal and in such a manner that the effect of these emissions can be compared with the standard. Such sampling techniques shall be approved by the Administrator.

(b) All samples shall be analyzed and results shall be calculated within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All results shall be reported to the Administrator by a registered letter dispatched before the close of the next business day following determination of such results.

(c) Records of air sampling test results and other data needed to determine integrated intermittent concentrations shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(d) The Administrator shall be notified at least 30 days prior to an air sampling test, so that he may at his option observe the test.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.44 Stack sampling.

(a) Sources subject to § 61.42(b) shall be continuously sampled, during release of combustion products from the tank, in such a manner that compliance with the standards can be determined. The provisions of § 61.14 shall apply.

(b) All samples shall be analyzed, and beryllium emissions shall be determined within 30 days after samples are taken and before any subsequent rocket motor firing or propellant disposal at the given site. All determinations shall be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determinations.

(c) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(d) The Administrator shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

38 FR 8826, 4/6/73 (1)

as amended

42 FR 41424, 8/17/77 (40)
43 FR 8800, 3/3/78 (47)

Subpart E—National Emission Standard for Mercury

§ 61.50 Applicability. [7]

The provisions of this subpart are applicable to those stationary sources which process mercury ore to recover mercury, use mercury chlor-alkali cells to produce chlorine gas and alkali metal hydroxide, and incinerate or dry wastewater treatment plant sludge.

§ 61.51 Definitions.

Terms used in this subpart are defined in the act, in subpart A of this part, or in this section as follows:

(a) "Mercury" means the element mercury, excluding any associated elements, and includes mercury in particulates, vapors, aerosols, and compounds.

(b) "Mercury ore" means a mineral mined specifically for its mercury content.

(c) "Mercury ore processing facility" means a facility processing mercury ore to obtain mercury.

(d) "Condenser stack gases" mean the gaseous effluent evolved from the stack of processes utilizing heat to extract mercury metal from mercury ore.

(e) "Mercury chlor-alkali cell" means a device which is basically composed of an electrolyzer section and a denuder (decomposer) section and utilizes mercury to produce chlorine gas, hydrogen gas, and alkali metal hydroxide.

(f) "Mercury chlor-alkali electrolyzer" means an electrolytic device which is part of a mercury chlor-alkali cell and utilizes a flowing mercury cathode to produce chlorine gas and alkali metal amalgam.

(g) "Denuder" means a horizontal or vertical container which is part of a mercury chlor-alkali cell and in which water and alkali metal amalgam are converted to alkali metal hydroxide, mercury, and hydrogen gas in a short-circuited, electrolytic reaction.

(h) "Hydrogen gas stream" means a hydrogen stream formed in the chlor-alkali cell denuder.

(i) "End box" means a container(s) located on one or both ends of a mercury chlor-alkali electrolyzer which serves as a connection between the electrolyzer and denuder for rich and stripped amalgam.

(j) "End box ventilation system" means a ventilation system which collects mercury emissions from the end-boxes, the mercury pump sumps, and their water colection systems.

(k) "Cell room" means a structure(s) housing one or more mercury electrolytic chlor-alkali cells.

(l) "Sludge" means sludge produced by a treatment plant that processes municipal or industrial waste waters. [7]

(m) "Sludge dryer" means a device used to reduce the moisture content of sludge by heating to temperatures above 65°C (ca. 150°F) directly with combustion gases. [7]

§ 61.52 Emission standard. [7]

(a) Emissions to the atmosphere from mercury ore processing facilities and mercury cell chlor-alkali plants shall not exceed 2300 grams of mercury per 24-hour period.

(b) Emissions to the atmosphere from sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges shall not exceed 3200 grams of mercury per 24-hour period.

§ 61.53 Stack sampling.

(a) Mercury ore processing facility.

(1) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator processing mercury ore shall test emissions from his source,

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(2) The Administrator shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(3) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission level has been estimated by calculation and the results reported to the Administrator.

(4) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the source test. Each determination will be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determination.

(5) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(b) Mercury chlor-alkali plant—hydrogen and end-box ventilation gas streams.

(1) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator employing mercury chlor-alkali cell(s) shall test emissions from his source,

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(2) The Administrator shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(3) Samples shall be taken over such a period or periods as are necessary to accurately determine the maximum emissions which will occur in a 24-hour period. No changes in the operation shall be made, which would potentially increase emissions above that determined by the most recent source test, until the new emission has been estimated by calculation and the results reported to the Administrator.

(4) All samples shall be analyzed and mercury emisions shall be determined within 30 days after the source test. All the determinations will be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determination.

(5) Records of emission test results and other data needed to determine total emissions shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(c) Mercury chlor-alkali plants—cell room ventilation system.

(1) Stationary sources using mercury chlor-alkali cells may test cell room emissions in accordance with paragraph (c)(2) of this section or demonstrate compliance with paragraph (c)(4) of this section and assume ventilation emissions of 1,300 gms/day of mercury.

(2) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator shall pass all cell room air in forced gas streams through stacks suitable for testing,

(i) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(ii) Within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(3) The Administrator shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.

(4) An owner or operator may carry out approved design, maintenance, and housekeeping practices. A list of approved design, maintenance, and housekeeping practices may be obtained from the Administrator.

(d) Sludge incineration and drying plants.

(1) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator of a source subject to the standard in § 61.52(b) shall test emissions from that source. Such tests shall be conducted in accordance with the procedures set forth either in paragraph (d) of this section or in § 61.54.

(2) Method 101A in Appendix B to this part shall be used to test emissions as follows: [66]

(i) The test shall be performed within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date.[66]

(ii) The test shall be performed within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.[66]

(3) The Administrator shall be notified at least 30 days prior to an emission test, so that he may at his option observe the test.[7]

(4) Samples shall be taken over such a period or periods as are necessary to determine accurately the maximum emissions which will occur in a 24-hour period. No changes shall be made in the operation which would potentially increase emissions above the level determined by the most recent stack test, until the new emission level has been estimated by calculation and the results reported to the Administrator.[7]

(5) All samples shall be analyzed, and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determination.[7]

(6) Records of emission test results and other data needed to determine total emissions shall be retained at the source and shall be made available, for inspection by the Administrator, for a minimum of 2 years.[7]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.54 Sludge sampling.[7]

(a) As an alternative means for demonstrating compliance with § 61.52 (b), an owner or operator may use Method 105 of Appendix B and the procedures specified in this section.

(1) A sludge test shall be conducted within 90 days of the effective date of these regulations in the case of an existing source or a new source which has an initial startup date preceding the effective date; or

(2) A sludge test shall be conducted within 90 days of startup in the case of a new source which did not have an initial startup date preceding the effective date.

(b) The Administrator shall be notified at least 30 days prior to a sludge sampling test, so that he may at his option observe the test.

(c) Sludge shall be sampled according to paragraph (c)(1) of this section, sludge charging rate for the plant shall be determined according to paragraph (c)(2) of this section, and the sludge analysis shall be performed according to paragraph (c)(3) of this section.

[1] The sludge shall be sampled according to Method 105—Determination of Mercury in Wastewater Treatment Plant Sewage Sludges. A total of three composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period shall not exceed 72 hours after the first grab sample is obtained. Samples shall not be exposed to any condition that may result in mercury contamination or loss.[106]

(2) The maximum 24-hour period sludge incineration or drying rate shall be determined by use of a flow rate measurement device that can measure the mass rate of sludge charged to the incinerator or dryer with an accuracy of ±5 percent over its operating range. Other methods of measuring sludge mass charging rates may be used if they have received prior approval by the Administrator.

(3) The sampling, handling, preparation, and analysis of sludge samples shall be accomplished according to Method 105 in Appendix B of this part.[106]

(d) The mercury emissions shall be determined by use of the following equation.

$$E_{Hg} = \frac{M Q F_{sm(avg)}}{.1000}$$

where:

E_{Hg} = Mercury emissions, g/day.

M = Mercury concentration of sludge on a dry solids basis, μg/g.

Q = Sludge charging rate, kg/day.

F_{sm} = Weight fraction of solids in the collected sludge after mixing.[106]

(e) No changes in the operation of a plant shall be made after a sludge test has been conducted which would potentially increase emissions above the level determined by the most recent sludge test, until the new emission level has been estimated by calculation and the results reported to the Administrator.

(f) All sludge samples shall be analyzed for mercury content within 30 days after the sludge sample is collected. Each determination shall be reported to the Administrator by a registered letter dispatched before the close of the next business day following such determination.

(g) Records of sludge sampling, charging rate determination and other data needed to determine mercury content of wastewater treatment plant sludges shall be retained at the source and made available, for inspection by the Administrator, for a minimum of 2 years.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

§ 61.55 Emission monitoring.[7]

(a) Wastewater treatment plant sludge incineration and drying plants. All such sources for which mercury emissions exceed 1600 g/day, demonstrated either by stack sampling according to § 61.53 or sludge sampling according to § 61.54, shall monitor mercury emissions at intervals of at least once per year by use of Method 105 of Appendix B, or the procedures specified in § 61.54(c) and (d). The results of monitoring shall be reported and retained according to § 61.53(d) (5) and (6), or § 61.54(f) and (g).

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). [40,47]

38 FR 8826, 4/6/73 (1)

as amended

40 FR 48299, 10/14/75 (7)
42 FR 41424, 8/17/77 (40)
43 FR 8800, 3/3/78 (47)
47 FR 24703, 6/8/82 (66)
49 FR 35768, 9/12/84 (106)

Subpart F—National Emission Standard for Vinyl Chloride [28]

§ 61.60 Applicability.

(a) This subpart applies to plants which produce:

(1) Ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene,

(2) Vinyl chloride by any process, and/or

(3) One or more polymers containing any fraction of polymerized vinyl chloride.

(b) This subpart does not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of no more than 0.19 m^3 (50 gal).

(c) Sections of this subpart other than §§ 61.61; 61.64 (a)(1), (b), (c), and (d); 61.67; 61.68; 61.69; 61.70; and 61.71 do not apply to equipment used in research and development if the reactor used to polymerize the vinyl chloride processed in the equipment has a capacity of greater than 0.19 m^3 (50 gal) and no more than 4.07 m^3 (1100 gal).[38]

§ 61.61 Definitions.

Terms used in this subpart are defined in the Act, in Subpart A of this part, or in this section as follows:

(a) "Ethylene dichloride plant" includes any plant which produces ethylene dichloride by reaction of oxygen and hydrogen chloride with ethylene.

(b) "Vinyl chloride plant" includes any plant which produces vinyl chloride by any process.

(c) "Polyvinyl chloride plant" includes any plant where vinyl chloride alone or in combination with other materials is polymerized.

(d) "Slip gauge" means a gauge which has a probe that moves through the gas/liquid interface in a storage or transfer vessel and indicates the level of vinyl chloride in the vessel by the physical state of the material the gauge discharges.

(e) "Type of resin" means the broad classification of resin referring to the basic manufacturing process for producing that resin, including, but not limited to, the suspension, dispersion, latex, bulk, and solution processes.

(f) "Grade of resin" means the subdivision of resin classification which describes it as a unique resin, i.e., the most exact description of a resin with no further subdivision.

(g) "Dispersion resin" means a resin manufactured in such away as to form fluid dispersions when dispersed in a plasticizer or plasticizer/diluent mixtures.

(h) "Latex resin" means a resin which is produced by a polymerization process which initiates from free radical catalyst sites and is sold undried.

(i) "Bulk resin' 'means a resin which is produced by a polymerization process in which no water is used.

(j) "Inprocess wastewater" means any water which, during manufacturing or processing, comes into direct contact with vinyl chloride or polyvinyl chloride or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product containing vinyl chloride or polyvinyl chloride but which has not been discharged to a wastewater treatment process or discharged untreated as wastewater.

(k) "Wastewater treatment process" includes any process which modifies characteristics such as BOD, COD, TSS, and pH, usually for the purpose of meeting effluent guidelines and standards; it does not include any process the purpose of which is to remove vinyl chloride from water to meet requirements of this subpart.

(l) "In vinyl chloride service" means that a piece of equipment contains or contacts either a liquid that is at least 10 percent by weight vinyl chloride or a gas that is at least 10 percent by volume vinyl chloride.

(m) "Standard operating procedure" means a formal written procedure officially adopted by the plant owner or operator and available on a routine basis to those persons responsible for carrying out the procedure.

(n) "Run" means the net period of time during which an emission sample is collected.

(o) "Ethylene dichloride purification" includes any part of the process of ethylene dichloride production which follows ethylene dichloride formation and in which finished ethylene dichloride is produced.

(p) "Vinyl chloride purification" includes any part of the process of vinyl chloride production which follows vinyl chloride formation and in which finished vinyl chloride is produced.

(q) "Reactor" includes any vessel in which vinyl chloride is partially or totally polymerized into polyvinyl chloride.

(r) "Reactor opening loss" means the emissions of vinyl chloride occurring when a reactor is vented to the atmosphere for any purpose other than an emergency relief discharge as defined in § 61.65(a).

(s) "Stripper" includes any vessel in which residual vinyl chloride is removed from polyvinyl chloride resin, except bulk resin, in the slurry form by the use of heat and/or vacuum. In the case of bulk resin, stripper includes any vessel which is used to remove residual vinyl chloride from polyvinyl chloride resin immediately following the polymerization step in the plant process flow.

(t) "Standard temperature" means a temperature of 20° C (69° F).[38]

(u) "Standard pressure" means a pressure of 760 mm of Hg (29.92 in. of Hg).[38]

§ 61.62 Emission standard for ethylene dichloride plants.[38]

(a) Ethylene dichloride purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in ethylene dichloride purification is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

(b) Oxychlorination reactor: Except as provided in § 61.65(a), emissions of vinyl chloride to the atmosphere from each oxychlorination reactor are not to exceed 0.2 g/kg (0.0002 lb/lb) of the 100 percent ethylene dichloride product from the oxychlorination process.

§ 61.63 Emission standard for vinyl chloride plants.

An owner or operator of a vinyl chloride plant shall comply with the requirements of this section and § 61.65.

(a) Vinyl chloride formation and purification: The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from any equipment used in vinyl chloride formation and/or purification is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

§ 61.64 Emission standard for polyvinyl chloride plants.

An owner or operator of a polyvinyl chloride plant shall comply with the requirements of this section and § 61.65.

(a) *Reactor.* The following requirements apply to reactors:

(1) The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each reactor is not to exceed 10 ppm, except as provided in paragraph (a)(2) of this section and § 61.65(a).

(2) The reactor opening loss from each reactor is not to exceed 0.02 g vinyl chloride/kg (0.00002 lb vinyl chloride/lb) of polyvinyl chloride product, with the product determined on a dry solids basis. This requirement applies to any vessel which is used as a reactor or as both a reactor and a stripper. In the bulk process, the product means the gross product of prepolymerization and postpolymerization.

(3) Manual vent valve discharge: Except for an emergency manual vent valve discharge, there is to be no discharge to the atmosphere from any manual vent valve on a polyvinyl chloride reactor in vinyl chloride service. An emergency manual vent valve discharge means a discharge to the atmosphere which could not have been avoided by taking measures to prevent the discharge. Within 10

days of any discharge to the atmosphere from any manual vent valve, the owner or operator of the source from which the discharge occurs shall submit to the Administrator a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.

(b) *Stripper.* The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each stripper is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

(c) *Mixing, weighing, and holding containers.* The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each mixing, weighing, or holding container in vinyl chloride service which precedes the stripper (or the reactor if the plant has no stripper) in the plant process flow is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

(d) *Monomer recovery system.* The concentration of vinyl chloride in all exhaust gases discharged to the atmosphere from each monomer recovery system is not to exceed 10 ppm, except as provided in § 61.65(a). This requirement does not apply to equipment that has been opened, is out of operation, and met the requirement in § 61.65(b)(6)(i) before being opened.

(e) *Sources following the stripper(s).* The following requirements apply to emissions of vinyl chloride to the atmosphere from the combination of all sources following the stripper(s) [or the reactor(s) if the plant has no stripper(s)] in the plant process flow including but not limited to, centrifuges, concentrators, blend tanks, filters, dryers, conveyor air discharges, baggers, storage containers, and inprocess wastewater:

(1) In polyvinyl chloride plants using stripping technology to control vinyl chloride emissions, the weighted average residual vinyl chloride concentration in all grades of polyvinyl chloride resin processed through the stripping operation on each calendar day, measured immediately after the stripping operation is completed, may not exceed:

(i) 2000 ppm for polyvinyl chloride dispersion resins, excluding latex resins;

(ii) 400 ppm for all other polyvinyl chloride resins, including latex resins, averaged separately for each type of resin; or

(2) In polyvinyl chloride plants controlling vinyl chloride emissions with technology other than stripping or in addition to stripping, emissions of vinyl chloride to the atmosphere may not exceed:

(i) 2 g/kg (0.002 lb/lb) product from the stripper(s) [or reactor(s) if the plant has no stripper(s)] for dispersion polyvinyl chloride resins, excluding latex resins, with the product determined on a dry solids basis;

(ii) 0.4 g/kg (0.0004 lb/lb) product from the strippers [or reactor(s) if the plant has no stripper(s)] for all other polyvinyl chloride resins, including latex resins, with the product determined on a dry solids basis.

§ 61.65 Emission standard for ethylene dichloride, vinyl chloride and polyvinyl chloride plants.

An owner or operator of an ethylene dichloride, vinyl chloride, and/or polyvinyl chloride plant shall comply with the requirements of this section.

(a) *Relief valve discharge.* Except for an emergency relief discharge, there is to be no discharge to the atmosphere from any relief valve on any equipment in vinyl chloride service. An emergency relief discharge means a discharge which could not have been avoided by taking measures to prevent the discharge. Within 10 days of any relief valve discharge, the owner or operator of the source from which the relief valve discharge occurs shall submit to the Administrator a report in writing containing information on the source, nature and cause of the discharge, the date and time of the discharge, the approximate total vinyl chloride loss during the discharge, the method used for determining the vinyl chloride loss, the action that was taken to prevent the discharge, and measures adopted to prevent future discharges.

(b) *Fugitive emission sources.* (1) *Loading and unloading lines:* Vinyl chloride emissions from loading and unloading lines in vinyl chloride service which are opened to the atmosphere after each loading or unloading operation are to be minimized as follows:[38]

(i) After each loading or unloading operation and before opening a loading or unloading line to the atmosphere, the quantity of vinyl chloride in all parts of each loading or unloading line that are to be opened to the atmosphere is to be reduced so that the parts combined contain no greater than 0.0038 m^3 (0.13 ft^3) of vinyl chloride, at standard temperature and pressure; and

(ii) Any vinyl chloride removed from a loading or unloading line in accordance with paragraph (b)(1)(i) of this section is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(2) *Slip gauges.* During loading or unloading operations, the vinyl chloride emissions from each slip gauge in vinyl chloride service are to be minimized by ducting any vinyl chloride discharged from the slip gauge through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(3) Leakage from pump, compressor, and agitator seals:

(i) *Rotating pumps.* Vinyl chloride emissions from seals on all rotating pumps in vinyl chloride service are to be minimized by installing sealless pumps, pumps with double mechanical seals, or equivalent as provided in § 61.66. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(ii) *Reciprocating pumps.* Vinyl chloride emissions from seals on all reciprocating pumps in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in § 61.66. If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the pump; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(iii) *Rotating compressor.* Vinyl chloride emissions from seals on all rotating compressors in vinyl chloride service are to be minimized by installing compressors with double mechanical seals, or equivalent as provided in § 61.66. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the compressor; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(iv) *Reciprocating compressors.* Vinyl chloride emissions from seals on all reciprocating compressors in vinyl chloride service are to be minimized by installing double outboard seals, or equivalent as provided in § 61.66. If double outboard seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the compressor; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(v) *Agitator.* Vinyl chloride emissions from seals on all agitators in vinyl chloride service are to be minimized by in-

stalling agitators with double mechanical seals, or equivalent as provided in § 61.66. If double mechanical seals are used, vinyl chloride emissions from the seals are to be minimized by maintaining the pressure between the two seals so that any leak that occurs is into the agitated vessel; by ducting any vinyl chloride between the two seals through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(4) *Leakage from relief valves.* Vinyl chloride emissions due to leakage from each relief valve on equipment in vinyl chloride service are to be minimized by installing a rupture disk between the equipment and the relief valve, by connecting the relief valve discharge to a process line or recovery system, or equivalent as provided in § 61.66.

(5) *Manual venting of gases.* Except as provided in § 61.64(a)(3), all gases which are manually vented from equipment in vinyl chloride service are to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm; or equivalent as provided in § 61.66.

(6) *Opening of equipment.* Vinyl chloride emissions from opening of equipment (including loading or unloading lines that are not opened to the atmosphere after each loading or unloading operation) are to be minimized as follows:

(i) Before opening any equipment for any reason, the quantity of vinyl chloride is to be reduced so that the equipment contains no more than 2.0 percent by volume vinyl chloride or 0.0950 m^3 (25 gal) of vinyl chloride, whichever is larger, at standard temperature and pressure; and

(ii) Any vinyl chloride removed from the equipment in accordance with paragraph (b)(6)(i) of this section is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(7) *Samples.* Unused portions of samples containing at least 10 percent by weight vinyl chloride are to be returned to the process, and sampling techniques are to be such that sample containers in vinyl chloride service are purged into a closed process system.

(8) *Leak detection and elimination.* Vinyl chloride emissions due to leaks from equipment in vinyl chloride service are to be minimized by instituting and implementing a formal leak detection and elimination program. The owner or operator shall submit a description of the program to the Administrator for approval. The program is to be submitted within 45 days of the effective date of these regulations, unless a waiver of compliance is granted under § 61.11. If a waiver of compliance is granted, the program is to be submitted on a date scheduled by the Administrator. Approval of a program will be granted by the Administrator provided he finds:

(i) It includes a reliable and accurate vinyl chloride monitoring system for detection of major leaks and identification of the general area of the plant where a leak is located. A vinyl chloride monitoring system means a device which obtains air samples from one or more points on a continuous sequential basis and analyzes the samples with gas chromatography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method.

(ii) It includes a reliable and accurate portable hydrocarbon detector to be used routinely to find small leaks and to pinpoint the major leaks indicated by the vinyl chloride monitoring system. A portable hydrocarbon detector means a device which measures hydrocarbons with a sensitivity of at least 10 ppm and is of such design and size that it can be used to measure emissions from localized points.

(iii) It provides for an acceptable calibration and maintenance schedule for the vinyl chloride monitoring system and portable hydrocarbon detector. For the vinyl chloride monitoring system, a daily span check is to be conducted with a concentration of vinyl chloride equal to the concentration defined as a leak according to paragraph (b)(8)(vi) of this section. The calibration is to be done with either:

(A) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or[38]

(B) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than ±5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in section 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.[38]

(iv) The location and number of points to be monitored and the frequency of monitoring provided for in the program are acceptable when they are compared with the number of pieces of equipment in vinyl chloride service and the size and physical layout of the plant.

(v) It contains an acceptable plan of action to be taken when a leak is detected.

(vi) It contains a definition of leak which is acceptable when compared with the background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system. Measurements of background concentrations of vinyl chloride in the areas of the plant to be monitored by the vinyl chloride monitoring system are to be included with the description of the program. The definition of leak for a given plant may vary among the different areas within the plant and is also to change over time as background concentrations in the plant are reduced.

(9) *Inprocess wastewater.* Vinyl chloride emissions to the atmosphere from inprocess wastewater are to be reduced as follows:

(i) The concentration of vinyl chloride in each inprocess wastewater stream containing greater than 10 ppm vinyl chloride measured immediately as it leaves a piece of equipment and before being mixed with any other inprocess wastewater stream is to be reduced to no more than 10 ppm by weight before being mixed with any other inprocess wastewater stream which contains less than 10 ppm vinyl chloride; before being exposed to the atmoshere; before being discharged to a wastewater treatment process; or before being discharged untreated as a wastewater. This paragraph does apply to water which is used to displace vinyl chloride from equipment before it is opened to the atmosphere in accordance with § 61.64(a)(2) or paragraph (b)(6) of this section, but does not apply to water which is used to wash out equipment after the equipment has already been opened to the atmosphere in accordance with § 61.64(a)(2) or paragraph (b)(6) of this section.[30]

(ii) Any vinyl chloride removed from the inprocess wastewater in accordance with paragraph (b)(9)(i) of this section is to be ducted through a control system from which the concentration of vinyl chloride in the exhaust gases does not exceed 10 ppm, or equivalent as provided in § 61.66.

(c) The requirements in paragraphs (b)(1), (b)(2), (b)(5), (b)(6), (b)(7) and (b)(8) of this section are to be incorporated into a standard operating procedure, and made available upon request for inspection by the Administrator. The standard operating procedure is to include provisions for measuring the vinyl chloride in equipment ≥4.75 m^3 (1,250 gal) in volume for which an emission limit is prescribed in § 61.65(b)(6)(i) prior to opening the equipment and using Test Method 106, a portable hydrocarbon detector, or an equivalent or alternative method. The method of measurement is to meet the requirements in § 61.67(g)(5)(i)(A) or (g)((5)(i)(B).[30]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)).

§ 61.66 Equivalent equipment and procedures.

Upon written application from an owner or operator, the Administrator may approve use of equipment or procedures which have been demonstrated to his satisfaction to be equivalent in terms of reducing vinyl chloride emissions to the atmosphere to those prescribed for compliance with a specific paragraph of this subpart. For an existing source, any request for using an equivalent method as the initial measure of control is to be submitted to the Administrator within 30 days of the effective date. For a new source, any request for using an equivalent method is to be submitted to the Administrator with the application for approval of construction or modification required by § 61.07.

§ 61.67 Emission tests.

(a) Unless a waiver of emission testing is obtained under § 61.13, the owner or operator of a source to which this subpart applies shall test emissions from the source,

(1) Within 90 days of the effective date in the case of an existing source or a new source which has an initial startup date preceding the effective date, or

(2) Within 90 days of startup in the case of a new source, initial startup of which occurs after the effective date.

(b) The owner or operator shall provide the Administrator at least 30 days prior notice of an emission test to afford the Administrator the opportunity to have an observer present during the test.

(c) Any emission test is to be conducted while the equipment being tested is operating at the maximum production rate at which the equipment will be operated and under other relevant conditions as may be specified by the Administrator based on representative performance of the source.

(d) [Reserved][38]

(e) When at all possible, each sample is to be analyzed within 24 hours, but in no case in excess of 72 hours of sample collection. Vinyl chloride emissions are to be determined within 30 days after the emission test. The owner or operator shall report the determinations to the Administrator by a registered letter dispatched before the close of the next business day following the determination.[38]

(f) The owner or operator shall retain at the plant and make available, upon request, for inspection by the Administrator, for a minimum of 2 years records of emission test results and other data needed to determine emissions.

(g) Unless otherwise specified, the owner or operator shall use test Test Methods in Appendix B to this part for each test as required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), and (g)(5) of this section, unless an equivalent method or an alternative method has been approved by the Administrator. If the Administrator finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, he may require the use of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Administrator may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.

Whenever Test Method 107 is specified, and the conditions in Section 1.1, "Applicability" of Method 107A are met, Method 107A may be used.[71]

(1) Test Method 106 is to be used to determine the vinyl chloride emissions from any source for which an emission limit is prescribed in §§ 61.62(a) or (b) § 61.63(a), or §§ 61.64(a)(1), (b), (c), or (d), or from any control system to which reactor emissions are required to be ducted in § 61.64(a)(2) or to which fugitive emissions are required to be ducted in § 61.65(b)(1)(ii), (b)(2), (b)(5), (b)(6)(ii), or (b)(9)(ii).

(i) For each run, one sample is to be collected. The sampling site is to be at least two stack or duct diameters downstream and one half diameter upstream from any flow disturbance such as a bend, expansion, contraction, or visible flame. For a rectangular cross section an equivalent diameter is to be determined from the following equation:

$$\text{equivalent diameter} = 2\frac{(\text{length})\ (\text{width})}{\text{length} + \text{width}}$$

The sampling point in the duct is to be at the centroid of the cross section. The sample is to be extracted at a rate proportional to the gas velocity at the sampling point. The sample is to be taken over a minimum of one hour, and is to contain a minimum volume of 50 liters corrected to standard conditions.

(ii) Each emission test is to consist of three runs. For the purpose of determining emissions, the average of results of all runs is to apply. The average is to be computed on a time weighted basis.[38]

(iii) For gas streams containing more than 10 percent oxygen the concentration of vinyl chloride as determined by Test Method 106 is to be corrected to 10 percent oxygen (dry basis) for determination of emissions by using the following equation:

$$C_{b\,(\text{corrected})} = C_b\frac{10.9}{20.9 - \text{percent } O_2}$$

where:

$C_{b(\text{corrected})}$ = The concentration of vinyl chloride in the exhaust gases, corrected to 10-percent oxygen.
C_b = The concentration of vinyl chloride as measured by Test Method 106.
20.9 = Percent oxygen in the ambient air at standard conditions.
10.9 = Percent oxygen in the ambient air at standard conditions, minus the 10.0-percent oxygen to which the correction is being made.
Percent O_2 = Percent oxygen in the exhaust gas as measured by Reference Method 3 in Appendix A of Part 60 of this chapter.[38]

(iv) For those emission sources where the emission limit is prescribed in terms of mass rather than concentration, mass emissions in kg/100 kg product are to be determined by using the following equation:

$$C_{BX} = \frac{[C_b(2.60)\,Q\ 10^{-6}]\ [100]}{Z}$$

where:

C_{BX} = kg vinyl chloride/100 kg product.
C_b = The concentration of vinyl chloride as measured by Test Method 106.
2.60 = Density of vinyl chloride at one atmosphere and 20° C in kg/m³.
Q = Volumetric flow rate in m³/hr as determined by Reference Method 2 of Appendix A to Part 60 of this chapter.
10^{-6} = Conversion factor for ppm.
Z = Production rate (kg/hr).[38]

(2) Test Method 107 is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream for which an emission limit is prescribed in § 61.65(b)(9)(i).

(3) Where a stripping operation is used to attain the emission limit in § 61.64(e), emissions are to be determined using Test Method 107 as follows:

(i) The number of strippers and samples and the types and grades of resin to be sampled are to be determined by the Administrator for each individual plant at the time of the test based on the plant's operation.

(ii) Each sample is to be taken immediately following the stripping operation.

(iii) The corresponding quantity of material processed by each stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Administrator.

(iv) At the prior request of the Administrator, the owner or operator shall provide duplicates of the samples required in paragraph (g)(3)(i) of this section.

(4) Where control technology other than or in addition to a stripping operation is used to attain the emission limit in § 61.64(e), emissions are to be determined as follows:

(i) Test Method 106 is to be used to determine atmospheric emissions from all of the process equipment simultaneously. The requirements of paragraph (g)(1) of this section are to be met.

(ii) Test Method 107 is to be used to determine the concentration of vinyl chloride in each inprocess wastewater stream subject to the emission limit prescribed in § 61.64(e). The mass of vinyl chloride in kg/100 kg product in each in process wastewater stream is to be determined by using the following equation:

$$C_{BX} = \frac{[C_a R\ 10^{-6}]\ [100]}{Z}$$

where:

C_{BX} = kg vinyl chloride/100 kg product.
C_a = the concentration of vinyl chloride as measured by Test Method 107.
R = water flow rate in l/hr, determined in accordance with a method which has been submitted to and approved by the Administrator.
10^{-6} = Conversion factor for ppm.
Z = Production rate (kg/hr), determined in accordance with a method which has been submitted and approved by the Administrator.

(5) The reactor opening loss for which an emission limit is prescribed in § 61.64(a)(2) is to be determined. The number of reactors for which the determination

is to be made is to be specified by the Administrator for each individual plant at the time of the determination based on the plant's operation. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(i) Except as provided in paragraph (g)(5)(ii) of this section. the reactor opening loss is to be determined using the following equation:

$$C = \frac{W\ (2.60)\ (10^{-6})\ (Cb)}{YZ}$$

where:

C = kg vinyl chloride emissions/kg product.
W = Capacity of the reactor in m^3.
2.60 = Density of vinyl chloride at one atmosphere and 20° C in kg/m^3.
10^{-6} = Conversion factor for ppm.
Cb = ppm by volume vinyl chloride as determined by Test Method 106 or a portable hydrocarbon detector which measures hydrocarbons with a sensitivity of at least 10 ppm.
Y = Number of batches since the reactor was last opened to the atmosphere.
Z = Average kg of polyvinyl chloride produced per batch in the number of batches since the reactor was last opened to the atmosphere.

(A) If Method 106 is used to determine the concentration of vinyl chloride (Cb), the sample is to be withdrawn at a constant rate with a probe of sufficient length to reach the vessel bottom from the manhole. Samples are to be taken for 5 minutes within 6 inches of the vessel bottom, 5 minutes near the vessel center, and 5 minutes near the vessel top.

(B) If a portable hydrocarbon detector is used to determine the concentration of vinyl chloride (Cb), a probe of sufficient length to reach the vessel bottom from the manhole is to be used to make the measurements. One measurement will be made within 6 inches of the vessel bottom, one near the vessel center and one near the vessel top. Measurements are to be made at each location until the reading is stabilized. All hydrocarbons measured are to be assumed to be vinyl chloride.

(C) The production rate of polyvinyl chloride (Z) is to be determined by a method submitted to and approved by the Administrator.

(ii) A calculation based on the number of evacuations, the vacuum involved, and the volume of gas in the reactor is hereby approved by the Administrator as an alternative method for determining reactor opening loss for postpolymerization reactors in the manufacture of bulk resins.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.68 Emission monitoring.

(a) A vinyl chloride monitoring system is to be used to monitor on a continuous basis the emissions from the sources for which emission limits are prescribed in § 61.62(a) and (b), § 61.63(a), and § 61.64(a)(1), (b), (c), and (d), and for any control system to which reactor emissions are required to be ducted in § 61.64(a)(2) or to which fugitive emissions are required to be ducted in § 61.65 (b)(1)(ii), and (b)(2), (b)(5), (b)(6)(ii), and (b)(9)(ii).[30]

(b) The vinyl chloride monitoring system(s) used to meet the requirement in paragraph (a) of this section is to be a device which obtains air sampels from one or more points on a continuous sequential basis and analyzes the samples with gas chromotography or, if the owner or operator assumes that all hydrocarbons measured are vinyl chloride, with infrared spectrophotometry, flame ion detection, or an equivalent or alternative method. The vinyl chloride monitoring system used to meet the requirements in § 61.65(b)(8)(i) may be used to meet the requirements of this section.

(c) A daily span check is to be conducted for each vinyl chloride monitoring system used. For all of the emission sources listed in paragraph (a) of this section, except the one for which an emission limit is prescribed in § 61.62(b), the daily span check is to be concducted with a concentration of vinyl chloride equal to 10 ppm. For the emission source for which an emission limit is prescribed in § 61.62(b), the daily span check is to be conducted with a concentration of vinyl chloride which is determined to be equivalent to the emission limit for that source based on the emission test required by § 61.67. The calibration is to be done with either:

(1) A calibration gas mixture prepared from the gases specified in sections 5.2.1 and 5.2.2 of Test Method 106 and in accordance with section 7.1 of Test Method 106, or[36]

(2) A calibration gas cylinder standard containing the appropriate concentration of vinyl chloride. The gas composition of the calibration gas cylinder standard is to have been certified by the manufacturer. The manufacturer must have recommended a maximum shelf life for each cylinder so that the concentration does not change greater than ±5 percent from the certified value. The date of gas cylinder preparation, certified vinyl chloride concentration and recommended maximum shelf life must have been affixed to the cylinder before shipment from the manufacturer to the buyer. If a gas chromatograph is used as the vinyl chloride monitoring system, these gas mixtures may be directly used to prepare a chromatograph calibration curve as described in section 7.3 of Test Method 106. The requirements in sections 5.2.3.1 and 5.2.3.2 of Test Method 106 for certification of cylinder standards and for establishment and verification of calibration standards are to be followed.[36]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.69 Initial report.

(a) An owner or operator of any source to which this subpart applies shall submit a statement in writing notifying the Administrator that the equipment and procedural specifications in § 61.65 (b)(1), (b)(2), (b)(3), (b)(4), (b)(5), (b)(6), (b)(7), and (b)(8) are being implemented.

(b)(1) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under § 61.11, along with the information required under § 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.

(2) In the case of a new source which did not have an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the initial startup date.

(c) The statement is to contain the following information:

(1) A list of the equipment installed for compliance,

(2) A description of the physical and functional characteristics of each piece of equipment.

(3) A description of the methods which have been incorporated into the standard operating procedures for measuring or calculating the emissions for which emission limits are prescribed in § 61.65 (b)(1)(i) and (b)(6)(i),

(4) A statement that each piece of equipment is installed and that each piece of equipment and each procedure is being used.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

§ 61.70 Semiannual report.

(a) The owner or operator of any source to which this subpart applies shall submit to the Administrator on September 15 and March 15 of each year a report in writing containing the information required by this section. The first semiannual report is to be submitted following the first full 6 month reporting period after the initial report is submitted.[30]

(b)(1) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the effective date, unless a waiver of compliance is granted under § 61.11. If a waiver of compliance is granted, the first report is to be submitted on a date scheduled by the Administrator.

(2) In the case of a new source which did not have an initial startup date preceding the effective date, the first report is to be submitted within 180 days of the initial startup date.

(c) Unless otherwise specified, the owner or operator shall use the Test Methods in Appendix B to this part to conduct emission tests as required by paragraphs (c)(2) and (c)(3) of this section, unless an equivalent or an alternative method has been approved by the Administrator. If the Administrator finds reasonable grounds to dispute the results obtained by an equivalent or alternative method, he may require the use

of a reference method. If the results of the reference and equivalent or alternative methods do not agree, the results obtained by the reference method prevail, and the Administrator may notify the owner or operator that approval of the method previously considered to be equivalent or alternative is withdrawn.

(1) The owner or operator shall include in the report a record of any emissions which averaged over any hour period (commencing on the hour) are in excess of the emission limits prescribed in §§ 61.62(a) or (b), § 61.63(a), or § 61.64(a)(1), (b), (c), or (d), or for any control system to which reactor emissions are required to be ducted in § 61.64(a)(2) or to which fugitive emissions are required to be ducted in § 61.65 (b)(1)(ii), (b)(2), (b)(5), (b)(6)(ii), or (b)(9)(ii). The emissions are to be measured in accordance with § 61.68.

(2) In polyvinyl chloride plants for which a stripping operation is used to attain the emission level prescribed in § 61.64(e), the owner or operator shall include in the report a record of the vinyl chloride content in the polyvinyl chloride resin. Test Method 107 is to be used to determine vinyl chloride content as follows:

(i) If batch stripping is used, one representative sample of polyvinyl chloride resin is to be taken from each batch of each grade of resin immediately following the completion of the stripping operation, and identified by resin type and grade and the date and time the batch is completed. The corresponding quantity of material processed in each stripper batch is to be recorded and identified by resin type and grade and the date and time the batch is completed.[38]

(ii) If continuous stripping is used, one representative sample of polyvinyl chloride resin is to be taken for each grade of resin processed or at intervals of 8 hours for each grade of resin which is being processed, whichever is more frequent. The sample is to be taken as the resin flows out of the stripper and identified by resin type and grade and the date and time the sample was taken. The corresponding quantity of material processed by each stripper over the time period represented by the sample during the eight hour period, is to be recorded and identified by resin type and grade and the date and time it represents.

(iii) The quantity of material processed by the stripper is to be determined on a dry solids basis and by a method submitted to and approved by the Administrator.

(iv) At the prior request of the Administrator, the owner or operator shall provide duplicates of the samples required in paragraphs (c)(2)(i) and (c)(2)(ii) of this section.

(v) The report to the Administrator by the owner or operator is to include the vinyl chloride content found in each sample required by paragraphs (c)(2)(i) and (c)(2)(ii) of this section, averaged separately for each type of resin, over each calendar day and weighted according to the quantity of each grade of resin processed by the stripper(s) that calendar day, according to the following equation:

$$A_{T_i}=\frac{\sum_{i}^{n}=1 P_{G_i} M_{G_i}}{Q_{T_i}}=\frac{P_{G_1} M_{G_1}+P_{G_2} M_{G_2}+\cdots+P_{G_n} M_{G_n}}{Q_{T_i}}$$

where:

A = 24-hour average concentration of type, T_i resin in ppm (dry weight basis).
Q = Total production of type T_i resin over the 24-hour period, in kg.
T_i = Type of resin; $i=1,2 \ldots m$ where m is total number of resin types produced during the 24-hour period.
M = Concentration of vinyl chloride in one sample of grade G_i resin, in ppm.
P = Production of grade G_i resin represented by the sample, in kg.
G_i = Grade of resin; e.g., G_1, G_2, and G_3.
n = Total number of grades of resin produced during the 24-hour period.[38]

(vi) The owner or operator shall retain at the source and make available for inspection by the Administrator for a minimum of 2 years records of all data needed to furnish the information required by paragraph (c)(2)(v) of this section: The records are to contain the following information:

(A) The vinyl chloride content found in all the samples required in paragraphs (c)(2)(i) and (c)(2)(ii) of this section, identified by the resin type and grade and the time and date of the sample, and

(B) The corresponding quantity of polyvinyl chloride resin processed by the stripper(s), identified by the resin type and grade and the time and date it represents.

(3) The owner or operator shall include in the report a record of the emissions from each reactor opening for which an emission limit is prescribed in § 61.64(a)(2). Emissions are to be determined in accordance with § 61.67(g)(5), except that emissions for each reactor are to be determined. For a reactor that is also used as a stripper, the determination may be made immediately following the stripping operation.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)).[40,47]

§ 61.71 Recordkeeping.

(a) The owner or operator of any source to which this subpart applies shall retain the following information at the source and make it available for inspection by the Administrator for a minimum of two years;

(1) A record of the leaks detected by the vinyl chloride monitoring system, as required by § 61.65(b)(8), including the concentrations of vinyl chloride measured, analyzed, and recorded by the vinyl chloride detector, the location of each measurement and the date and approximate time of each measurement.

(2) A record of the leaks detected during routine monitoring with the portable hydrocarbon detector and the action taken to repair the leaks, as required by § 61.65(b)(8), including a brief statement explaining the location and cause of each leak detected with the portable hydrocarbon detector, the date and time of the leak, and any action taken to eliminate that leak.[38]

(3) A record of emissions measured in accordance with § 61.68.[38]

(4) A daily operating record for each polyvinyl chloride reactor, including pressures and temperatures.[38]

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)).[40,47]

38 FR 8826, 4/6/73 (1)

as amended

41 FR 46560, 10/21/76 (28)
41 FR 53017, 12/3/76 (30)
42 FR 29005, 6/7/77 (38)
42 FR 41424, 8/17/77 (40)
43 FR 8800, 3/3/78 (47)
47 FR 39485, 9/8/82 (71)

Subpart J—National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene [97]

§ 61.110 Applicability and designation of sources.

(a) The provisions of this subpart apply to each of the following sources that are intended to operate in benzene service: pumps, compressors, pressure relief devices, sampling connections, systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this subpart.

(b) The provisions of this subpart do not apply to sources located in coke by-product plants.

(c)(1) If an owner or operator applies for one of the exemptions in this paragraph, then the owner or operator shall maintain records as required in § 61.246(i).

(2) Any equipment in benzene service that is located at a plant site designed to produce or use less than 1,000 megagrams of benzene per year is exempt from the requirements of § 61.112.

(3) Any process unit (defined in § 61.241) that has no equipment in benzene service is exempt from the requirements of § 61.112.

(d) While the provisions of this subpart are effective, a source to which this subpart applies that is also subject to the provisions of 40 CFR Part 60 only will be required to comply with the provisions of this subpart.

§ 61.111 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act, in Subpart A of Part 61, or in Subpart V of Part 61, and the following terms shall have the specific meanings given them:

"In benzene service" means that a piece of equipment either contains or contacts a fluid (Liquid or gas) that is at least 10 percent benzene by weight as determined according to the provisions of § 61.245(d). The provisions of § 61.245(d) also specify how to determine that a piece of equipment is not in benzene service.

"Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after June 6, 1984 for existing sources.

§ 61.112 Standards.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the requirements of Subpart V of this part.

(b) An owner or operator may elect to comply with the requirements of § 61.243–1 and § 61.243–2.

(c) An owner or operator may apply to the Administrator for a determination of an alternative means of emission limitation that achieves a reduction in emissions of benzene at least equivalent to the reduction in emissions of benzene achieved by the controls required in this subpart. In doing so, the owner or operator shall comply with requirements of § 61.244.

§ 61.113–61.119 [Reserved]

38 FR 8826, 4/6/73 (1)

as amended

49 FR 23498, 6/6/84 (97)

Subpart M—National Emission Standard for Asbestos [91]

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in §§ 61.142 through 61.153.

§ 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in Subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

Adequately wetted means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

Asbestos means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

Asbestos-containing waste materials means any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes asbestos mill tailings, asbestos waste from control devices, friable asbestos waste material, and bags or containers that previously contained commercial asbestos. However, as applied to demolition and renovation operations, this term includes only friable asbestos waste and asbestos waste from control devices.

Asbestos material means asbestos or any material containing asbestos.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected by a pollution control device.[99]

Commercial asbestos means any asbestos that is extracted from asbestos ore.

Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

Emergency renovation operation means a renovation operation that was not planned but results from a sudden, unexpected event. This term includes operations necessitated by nonroutine failures of equipment.[99]

Fabricating means any processing of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of facilities.

Facility means any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings having no more than four dwelling units).

Facility component means any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility; or any structural member of a facility.

Friable asbestos material means any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

Manufacturing means the combining of commercial asbestos—or, in the case of woven friction products, the combining of textiles containing commercial asbestos—with any other material(s), including commercial asbestos, and the processing of this combination into a product.

Outside air means the air outside buildings and structures.

Particulate asbestos material means finely divided particles of asbestos material.

Planned renovation operations means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

Remove means to take out friable asbestos materials from any facility.

Renovation means altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Roadways means surfaces on which motor vehicles travel. This term includes highways, roads, streets, parking areas, and driveways.

Strip means to take off friable asbestos materials from any part of a facility.[99]

Structural member means any load-supporting member of a facility, such as beams and load supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.[99]

Visible emissions means any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

§ 61.142 Standard for asbestos mills.

Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.143 Standard for roadways.

No person may surface a roadway with asbestos tailings or may deposit asbestos tailings or asbestos-containing waste material on that roadway, unless it is a temporary roadway on an area of asbestos ore deposits.[99]

§ 61.144 Standard for manufacturing.

(a) *Applicability:* This section applies to the following manufacturing operations using commercial asbestos.

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) *Standard:* Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.145 Standard for demolition and renovation: Applicability.

The requirements of §§ 61.146 and 61.147 apply to each owner or operator of a demolition or renovation operation as follows:

(a) If the amount of friable asbestos materials in a facility being demolished is at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, all the requirements of §§ 61.146 and 61.147 apply, except as provided in paragraph (c) of this section.

(b) If the amount of friable asbestos materials in a facility being demolished is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, only the notification requirements of paragraphs (a), (b), and (c) (1), (2), (3), (4), and (5) of § 61.146 apply.

(c) If the facility is being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements in § 61.146 and in paragraphs (d), (e), (f), and (g) of § 61.147 apply.

(d) If at least 80 linear meters (260 linear feet) of friable asbestos materials on pipes or at least 15 square meters (160 square feet) of friable asbestos materials on other facility components are stripped or removed at a facility being renovated, all the requirements of §§ 61.146 and 61.147 apply.

(1) To determine whether paragraph (d) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the additive amount of friable asbestos materials to be removed or stripped over the maximum period of time a prediction can be made, not to exceed 1 year.

(2) To determine whether paragraph (d) of this section applies to emergency renovation operations, estimate the amount of friable asbestos materials to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(e) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

§ 61.146 Standard for demolition and renovation: Notification requirements.

Each owner or operator to which this section applies shall:

(a) Provide the Administrator with written notice of intention to demolish or renovate.

(b) Postmark or deliver the notice as follows:

(1) At least 10 days before demolition begins if the operation is described in § 61.145(a);

(2) At least 20 days before demolition begins if the operation is described in § 61.145(b);

(3) As early as possible before demolition begins if the operation is described in § 61.145(c);

(4) As early as possible before renovation begins.

(c) Include the following information in the notice:

(1) Name and address of owner or operator.

(2) Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

(3) Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components. For facilities described in § 61.145(b), explain techniques of estimation.[99]

(4) Location of the facility being demolished or renovated.

(5) Scheduled starting and completion dates of demolition or renovation.

(6) Nature of planned demolition or renovation and method(s) to be used.

(7) Procedures to be used to comply with the requirements of this Subpart.

(8) Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

(9) For facilities described in § 61.145(c), the name, title, and authority of the State or local governmental representative who has ordered the demolition.

(Approved by the Office of Management and Budget under control number 2000-0264)

§ 61.147 Standard for demolition and renovation: Procedures for asbestos emission control.

Each owner or operator to whom this section applies shall comply with the following procedures to prevent emissions of particulate asbestos material to the outside air:

(a) Remove friable asbestos materials from a facility being demolished or renovated before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. However, friable asbestos materials need not be removed before demolition if:

(1) They are on a facility component that is encased in concrete or other similar material; and

(2) These materials are adequately wetted whenever exposed during demolition.

(b) When a facility component covered or coated with friable asbestos materials is being taken out of the facility as units or in sections:

(1) Adequately wet any friable asbestos materials exposed during cutting or disjointing operations; and

(2) Carefully lower the units or sections to ground level, not dropping them or throwing them.

(c) Adequately wet friable asbestos materials when they are being stripped from facility components before the members are removed from the facility. In renovation operations, wetting that would unavoidably damage equipment is not required if the owner or operator:

(1) Asks the Administrator to determine whether wetting to comply with this paragraph would unavoidably damage equipment, and, before beginning to strip, supplies the Administrator with adequate information to make this determination; and

(2) When the Administrator does determine that equipment damage would be unavoidable, uses a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the friable asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(d) After a facility component has been taken out of the facility as units or in sections, either:

(1) Adequately wet friable asbestos materials during stripping; or

(2) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(e) For friable asbestos materials that have been removed or stripped:

(1) Adequately wet the materials to ensure that they remain wet until they are collected for disposal in accordance with § 61.152; and

(2) Carefully lower the materials to the ground or a lower floor, not dropping or throwing them; and

(3) Transport the materials to the ground via dust-tight chutes or containers if they have been removed or stripped more than 50 feet above ground

level and were not removed as units or in sections.

(f) When the temperature at the point of wetting is below 0°C (32°F):

(1) Comply with the requirements of paragraphs (d) and (e) of this section. The owner or operator need not comply with the other wetting requirements in this section; and

(2) Remove facility components coated or covered with friable asbestos materials as units or in sections to the maximum extent possible.

(g) For facilities described in § 61.145(c), adequately wet the portion of the facility that contains friable asbestos materials during the wrecking operation.

§ 61.148 Standard for spraying.

The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:

(a) Use materials that contain 1 percent asbestos or less on a dry weight basis for spray-on application on buildings, structures, pipes, and conduits, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos on a dry weight basis on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

(2) Discharge no visible emissions to the outside air from the spray-on application of the asbestos-containing material or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

(d) Owners and operators of sources subject to this section are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(Approved by the Office of Management and Budget under control number 2000-0264)

§ 61.149 Standard for fabricating.

(a) *Applicability.* This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) *Standard.* Each owner or operator of any of the fabricating operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.150 Standard for insulating materials.

After the effective date of this regulation, no owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under § 61.148.

§ 61.151 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of § 61.142 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air from the transfer of asbestos waste from control devices to the tailings conveyor, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.152(b) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, transporting, or deposition of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5°C (15°F). Determine the ambient air temperature by an appropriate measurement method with an accuracy of ±1°C(±2°F), and record it at least hourly while the wetting operation is suspended. Keep the records for at least 2 years in a form suitable for inspection.

(2) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.152 Standard for waste disposal for manufacturing demolition, renovation, spraying, and fabricating operations.

Each owner or operator of any source covered under the provisions of §§ 61.147 and 61.149 shall: [99]

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, transporting, or deposition of any asbestos-containing waste material generated by the source, or use one of the disposal methods specified in paragraphs (b)(1), (2), or (3) of this section, as follows:

(1) Treat asbestos-containing waste material with water:

(i) Mix asbestos waste from control devices with water to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, and wetting operations, or use the methods specified by § 61.154 to clean emissions containing particulate

asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; and

(iv) Label the containers specified in paragraph (b)(1)(iii) as follows:

CAUTION

Contains Asbestos-
Avoid Opening or
Breaking Container
Breathing Asbestos isHazardous
to Your Health [99]

Alternatively, use warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(g)(2)(ii).

(2) Process asbestos-containing waste material into nonfriable forms:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes; and

(ii) Discharge no visible emissions to the outside air from collection and processing operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under §§ 61.142, 61.144, or 61.149 and received deposits of asbestos-containing waste material generated by the sources, shall

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, apply a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Use the agent as recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent. Obtain prior approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

§ 61.154 Air-cleaning.

(a) The owner or operator who elects to use air-cleaning, as permitted by §§ 61.142, 61.144, 61.147(c)(2), 61.147(d)(2), 61.148(b)(2), 61.149(b), 61.151(b), 61.151(c)(1)(ii), 61.152(b)(1)(ii), and 61.152(b)(2)(ii) shall:

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Operating the fabric filter collection devices at a pressure drop of no more than .995 kilopascal (4 inches water gage), as [99] measured across the filter fabric; and

(ii) Ensuring that the airflow permeability, as determined by ASTM Method D737-75, does not exceed 9 m^3/min/m^2 (30 ft^3/min/ft^2) for woven fabrics or 11 m^3/min/m^2(35 ft^3/min/ft^2) for felted fabrics, except that 12 m^3/min/m^2 (40 ft^3min/ft^2) for woven and 14 m^3/min/m^2 (45 ft ^{3}min/ft^2) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(iii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and

(iv) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(b) There are the following exceptions to paragraph (a)(1):

(1) If the use of fabric creates a fire or explosion hazard, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

(2) The Administrator may authorize the use of filtering equipment other than that described in paragraphs (a)(1) and (b)(1) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

§ 61.155 Reporting.

(a) Within 90 days after the effective date of this subpart, each owner or operator of any existing source to which this subpart applies shall provide the following information to the Administrator, except that any owner or operator who provided this information prior to April 5, 1984 in order to comply with § 61.24 (which this section replaces) is not required to resubmit it.

(1) A description of the emission control equipment used for each

process; and

(2) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage; and

(i) If the fabric device uses a woven fabric, the airflow permeability in $m^3/min/m^2$ and; if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2, the minimum thickness in inches, and the airflow permeability in $m^3/min/m^2$.

(3) For sources subject to §§ 61.151 and 61.152:

(i) A brief description of each process that generates asbestos-containing waste material; and

(ii) The average weight of asbestos-containing waste material disposed of, measured in kg/day; and

(iii) The emission control methods used in all stages of water disposal; and

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(4) For sources subject to § 61.153:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. The information described in this section must be reported using the format of Appendix A of this part.

(Sec. 114. Clean Air Act as amended (42 U.S.C. 7414)).

(Approved by this Office of Management and Budget under control number 2000-0264)

§ 61.156 Active waste disposal sites.

To be an acceptable site for disposal of asbestos-containing waste material under §§ 61.151 and 61.152, an active waste disposal site must meet the requirements of this section.

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements of 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site.	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period is covered with either.

(1) At least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) A resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. This agent must be used as recommended for the particular dust by the manufacturer of the dust suppression agent. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if an alternative control method for emissions that has received prior approval by the Administrator is used.

(Secs. 112 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7412, 7601(a))

38 FR 8826, 4/6/73 (1)

as amended

49 FR 13658, 4/5/84 (91)

Subpart V—National Emission Standard for Equipment Leaks (Fugitive Emission Sources)[97]

§ 61.240 Applicability and designation of sources.

(a) The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this subpart.

(b) The provisions of this subpart apply to the sources listed in paragraph (a) after the date of promulgation of a specific subpart in Part 61.

(c) While the provisions of this subpart are effective, a source to which this subpart applies that is also subject to the provisions of 40 CFR Part 60 only will be required to comply with the provisions of this subpart.

§ 61.241 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act, in Subpart A of Part 61, or in specific subparts of Part 61; and the following terms shall have specific meaning given them:

"Closed-vent system" means a system that is not open to atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

"Connector" means, flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of equipment.

"Control device" means an enclosed combustion device, vapor recovery system, or flare.

"Double block and bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

"Equipment" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, flange or other connector, product accumulator vessel in VHAP service, and any control devices or systems required by this subpart.

"First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.

"In gas/vapor service" means that a piece of equipment contains process fluid that is in the gaseous state at operating conditions.

"In liquid service" means that a piece of equipment is not in gas/vapor service.

"*In-situ* sampling systems" means nonextractive samplers or in-line samplers.

"In vacuum service" means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa) below ambient pressure.

"In VHAP service" means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) as determined according to the provisions of § 61.245(d). The provisions of § 61.245(d) also specify how to determine that a piece of equipment is not in VHAP service.

"In VOC service" means, for the purposes of this subpart, that (a) the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (see 40 CFR 60.2 for the definition of volatile organic compound or VOC and 40 CFR 60.485(d) to determine whether a piece of equipment is not in VOC service) and (b) the piece of equipment is not in liquid service as defined in 40 CFR 60.481.[112]

"Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.

"Pressure release" means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

"Process unit" means equipment assembled to produce a VHAP or its derivatives as intermediates or final products, or equipment assembled to use a VHAP in the production of a product. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

"Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

"Product accumulator vessel" means any distillate receiver, bottoms receiver, surge control vessel, or product separator in VHAP service that is vented to atmosphere either directly or through a vacuum-producing system. A product accumulator vessel is in VHAP service if the liquid or the vapor in the vessel is at least 10 percent by weight VHAP.

"Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

"Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after the effective date of a specific subpart that references this subpart for existing sources.[112]

"Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

"Volatile Hazardous Air Pollutant" or "VHAP" means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene is a VHAP.

§ 61.242-1 Standards: General.

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of § 61.242-1 to § 61.242-11 for each new and existing source as required in 40 CFR 61.05, except as provided in § 61.243 and § 61.244.

(b) Compliance with this subpart will be detemined by review of records, review of performance test results, and inspection using the methods and procedures specified in § 61.245.

(c)(1) An owner or operator may request a determination of alternative means of emission limitation to the requirements of §§ 61.242-2, 61.242-3, 61.242-5, 61.242-6, 61.242-7, 61.242-8, 61.242-9 and 61.242-11 as provided in § 61.244.[112]

(2) If the Administrator makes a determination that a means of emission limitation is at least a permissible alternative to the requirements of §§ 61.242-2, 61.242-3, 61.242-5, 61.242-6, 61.242-7, 61.242-8, 61.242-9 or 61.242-11,

an owner or operator shall comply with the requirements of that determination.

(d) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinquished readily from other pieces of equipment.

(e) Equipment that is in vacuum service is excluded from the requirements of § 61.242-2, to § 61.242-11 if it is identified as required in § 61.246(e)(5).

§ 61.242-2 Standards: Pumps.

(a)(1) Each pump shall be monitored monthly to detect leaks by the methods specified in § 61.245(b), except as provided in § 61.242-1(c) and paragraphs (d), (e), and (f) of this section.

(2) Each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) if an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of pargraph (a), provided the following requirements are met:

(1) Each dual mechanical seal system is:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or

(ii) Equipped with a barrier fluid degassing reservior that is connected by a closed-vent system to a control device that complies with the requirements of § 61.242-11; or

(iii) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.

(2) The barrier fluid is not in VHAP service and, if the pump is covered by standards under 40 CFR Part 60, is not in VOC service.

(3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(5)(i) Each sensor as described in paragraph (d)(3) of this section is checked daily or is equipped with a audible alarm, and

(ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii), a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 61.246(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) if the pump:

(1) Has no externally actuated shaft penetrating the pump housing,

(2) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c), and

(3) Is tested for compliance with paragraph (e)(2) initially upon designation, annually, and at other times requested by the Administrator.

(f) If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 61.242-11, it is exempt from the requirements of paragraphs (a)-(e).

(g) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5)(i) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.[112]

§ 61.242-3 Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to atmosphere, except as provided in § 61.242-1(c) and paragraphs (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of § 61.242-11; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.

(c) The barrier fluid shall not be in VHAP service and, if the compressor is covered by standards under 40 CFR Part 60, shall not be in VOC service.

(d) Each barrier fluid system as described in paragraphs (a)-(c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm unless the compressor is located within the boundary of an unmanned plant site.[112]

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after eack leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of § 61.242-11, except as provided in paragraph (i).

(i) Any Compressor that is designated, as described in § 61.246(e)(2), for no detectable emission as indicated by an instrument reading of less than 500 ppm above background is exempt from the

requirements of paragraphs (a)–(h) if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c); and

(2) Is tested for compliance with paragraph (i)(1) initially upon designation, annually, and at other times requested by the Administrator.

§ 61.242-4 Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in § 61.242-10.[1,2]

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c).

(c) Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in § 61.242-11 is exempt from the requirements of paragraphs (a) and (b).

§ 61.242-5 Standards: Sampling connecting systems.

(a) Each sampling connection system shall be equipped with a closed-purge system or closed vent system, except as provided in § 61.242-1(c).

(b) Each closed-purge system or closed-vent system as required in paragraph (a) shall:

(1) Return the purged process fluid directly to the process line with zero VHAP emissions to atmosphere; or

(2) Collect and recycle the purged process fluid with zero VHAP emissions to atmosphere; or

(3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of § 61.242-11.

(c) *In-situ* sampling systems are exempt from the requirements of paragraphs (a) and (b).

§ 61.242-6 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in § 61.242-1(c).

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

(c) When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) at all other times.

§ 61.242-7 Standards: Valves.

(a) Each valve shall be monitored monthly to detect leaks by the method specified in § 61.245(b) and shall comply with paragraphs (b)–(e), except as provided in paragraphs (f), (g), and (h) of this section, §§ 61.243-1 or 61.243-2, and § 61.242-1(c).

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

(1) Tightening of bonnet bolts;

(2) Replacement of bonnet bolts;

(3) Tightening of packing gland nuts; and

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 61.246(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) if the valve:

(1) Has no external actuating mechanism in contact with the process fluid;

(2) Is operated with emissions less than 500 ppm above background, as measured by the method specified in § 61.245(c); and

(3) Is tested for compliance with paragraph (f)(2) initially upon designation, annually, and at other times requested by the Administrator.

(g) Any valve that is designated, as described in § 61.246(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a); and

(2) The owner or operator of the valve has a written plan that requires monitoring of the valve as frequent as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 61.246(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface;

(2) The process unit within which the valve is located is an existing process unit; and

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 61.242-8 Standards: Pressure relief devices in liquid service and flanges and other connectors.

(a) Pressure relief devices in liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in § 61.245(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method, except as provided in § 61.242-1(c).[1,2]

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) The first attempt at repair shall be made no later than 5 calendar days after

each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 61.242-7(e).

§ 61.242-9 Standards: Product accumulator vessels.

Each product accumulator vessel shall be equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device as described in § 61.242-11, except as provided in § 61.242-1(c).[112]

§ 61.242-10 Standards: Delay of repair.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the process and that does not remain in VHAP service.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with § 61.242-11.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

§61.242-11 Standards: Closed-vent systems and control devices.

(a) Owners or operators of closed-vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section, except as provided in § 61.242-1(c).[112]

(b) Vapor recovery systems (for example, condensers and adsorbers) shall be designed and operated to recover the organic vapors vented to them with an efficiency of 95 percent or greater.

(c) Enclosed combustion devices shall be designed and operated to reduce the VHAP emissions vented to them with an efficiency of 95 percent or greater or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760°C.

(d)(1) Flares shall be designed for an operated with no visible emissions as determined by the methods specified in § 61.245(e), except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.[112]

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in § 61.245.(e).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the method specified in § 61.245(e).

(4) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in § 61.245(e)(4), less than 18 m/sec (60 ft/sec).

(5) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, v_{max}, as determined by the method specified in § 61.245(e)(5).

(6) Flares used comply with this subpart shall be steam-assisted, air-assisted, or nonassisted.

(e) Owners or operators of control devices that are used to comply with the provisions of this supbart shall monitor these control devices to ensure that they are operated and maintained in conformance with their design.

(f)(1) Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as § 61.245(c).

(2) Closed-event systems shall be monitored to determine compliance with this section initially in accordance with § 61.05, annually, and at other times requested by the administrator.

(3) Leaks, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected.

(4) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

(g) Closed-vent systems and control devices use to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 61.243-1 Alternative standards for valves in VHAP service—allowable percentage of valves leaking.

(a) An owner or operator may elect to have all valves within a process unit to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator decides to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to have all valves within a process unit to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in § 61.247(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 61.242-7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in VHAP service within the process unit shall be monitored within 1 week by the methods specified in § 61.245(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves in VHAP service for which leaks are detected by the number of valves in VHAP service within the process unit.

(d) Owner or operators who elect to have all valves comply with this alternative standard shall not have a process unit with a leak percentage greater than 2.0 percent.

(e) If an owner or operator decides no longer to comply with § 61.243-1, the owner or operator must notify the Administrator in writing that the work practice standard described in § 61.242-7(a)-(e) will be followed.

§ 61.243-2 Alternative standards for valves in VHAP service—skip period leak detection and repair.

(a)(1) An owner or operator may elect for all valves within a process unit to comply with one of the alternative work practices specified in paragraphs (b)(2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in § 61.247(d).

(b)(1) An owner or operator shall comply initially with the requirements for valves, as described in § 61.242-7.

(2) After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in VHAP service.

(3) After 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quartely leak detection periods for the valves in VHAP service.

(4) If the percentage of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in § 61.242-7 but may again elect to use this section.

§ 61.244 Alternative means of emission limitation.

(a) Permission to use an alternative means of emission limitation under Section 112(e)(3) of the Clean Air Act shall be governed by the following procedures:

(b) Where the standard is an equipment, design, or operational requirement:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.

(2) The Administrator will compare test data for the means of emission limitation to test data for the equipment, design, and operational requirements.

(3) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) Where the standard is a work practice:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.

(2) For each source for which permission is requested, the emission reduction achieved by the required work practices shall be demonstrated for a minimum period of 12 months.

(3) For each source for which permission is requested, the emission reduction achieved by the alternative means of emission limitation shall be demonstrated.

(4) Each owner or operator applying for permission shall commit in writing each source to work practices that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practices.

(5) The Administrator will compare the demonstrated emission reduction for the alternative means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in paragraph (c)(4).

(6) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practices of this subpart.

(d) An owner or operator may offer a unique approach to demonstrate the alternative means of emission limitation.

(e)(1) Manufacturers of equipment used to control equipment leaks of a VHAP may apply to the Administrator for permission for an alternative means of emission limitation that achieves a reduction in emissions of the VHAP achieved by the equipment, design, and operational requirements of this subpart.

(2) The Administrator will grant permission according to the provisions of paragraphs (b), (c), and (d).

§ 61.245 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) Monitoring, as required in § 61.242, § 61.243, and § 61.244, shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and[1,2]

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 61.242-2(e), 61.242-3(i), 61.242-4, 61.242-7(f), and 61.242-11(f), the test shall comply with the following requirements:

(1) The requirements of paragraphs (b)(1)-(4) shall apply.

(2) The background level shall be determined, as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.[1,2]

(d)(1) Each piece of equipment within a process unit that can conceivably contain equipment in VHAP service is presumed to be in VHAP service unless an owner or operator demonstrates that the piece of equipment is not in VHAP service. For a piece of equipment to be considered not in VHAP service, it must be determined that the percent VHAP content can be reasonably expected never to exceed 10 percent by weight. For purposes of determining the percent VHAP content of the process fluid that is contained in or contacts equipment, procedures that conform to the methods described in ASTM Method D-2267 (incorporated by the reference as specified in § 61.18) shall be used.

(2)(i) An owner or operator may use engineering judgment rather than the procedures in paragraph (d)(1) of this section to demonstrate that the percent VHAP content does not exceed 10 percent by weight, provided that the engineering judgment demonstrates that the VHAP content clearly does not exceed 10 percent by weight. When an owner or operator and the Administrator do not agree on whether a piece of equipment is not in VHAP service, however, the procedures in paragraph (d)(1) of this section shall be used to resolve the disagreement.

(ii) If an owner or operator determines that a piece of equipment is in VHAP service, the determination can be revised only after following the procedures in paragraph (d)(1) of this section.

(3) Samples used in determining the percent VHAP content shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(e)(1) Reference Method 22 shall be

used to determine compliance of flares with the visible emission provisions of this subpart.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K \left(\sum_{i=1}^{n} C_i H_i \right)$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C.

K = Constant, 1.74×10^{-7} (1/ppm) (g mole/scm) (MJ/kcal) where standard [113] temperature for (g mole/scm) is 20°C

C_i = Concentration of sample component i in ppm, as measured by Reference Method 18 of Appendix A of 40 FR Part 60 and ASTM D2504–67 (reapproved 1977) (incorporated by reference as specified in § 61.18).

H_i = Net heat of combustion of sample component i, kcal/g mole. The heats of combustion may be determined using ASTM D2382–76 (incorporated by reference as specified in § 61.18) if published values are not available or cannot be calculated.

(4) The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Method 2, 2A, 2C, or 2D, as appropriate, by the unobstructed (free) cross section area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation:

$$VMax = 8.76 + 0.7084(H_T)$$

Where:

VMax = Maximum permitted velocity, m/sec

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(3) of this section.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).)

§ 61.246 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one process unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these process units in one recordkeeping system if the system identifies each record by each process unit.

(b) When each leak is detected as specified in §§ 61.242–2, 61.242–3, 61.242–7, and 61.242–8, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in § 61.242–7(c) and no leak has been detected during those 2 months.

(3) The identification on equipment, except on a valve, may be removed after it has been repaired.

(c) When each leak, is detected as specified in §§ 61.242–2, 61.242–3, 61.242–7, and 61.242–8, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) "Above 10,000" if the maximum instrument reading measured by the methods specified in § 61.245(a) after each repair attempt is equal to or greater than 10,000 ppm.

(5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(8) Dates of process unit shutdowns that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed-vent systems and control devices described in § 61.242–11 shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3) A description of the parameter or parameters monitored, as required in § 61.242–11(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

(4) Periods when the closed-vent systems and control devices required in §§ 61.242–2, 61.242–3, 61.242–4, 61.242–5 and 61.242–9 are not operated as designed, including periods when a flare pilot light does not have a flame.

(5) Dates of startups and shutdowns of the closed-vent systems and control devices required in §§ 61.242–2, 61.242–3, 61.242–4, 61.242–5 and 61.242–9.

(e) The following information pertaining to all equipment subject to the requirements in § 61.242–1 to § 61.242–11 shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart.[112]

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 61.242–2(e), 61.242–3(i), and 61.242–7(f).

(ii) The designation of this equipment as subject to the requirements of § 61.242–2(e), 61.242–3(i), or 61.242–7(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with § 61.242–4(a).

(4)(i) The dates of each compliance test required in §§ 61.242–2(e), 61.242–3(i), 61.242–4, and 61.242–7(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of § 61.242–7(g) and (h) shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve

stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(g) The following information shall be recorded for valves complying with § 61.243-2:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(h) The following information shall be recorded in a log that is kept in a readily accessible location:

(1) Design criterion required in § 61.242-2(d)(5) and § 61.242-3(e)(2) and an explanation of the design criterion; and

(2) Any changes to this criterion and the reasons for the changes.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis demonstrating the design capacity of the process unit, and

(2) An analysis demonstrating that equipment is not in VHAP service.

(j) Information and data used to demonstrate that a piece of equipment is not in VHAP service shall be recorded in a log that is kept in a readily accessible location.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).)

(Approved by the Office of Management and Budget under control number 2060-0068)

§ 61.247 Reporting requirements.

(a)(1) An owner or operator of any piece of equipment to which this subpart applies shall submit a statement in writing notifying the Administrator that the requirements of §§ 61.242, 61.245, 61.246, and 61.247 are being implemented.

(2) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under § 61.11, along with the information required under § 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.

(3) In the case of new sources which did not have an initial startup date preceding the effective date, the statement shall be submitted with the application for approval of construction, as described in § 61.07.

(4) The statement is to contain the following information for each source.

(i) Equipment identification number and process unit identification.

(ii) Type of equipment (for example, a pump or pipeline valve).

(iii) Percent by weight VHAP in the fluid at the equipment.

(iv) Process fluid state at the equipment (gas/vapor or liquid).

(v) Method of compliance with the standard (for example, "monthly leak detection and repair" or "equipped with dual mechanical seals").

(b) A report shall be submitted to the Administrator semiannually starting 6 months after the initial report required in § 61.247(a), that includes the following information:

(1) Process unit identification.

(2) For each month during the semiannual reporting period,

(i) Number of valves for which leaks were detected as described in § 61.242-7(b) of § 61.243-2.

(ii) Number of valves for which leaks were not repaired as required in § 61.242-7(d).

(iii) Number of pumps for which leaks were detected as described in § 61.242-2(b) and (d)(6).

(iv) Number of pumps for which leaks were not repaired as required in § 61.242-2(c) and (d)(6).

(v) Number of compressors for which leaks were detected as described in § 61.242-3(f).

(vi) Number of compressors for which leaks were not repaired as required in § 61.242-3(g).

(vii) The facts that explain any delay of repairs and, where appropriate, why a process unit shutdown was technically infeasible.

(3) Dates of process unit shutdowns which occurred within the semiannual reporting period.

(4) Revisions to items reported according to paragraph (a) if changes have occurred since the initial report or subsequent revisions to the initial report.

"[Note.—Compliance with the requirements of § 61.10(c) is not required for revisions documented under this paragraph.]." [12]

(5) The results of all performance tests to determine compliance with § 61.242-2(e), § 61.242-3(i), § 61.242-4(a), § 61.242-7(f), § 61.242-11(f), § 61.243-1 and § 61.243-2 conducted within the semiannual reporting period.

(c) In the first report submitted as required in § 61.247(a), the report shall include a reporting schedule stating the months that semiannual reports shall be submitted. Subsequent reports shall be submitted according to that schedule, unless a revised schedule has been submitted in a previous semiannual report.

(d) An owner or operator electing to comply with the provisions of §§ 61.243-1 and 61.243-2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.

(e) An application for approval of construction or modification, § 61.05(a) and § 61.07, will not be required if—

(1) The new source complies with the standard, § 61.242;

(2) The new source is not part of the construction of a process unit; and

(3) In the next semiannual report required by § 61.247(b), the information in § 61.247(a)(3) is reported.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).) (Approved by the Office of Management and Budget under control number ICR-1153.)

38 FR 8826, 4/6/73 (1)

as amended

49 FR 23498, 6/6/84 (97)

APPENDIX A

National Emission Standards for Hazardous Air Pollutants

Compliance Status Information

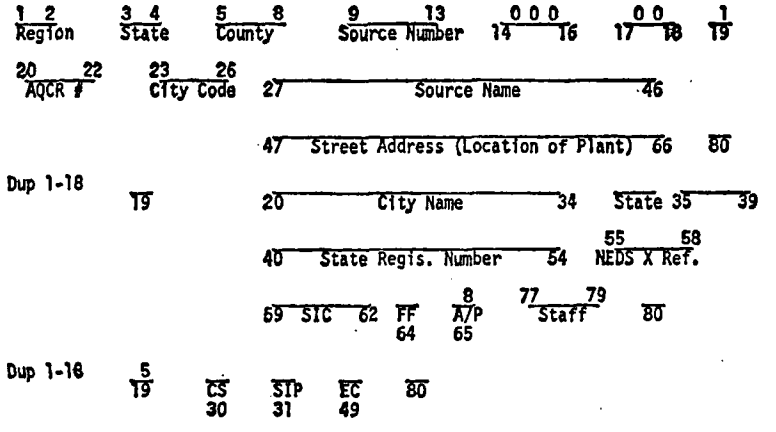
I. SOURCE REPORT

INSTRUCTIONS: Owners or operators of sources of hazardous pollutants subject to the National Emission Standards for Hazardous Air Pollutants are required to submit the information contained in Section I to the appropriate U.S. Environmental Protection Agency Regional Office prior to 90 days after the effective date of any standards or amendments which require the submission of such information.

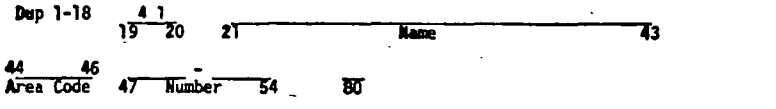
A list of regional offices is provided in §61.04.

A. SOURCE INFORMATION

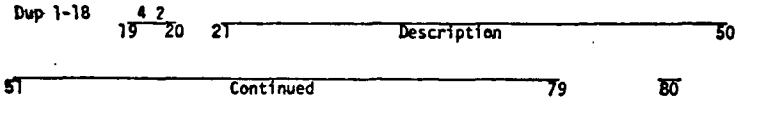
1. Identification/Location - Indicate the name and address of each source.



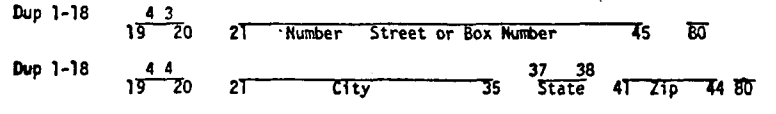
2. Contact - Indicate the name and telephone number of the owner or operator or other responsible official whom EPA may contact concerning this report.



3. Source Description - Briefly state the nature of the source (e.g., "Chlor-alkali Plant" or "Machine Shop").



4. Alternative Mailing Address - Indicate an alternative mailing address if correspondence is to be directed to a location different than that specified above.

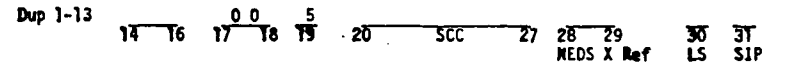


5. Compliance Status - The emissions from this source ___ can ___ cannot meet the emission limitations contained in the National Emission Standards on or prior to 90 days after the effective date of any standards or amendments which require the submission of such information.

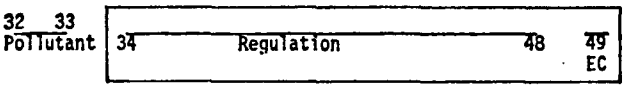
Signature of Owner, Operator or Other Responsible Official

NOTE: If the emissions from the source will exceed those limits set by the National Emission Standards for Hazardous Air Pollutants, the source will be in violation and subject to Federal enforcement actions unless granted a waiver of compliance by the Administrator of the U.S. Environmental Protection Agency. The information needed for such waivers is listed in Section II of this form.

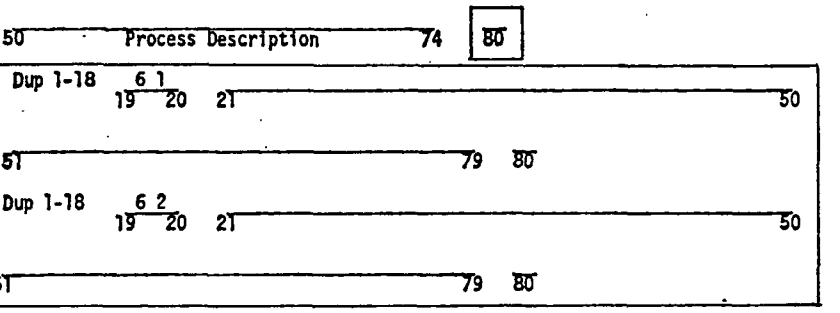
B. PROCESS INFORMATION. Part B should be completed separately for each point of emission for each hazardous pollutant. [Sources subject to 61.22(1) may omit number 4. below.]



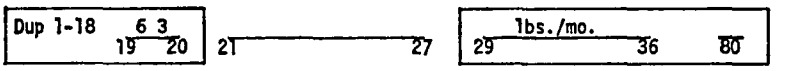
1. Pollutant Emitted - Indicate the type of hazardous pollutant emitted by the process. Indicate "AB" for asbestos, "BE" for beryllium, or "HG" for mercury.



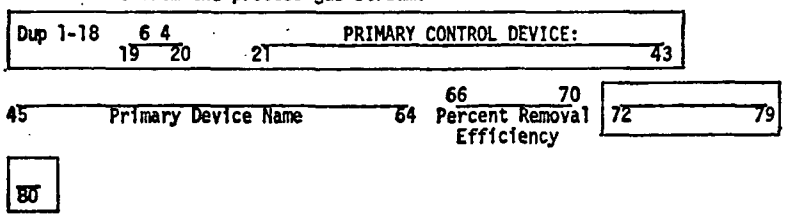
2. Process Description - Provide a brief description of each process (e.g., "hydrogen end box" in a mercury chlor-alkali plant, "grinding machine" in a beryllium machine shop). Use additional sheets if necessary.

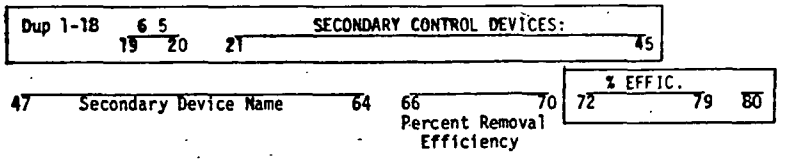


3. Amount of Pollutant - Indicate the average weight of the hazardous material named in Item 1 which enters the process in pounds per month (based on the previous twelve months of operation).



4. Control Devices
   a. Indicate the type of pollution control devices, if any, used to reduce the emissions from the process (e.g., venturi scrubber, baghouse, wet cyclone) and the estimated percent of the pollutant which the device removes from the process gas stream.





b. Asbestos Emission Control Devices Only

i. If a baghouse is specified in Item 4a, give the following information:

- The air flow permeability in cubic feet per minute per square foot of fabric area.

  Air flow permeability = _____ cfm/ft^2

- The pressure drop in inches water gauge across the filter at which the baghouse is operated.

  Operating pressure drop = _____ inches w.g.

- If the baghouse material contains synthetic fill yarn, check whether this material is / / spun / / or not spun.

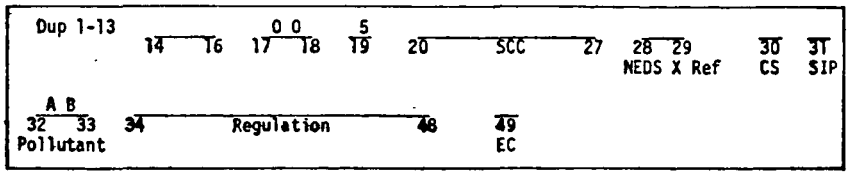
- If the baghouse utilizes a felted fabric, give the minimum thickness in inches and the density in ounces per square yard.

  Thickness = _____ inches Density = _____ oz/yd^2

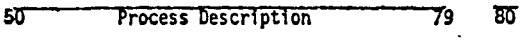
ii. If a wet collection device is specified in Item 4a, give the designed unit contacting energy in inches water gauge.

- Unit contacting energy = _____ inches w.g.

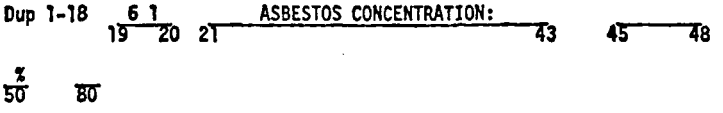
C. DISPOSAL OF ASBESTOS-CONTAINING WASTES. Part C should be completed separately for each asbestos-containing waste generation operation arising from sources subject to §61.22(a), (c), (e), and (h).



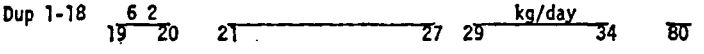
1. Waste Generation - Provide a brief description of each process that generates asbestos-containing waste (e.g. disposal of control device wastes).



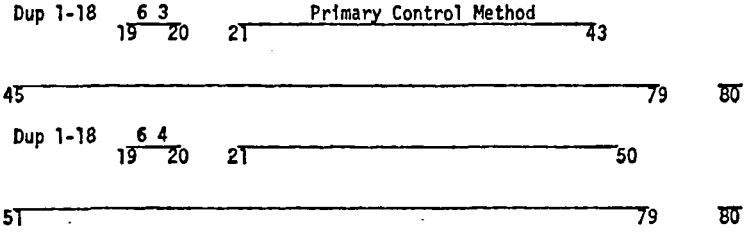
2. Asbestos Concentration - Indicate the average percentage asbestos content of these materials.



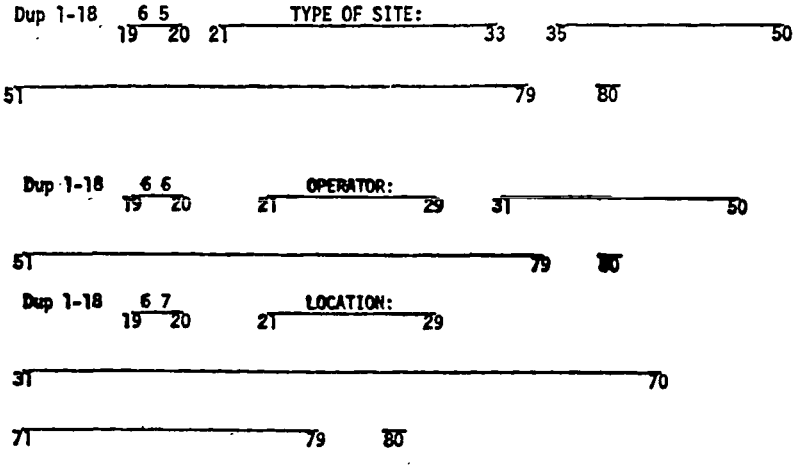
3. Amount of Wastes - Indicate the average weight of asbestos-containing wastes disposed of, measured in kg/day.



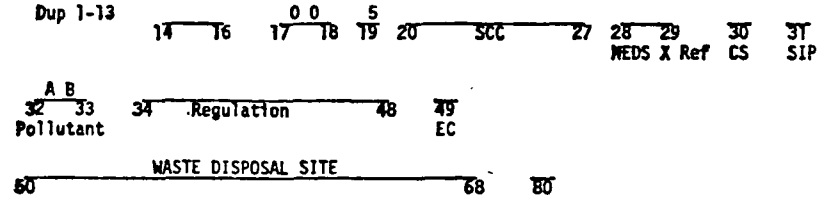
4. Control Methods - Indicate the emission control methods used in all stages of waste disposal, from collection, processing, and packaging to transporting and deposition.



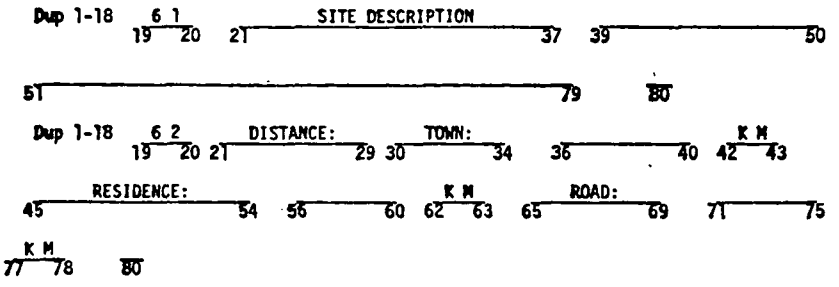
5. Waste Disposal - Indicate the type of disposal site (sanitary landfill, open, covered) or incineration site (municipal, private) where the waste is disposed of and who operates the site (company, private, municipal). State the name and location of the site (closest city or town, county, state).



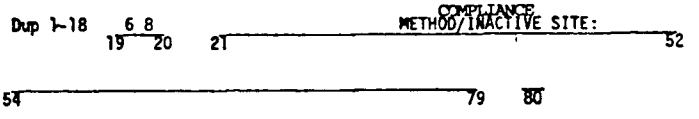
D. WASTE DISPOSAL SITES. Part D should be completed separately for each asbestos waste disposal site subject to section 61.22(1).



1. Description - Provide a brief description of the site, including its size and configuration, and the distance to the closest city or town, closest residence, and closest primary road.



2. Inactivation - After the site is inactivated, indicate the method or methods used to comply with the standard and send a list of the actions that will be undertaken to maintain the inactivated site.



II. WAIVER REQUESTS

A. WAIVER OF COMPLIANCE. Owners or operators of sources unable to operate in compliance with the National Emission Standards for Hazardous Air Pollutants prior to 90 days after the effective date of any standards or amendments which require the submission of such information may request a waiver of compliance from the Administrator of the U.S. Environmental Protection Agency for the time period necessary to install appropriate control devices or make modifications to achieve compliance. The Administrator may grant a waiver of compliance with the standard for a period not exceeding two years from the effective date of the hazardous pollutant standards, if he finds that such period is necessary for the installation of controls and that steps will be taken during the period of the waiver to assure that the health of persons will be protected from imminent endangerment.

The report information provided in Section I must accompany this application. Applications should be sent to the appropriate EPA regional office.

1. Processes Involved - Indicate the process or processes emitting hazardous pollutants to which emission controls are to be applied.

2. Controls

   a. Describe the proposed type of control device to be added or modification to be made to the process to reduce the emissions of hazardous pollutants to an acceptable level. (Use additional sheets if necessary.)

   b. Describe the measures that will be taken during the waiver period to assure that the health of persons will be protected from imminent endangerment. (Use additional sheets if necessary.)

3. Increments of Progress - Specify the dates by which the following increments of progress will be met.

   • Date by which contracts for emission control systems or process modifications will be awarded; or date by which orders will be issued for the purchase of the component parts to accomplish emission control or process modification.

Dup 1-16 017 17 19 53 54 55 60 61 MO/DY/YR 66 80

   • Date of initiation of on-site construction or installation of emission control equipment or process change.

Dup 1-16 027 17 19 53 54 55 60 61 MO/DY/YR 66 80

   • Date by which on-site construction or installation of emission control equipment or process modification is to be completed.

Dup 1-16 037 17 19 53 54 55 60 61 MO/DY/YR 66 80

   • Date by which final compliance is to be achieved.

Dup 1-16 047 17 19 53 54 55 60 61 MO/DY/YR 66 80

B. WAIVER OF EMISSION TESTS. A waiver of emission testing may be granted to owners or operators of sources of beryllium or mercury pollutants if, in the judgment of the Administrator of the Environmental Protection Agency the emissions from the source comply with the appropriate standard or if the owners or operators of the source have requested a waiver of compliance or have been granted a waiver of compliance.

This application should accompany the report information provided in Section I.

1. Reason - State the reasons for requesting a waiver of emission testing. If the reason stated is that the emissions from the source are within the prescribed limits, documentation of this condition must be attached.

_____

_____

_____ _____

Date Signature of the owner or operator

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414)). 40,47

Method 101—Determination of Particulate and Gaseous Mercury Emissions From Chlor-Alkali Plants—Air Streams[66]

1. *Applicability and Principle*—1.1 *Applicability.* This method applies to the determination of particulate and gaseous mercury (Hg) emissions from chlor-alkali plants and other sources (as specified in the regulations), where the carrier-gas stream in the duct or stack is principally air.

1.2 *Principle.* Particulate and gaseous Hg emissions are withdrawn isokinetically from the source and collected in acidic iodine monochloride (ICl) solution. The Hg collected (in the mercuric form) is reduced to elemental Hg, which is then aerated from the solution into an optical cell and measured by atomic absorption spectrophotometry.

2. *Range and Sensitivity*—2.1 *Range.* After initial dilution, the range of this method is 0.5 to 120 μg Hg/ml. The upper limit can be extended by further dilution of the sample.

2.2 *Sensitivity.* The sensitivity of this method depends on the recorder/spectrophotometer combination selected.

3. *Interfering Agents*—3.1 *Sampling.* SO_2 reduces ICl and causes premature depletion of the ICl solution.

3.2 *Analysis.* ICl concentrations greater than 10^{-4} molar inhibit the reduction of the Hg (II) ion in the aeration cell. Condensation of water vapor on the optical cell windows causes a positive interference.

4. *Precision and Accuracy*—The following estimates are based on collaborative tests, wherein 13 laboratories performed duplicate analyses on two Hg-containing samples from a chlor-alkali plant and on one laboratory-prepared sample of known Hg concentration. The concentration ranged from 2 to 65 μg Hg/ml.

4.1 *Precision.* The estimated within-laboratory and between-laboratory standard deviations are 1.6 and 1.8 μg Hg/ml, respectively.

4.2 *Accuracy.* The participating laboratories that analyzed a 64.3-μg Hg/ml (in 0.1 M ICl) standard obtained a mean of 63.7 μg Hg/ml.

5. *Apparatus*—5.1 *Sampling Train.* A schematic of the sampling train is shown in Figure 101–1; it is similar to the Method 5 train (mention of Method 5 refers to Parts 60 of 40 CFR). The sampling train consists of the following components:

5.1.1 *Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Metering System, Barometer, and Gas Density Determination Equipment.* Same as Method 5, Sections 2.1.1, 2.1.3, 2.1.4, 2.1.6, 2.1.9, and 2.1.10, respectively.

5.1.2 *Probe Liner.* Borosilicate or quartz glass tubing. The tester may use a heating system capable of maintaining a gas temperature of 120±14° C (248±25° F) at the probe exit during sampling to prevent water condensation.

Note.—Do not use metal probe liners.

5.1.3 *Impingers.* Four Greenburg-Smith impingers connected in series with leak-free ground glass fittings or any similar leak-free noncontaminating fittings. For the first, third, and fourth impingers, the tester may use impingers that are modified by replacing the tip with a 13-mm-ID (0.5-in.) glass tube extending to 13 mm (0.5 in.) from the bottom of the flask.

5.1.4 *Acid Trap.* Mine Safety Appliances air line filter, Catalog number 81857, with acid absorbing cartridge and suitable connections, or equivalent.

5.2 *Sample Recovery.* The following items are needed:

5.2.1 *Glass Sample Bottles.* Leakless, with Teflon-lined caps, 1000- and 100-ml.

5.2.2 *Graduated Cylinder.* 250-ml.

5.2.3 *Funnel and Rubber Policeman.* To aid in transfer of silica gel to container; not necessary if silica gel is weighed in the field.

5.2.4 *Funnel.* Glass, to aid in sample recovery.

5.3 *Sample Preparation and Analysis.* The following equipment is needed:

5.3.1 *Atomic Absorption Spectrophotometer.* Perkin-Elmer 303, or equivalent, containing a hollow-cathode mercury lamp and the optical cell described in Section 5.3.2.

5.3.2 *Optical Cell.* Cylindrical shape with quartz end windows and having the dimensions shown in Figure 101–2. Wind the cell with approximately 2 meters of 24-gauge nichrome heating wire, and wrap with fiberglass insulation tape or equivalent; do not let the wires touch each other.

5.3.3 *Aeration Cell.* Constructed according to the specifications in Figure 101–3. Do not use a glass frit as a substitute for the blown glass bubbler tip shown in Figure 101–3.

5.3.4 *Recorder.* Matched to output of the spectrophotometer described in Section 5.3.1.

5.3.5 *Variable Transformer.* To vary the voltage on the optical cell from 0 to 40 volts.

5.3.6 *Hood.* For venting optical cell exhaust.

5.3.7 *Flowmetering Valve.*

5.3.8 *Flowmeter.* Rotameter or equivalent, capable of measuring a gas flow of 1.5 liters/min.

5.3.9 *Aeration Gas Cylinder.* Nitrogen or dry, Hg-free air, equipped with a single-stage regulator.

5.3.10 *Connecting Tubing.* Use glass tubing (ungreased ball- and socket-connections are recommended) for all tubing connections between the solution cell and the optical cell; do not use Tygon tubing, other types of flexible tubing, or metal tubing as substitutes. The tester may use Teflon, steel, or copper tubing between the nitrogen tank and flowmetering valve (5.3.7), and Tygon, gum, or rubber tubing between the flowmetering valve and the aeration cell.

5.3.11 *Flow Rate Calibration Equipment.* Bubble flowmeter or wet test meter for measuring a gas flow rate of 1.5±0.1 liters/min.

5.3.12 *Volumetric Flasks.* Class A with penny head standard taper stoppers; 100-, 250-, 500- and 1000-ml.

5.3.13 *Volumetric Pipets.* Class A; 1-, 2-, 3-, 4-, and 5-ml.

5.3.14 *Graduated Cylinder.* 50-ml.

5.3.15 *Magentic Stirrer.* General-purpose laboratory type.

5.3.16 *Magnetic Stirring Bar.* Teflon-coated.

5.3.17 *Balance.* Capable of weighing to ±0.5 g.

5.4 *Alternative Analytical Apparatus.* Alternative systems are allowable as long as they meet the following criteria:

5.4.1 A linear calibration curve is generated and two consecutive samples of the same aliquot size and concentration agree within 9 percent of their average.

5.4.2 A minimum of 95 percent of the spike is recovered when an aliquot of a source sample is spiked with a known concentration of mercury (II) compound.

5.4.3 The reducing agent should be added after the aeration cell is closed.

5.4.4 The aeration bottle bubbler should not contain a frit.

5.4.5 Any Tygon used should be as short as possible and conditioned prior to use until blanks and standards yield linear and reproducible results.

5.4.6 If manual stirring is done before aeration, it should be done with the aeration cell closed.

5.4.7 A drying tube should not be used unless it is conditioned as the Tygon above.

6. *Reagents*—Use ACS reagent-grade chemicals or equivalent, unless otherwise specified.

6.1 *Sampling and Recovery.* The reagents used in sampling and recovery are as follows:

6.1.1 *Water.* Deionized distilled, meeting ASTM Specifications for Type I Reagent Water—ASTM Test Method D1193–77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter. Use this water in all dilutions and solution preparations.[79]

6.1.2 *Nitric Acid (HNO_3),* 50 Percent (V/V). Mix equal volumes of concentrated HNO_3 and deionized distilled water, being careful to slowly add the acid to the water.

6.1.3 *Silica Gel.* Indicating type, 6- to 16-mesh. If previously used, dry at 175° C (350° F) for 2 hours. The tester may use new silica gel as received.

6.1.4 *Potassium Iodide (KI) Solution, 25 Percent.* Dissolve 250 g of KI in deionized distilled water and dilute to 1 liter.

6.1.5 *Iodine Monochloride (ICl) Stock Solution, 1.0 M.* To 800 ml of 25 percent KI solution, add 800 ml of concentrated hydrochloric acid (HCl). Cool to room temperature. With vigorous stirring, slowly add 135 g of potassium iodate (KIO_3) and stir until all free iodine has dissolved. A clear orange-red solution occurs when all the KIO_3 has been added. Cool to room temperature and dilute to 1800 ml with deionized distilled water. Keep the solution in amber glass bottles to prevent degradation.

6.1.6 *Absorbing Solution, 0.1 M ICl.* Dilute 100 ml of the 1.0 M ICl stock solution to 1 liter with deionized distilled water. Keep the solution in amber glass bottles and in darkness to prevent degradation. This reagent is stable for at least 2 months.

6.2 *Sample Preparation and Analysis.* The reagents needed are listed below:

6.2.1 *Tin (II) Solution.* Prepare fresh daily and keep sealed when not being used.

Completely dissolve 20 g of tin (II) chloride [or 25 g of tin (II) sulfate] crystals (Baker Analyzed reagent grade or any other brand that will give a clear solution) in 25 ml of concentrated HCl. Dilute to 250 ml with deionized distilled water. Do not substitute HNO_3, H_2SO_4, or other strong acids for the HCl.

6.2.2 *Mercury Stock Solution, 1 mg Hg/ml.* Prepare and store all mercury standard solutions in borosilicate glass containers. Completely dissolve 0.1354 g of mercury (II) chloride in 75 ml of deionized distilled water in a 100 ml glass volumetric flask. Add 10 ml of concentrated HNO_3, and adjust the volume to exactly 100 ml with deionized distilled water. Mix thoroughly. This solution is stable for at least 1 month.

6.2.3 *Sulfuric Acid, 5 Percent (V/V).* Dilute 25 ml of concentrated H_2SO_4 to 500 ml with deionized distilled water.

6.2.4 *Intermediate Mercury Standard Solution, 10 μg Hg/ml.* Prepare fresh weekly. Pipet 5.0 ml of the mercury stock solution (6.2.2) into a 500-ml glass volumetric flask and add 20 ml of the 5 percent H_2SO_4 solution. Dilute to exactly 500 ml with deionized distilled water. Thoroughly mix the solution.

6.2.5 *Working Mercury Standard Solution, 200 ng Hg/ml.* Prepare fresh daily. Pipet 5.0 ml from the "Intermediate Mercury Standard Solution" (6.2.4) into a 250-ml volumetric glass flask. Add 10 ml of the 5 percent H_2SO_4 and 2 ml of the 0.1 M ICl absorbing solution taken as a blank (7.2.3) and dilute to 250 ml with deionized distilled water. Mix thoroughly.

7. *Procedure*—7.1 *Sampling.* Because of the complexity of this method, testers should be trained and experienced with the test procedures to assure reliable results. Since the amount of Hg that is collected generally is small, the method must be carefully applied to prevent contamination or loss of sample.

7.1.1 *Pretest Preparation.* Follow the general procedure given in Method 5, Section 4.1.1, except omit the directions on the filter.

7.1.2 *Preliminary Determinations.* Follow the general procedure given in Method 5, Section 4.1.2, except as follows: Select a nozzle size based on the range of velocity heads to assure that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates below 28 liters/min (1.0 cfm).

Obtain samples over a period or periods that accurately determine the maximum emissions that occur in a 24-hour period. In the case of cyclic operations, run sufficient tests for the accurate determination of the emissions that occur over the duration of the cycle. A minimum sample time of 2 hours is recommended. In some instances, high Hg or high SO_2 concentrations make it impossible to sample for the desired minimum time. This is indicated by reddening (liberation of free iodine) in the first impinger. In these cases, the tester may divide the sample run into two or more subruns to insure that the absorbing solution is not depleted.

7.1.3 *Preparation of Sampling Train.* Clean all glassware [probe, impingers, and connectors] by rinsing with 50 percent HNO_3, tap water, 0.1 M ICl, tap water, and finally deionized distilled water. Place 100 ml of 0.1 M ICl in each of the first three impingers. Take care to prevent the absorbing solution from contacting any greased surfaces. Place approximately 200 g of preweighed silica gel in the fourth impinger. The tester may use more silica gel, but should be careful to ensure that it is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place for later use in the sample recovery. Alternatively, determine and record the weight of the silica gel plus impinger to the nearest 0.5 g.

Install the selected nozzle using a Viton A O-ring when stack temperatures are less than 260° C (500° F). Use a fiberglass string gasket if temperatures are higher. See APTD-0576 (Citation 9 in Section 10) for details. Other connecting systems using either 316 stainless steel or Teflon ferrules may be used. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point. Assemble the train as shown in Figure 101-1, using (if necessary) a very light coat of silicone grease on all ground glass joints. Grease only the outer portion (see APTD-0576) to avoid possibility of contamination by the silicone grease.

Note.—An empty impinger may be inserted between the third impinger and the silica gel to remove excess moisture from the sample stream.

After the sampling train has been assembled, turn on and set the probe, if applicable, at the desired operating temperature. Allow time for the temperatures to stabilize. Place crushed ice around the impingers.

7.1.4 *Leak-Check Procedures.* Follow the leak-check procedures outlined in Method 5, Sections 4.1.4.1 (Pretest Leak Check), 4.1.4.2 (Leak Checks During Sample Run), and 4.1.4.3 (Post-Test Leak Check).

7.1.5 *Mercury Train Operation.* Follow the general procedure given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 101-4.

7.1.6 *Calculation of Percent Isokinetic.* Same as Method 5, Section 4.1.6.

7.2 *Sample Recovery.* Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period.

Allow the probe to cool. When it can be safely handled, wipe off any external particulate matter near the tip of the probe nozzle and place a cap over it. Do not cap off the probe tip tightly while the sampling train is cooling. Capping would create a vacuum and draw liquid out from the impingers.

Before moving the sampling train to the cleanup site, remove the probe from the train, wipe off the silicone grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the impinger. Use either ground-glass stoppers, plastic caps, or serum caps to close these openings.

Transfer the probe and impinger assembly to a cleanup area that is clean, protected from the wind, and free of Hg contamination. The ambient air in laboratories located in the immediate vicinity of Hg-using facilities is not normally free of Hg contamination.

Inspect the train before and during assembly, and note any abnormal conditions. Treat the sample as follows:

7.2.1 *Container No. 1* (Impinger and Probe). Using a graduated cylinder, measure the liquid in the first three impingers to within ±1 ml. Record the volume of liquid present (e.g., see Figure 5-3 of Method 5). This information is needed to calculate the moisture content of the effluent gas. (Use only glass storage bottles and graduated cylinders that have been precleaned as in Section 7.1.3.) Place the contents of the first three impingers into a 1000-ml glass sample bottle.

Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover the Hg (and any condensate) from the probe nozzle, probe fitting, and probe liner as follows: Rinse these components with two 50-ml portions of 0.1 M IC1. Next, rinse the probe nozzle, fitting and liner, and each piece of connecting glassware between the probe liner and the back half of the third impinger with a maximum of 400 ml of deionized distilled water. Add all washings to the 1000-ml glass sample bottle containing the liquid from the first three impingers.

After all washings have been collected in the sample container, tighten the lid on the container to prevent leakage during shipment to the laboratory. Mark the height of the liquid to determine later whether leakage occurred during transport. Label the container to clearly identify its contents.

7.2.2 *Container No. 2* (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use as aids a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that may adhere to the impinger wall need not be removed. Since the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g; record this weight.

7.2.3 *Container No. 3* (Absorbing Solution Blank). For a blank, place 50 ml of the 0.1 M IC1 absorbing solution in a 100-ml sample bottle. Seal the container. Use this blank to prepare the working mercury standard solution (6.2.5).

7.3 *Sample Preparation.* Check the liquid level in each container to see whether liquid was lost during transport. If a noticeable amount of leakage occurred, either void the sample or use methods subject to the approval of the Administrator to account for the losses. Then follow the procedures below:

7.3.1 *Container No. 1* (Impinger and Probe). Carefully transfer the contents of Container No. 1 into a 1000-ml volumetric flask and adjust the volume to exactly 1000 ml with deionized distilled water.

7.3.2 *Dilutions.* Pipet a 2-ml aliquot from the diluted sample from 7.3.1 into a 250-ml volumetric flask. Add 10 ml of 5 percent H_2SO_4 and adjust the volume to exactly 250 ml with deionized distilled water. These solutions are stable for at least 72 hours.

Note.—The dilution factor will be 250/2 for this solution.

7.4 *Analysis.* Calibrate the spectrophotometer and recorder and prepare the calibration curve as described in Sections 8.1 to 8.4.

7.4.1 *Mercury Samples.* Repeat the procedure used to establish the calibration curve with appropriately sized aliquots (1 to 5 ml) of each of the diluted samples (from Section 7.3.2) until two consecutive peak heights agree within ±3 percent of their average value. The peak maximum of an aliquot (except the 5-ml aliquot) must be greater than 10 percent of the recorder full scale. If the peak maximum of a 1.0-ml aliquot is off scale on the recorder, further dilute the original source sample to bring the Hg concentration into the calibration range of the spectrophotometer.

Run a blank and standard at least after every five samples to check the spectrophotometer calibration; recalibrate as necessary.

It is also recommended that at least one sample from each stack test be checked by the method of standard additions to confirm that matrix effects have not interfered in the analysis.

7.4.2 *Container No. 2* (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

8. *Calibration and Standards*—Before use, clean all glassware, both new and used, as follows: brush with soap and water, liberally rinse with tap water, soak for 1 hour in 50 percent HNO_3, and then rinse with deionized distilled water.

8.1 *Flow Calibration.* Assemble the aeration system as shown in Figure 101-5. Set the outlet pressure on the aeration gas cylinder regulator to a minimum pressure of 500 mm Hg (10 psi), and use the flowmetering valve and a bubble flowmeter or wet test meter to obtain a flow rate of 1.5±0.1 liters/min through the aeration cell. After the flow calibration is complete, remove the bubble flowmeter from the system.

8.2 *Optical Cell Heating System Calibration.* Using a 50-ml graduated cylinder, add 50 ml of deionized distilled water to the bottle section of the aeration cell and attach the bottle section to the bubbler section of the cell. Attach the aeration cell to the optical cell; and while aerating at 1.5 liters/min, determine the minimum variable transformer setting necessary to prevent condensation of moisture in the optical cell and in the connecting tubing. (This setting should not exceed 20 volts.)

8.3 *Spectrophotometer and Recorder Calibration.* The mercury response may be measured by either peak height or peak area.

Note.—The temperature of the solution affects the rate at which elemental Hg is released from a solution and, consequently, it affects the shape of the absorption curve (area) and the point of maximum absorbance (peak height). Therefore, to obtain reproducible results, bring all solutions to room temperature before use.

Set the spectrophotometer wavelength at 253.7 nm, and make certain the optical cell is at the minimum temperature that will prevent water condensation. Then set the recorder scale as follows: Using a 50-ml graduated cylinder, add 50 ml of deionized distilled water to the aeration cell bottle and pipet 5.0 ml of the working mercury standard solution into the aeration cell.

Note.—Always add the Hg-containing solution to the aeration cell after the 50 ml of deionized distilled water.

Place a Teflon-coated stirring bar in the bottle. Before attaching the bottle section to the bubbler section of the aeration cell, make certain that (1) the aeration cell exit arm stopcock (Figure 101-3) is closed (so that Hg will not prematurely enter the optical cell when the reducing agent is being added) and (2) there is no flow through the bubbler. If conditions (1) and (2) are met, attach the bottle section to the bubbler section of the aeration cell. Pipet 5 ml of stannous chloride solution into the aeration cell through the side arm, and immediately stopper the side arm. Stir the solution for 15 sec, turn on the recorder, open the aeration cell exit arm stopcock, and then immediately initiate aeration with continued stirring. Determine the maximum absorbance of the standard and set this value to read 90 percent of the recorder full scale.[106]

8.4 *Calibration Curve.* After setting the recorder scale, repeat the procedure in Section 8.3 using 0.0-, 1.0-, 2.0-, 3.0-, 4.0-, and 5.0-ml aliquots of the working standard solution (final amount of Hg in the aeration cell is 0, 200, 400, 600, 800, and 1000 ng, respectively). Repeat this procedure on each aliquot size until two consecutive peaks agree within 3 percent of their average value. (Note: To prevent Hg carryover from one sample to another, do not close the aeration gas tank valve and do not disconnect the aeration cell from the optical cell until the recorder pen has returned to the baseline.) It should not be necessary to disconnect the aeration gas inlet line from the aeration cell when changing samples. After separating the bottle and bubbler sections of the aeration cell, place the bubbler section into a 600-ml beaker containing approximately 400 ml of deionized distilled water. Rinse the bottle section of the aeration cell with a stream of deionized distilled water to remove all traces of the tin (II) reducing agent. Also, to prevent the loss of Hg before aeration, remove all traces of the reducing agent between samples by washing with deionized distilled water. It will be necessary, however, to wash the aeration cell parts with concentrated HCl if any of the following conditions occur: (1) A white film appears on any inside surface of the aeration cell, (2) the calibration curve changes suddenly, or (3) the replicate samples do not yield reproducible results.

Subtract the average peak height (or peak area) of the blank (0.0-ml aliquot)—which should be less than 2 percent of recorder full scale—from the averaged peak heights of the 1.0-, 2.0-, 3.0-, 4.0-, and 5.0-ml aliquot standards. If the blank absorbance is greater than 2 percent of full-scale, the probable cause is Hg contamination of a reagent or carry-over of Hg from a previous sample. Plot the corrected peak height of each standard solution versus the corresponding final total Hg weight in the aeration cell (in ng) and draw the best-fit straight line. This line should either pass through the origin or pass through a point no further from the origin than ±2 percent of the recorder full scale. If the line does not pass through or very near to the origin, check for nonlinearity of the curve and for incorrectly prepared standards.

8.5 *Sampling Train Calibration.* Calibrate the sampling train components according to the procedures outlined in the following sections of Method 5: Section 5.1 (Probe Nozzle), Section 5.2 (Pitot Tube), Section 5.3 (Metering System), Section 5.4 (Probe Heater), Section 5.5 (Temperature Gauges), Section 5.7 (Barometer). Note that the leak-check described in Section 5.6 of Method 5 applies to this method.

9. *Calculations*—9.1 *Dry Gas Volume.* Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions (corrected for leakage, if necessary) as outlined in Section 6.3 of Method 5.

9.2 *Volume of Water Vapor and Moisture Content.* Using the data obtained from this test, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

9.3 *Stack Gas Velocity.* Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity v_s.

9.4 *Total Mercury.* For each source sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agree within ±3 percent of their average for the contribution of the solution blank (see Section 8.4). Use the calibration curve and these corrected averages, to determine the final total weight of mercury in nanograms in the aeration cell for each source sample. Correct for any dilutions made to bring the sample in the working range of the spectrophotometer. Then calculate the Hg in μg (m_{Hg}) in the original solution as follows:

$$m_{Hg} = \frac{C_{Hg(AC)}(D.F.)\,V_f\,10^{-3}}{S} \qquad \text{Eq. 101-1}$$

Where:

$C_{Hg(AC)}$ = Total nanograms of mercury in aliquot analyzed (reagent blank subtracted).

D.F. = Dilution factor for the Hg-containing solution (before adding to the aeration cell; e.g., D.F. = 250/2 if the source samples were diluted as described in Section 7.3.2.)

V_f = Solution volume of original sample, 1000 ml for samples diluted as described in Section 7.3.1.

10^{-3} = Conversion factor, μg/ng.

S = Aliquot volume added to aeration cell, ml.

9.5 *Mercury Emission Rate.* Calculate the Hg emission rate R in g/day for continuous operations using Equation 101-2. For cyclic operations, use only the time per day each stack is in operation. The total Hg emission rate from a source will be the summation of results from all stacks.

$$R = K\,\frac{m_{Hg}\,v_s\,A_s\,(86{,}400\times10^{-9})}{[V_{m(std)}+V_{w(std)}](T_s/P_s)} \qquad \text{Eq. 101-2}$$

Where:

A_s = Stack cross-sectional area, m^2 (ft^2).

86,400 = Conversion factor, sec/day.
10^{-6} = Conversion factor, g/μg.
T_s = Absolute average stack gas temperature, °K (°R).
P_s = Absolute stack gas pressure, mm Hg (in. Hg).
K = 0.3858 °K/mm Hg for metric units.
= 17.65 °R/in. Hg for English units.

9.8 *Isokinetic Variation and Acceptable Results.* Same as Method 5, Sections 6.11 and 6.12, respectively.

9.7 *Determination of Compliance.* Each performance test consists of three repetitions of the applicable test method. For the purpose of determining compliance with an applicable national emission standard, use the average of the results of all repetitions.

10. *Bibliography.* 1. Addendum to Specifications for Incinerator Testing at Federal Facilities. PHS, NCAPC. December 6, 1967.

2. Determining Dust Concentration in a Gas Stream. ASME Performance Test Code No. 27. New York, NY. 1957.

3. Devorkin, Howard, et al. Air Pollution Source Testing Manual. Air Pollution Control District. Los Angeles, CA. November 1963.

4. Hatch, W.R., and W.I. Ott. Determination of Sub-Microgram Quantities of Mercury by Atomic Absorption Spectrophotometry. Anal. Chem. *40*:2085–87. 1968.

5. Mark, L.S. Mechanical Engineers' Handbook. McGraw-Hill Book Co., Inc. New York, NY. 1951.

6. Martin, Robert M. Construction Details of Isokinetic Source Sampling Equipment. U.S. Environmental Protection Agency. Research Triangle Park, NC. Publication No. APTD–0581. April 1971.

7. Western Precipitation Division of Joy Manufacturing Co. Methods for Determination of Velocity, Volume, Dust and Mist Content of Gases. Bulletin WP–50. Los Angeles, CA. 1968.

8. Perry, J.H. Chemical Engineers' Handbook. McGraw-Hill Book Co., Inc. New York, NY. 1960.

9. Rom, Jerome J. Maintenance, Calibration, and Operation of Isokinetic Source Sampling Equipment. U.S. Environmental Protection Agency. Research Triangle Park, NC. Publication No. APTD–0576. April 1972.

10. Shigehara, R.T., W.F. Todd, and W.S. Smith. Significance of Errors in Stack Sampling Measurements. Stack Sampling News. *1*:(3):6–18. September 1973.

11. Smith, W.S., et al. Stack Gas Sampling Improved and Simplified with New Equipment. APCA Paper No. 67–119. 1967.

12. Smith, W.S., R.T. Shigehara, and W.F. Todd. A Method of Interpreting Stack Sampling Data. Stack Sampling News. *1*(2):8–17. August 1973.

13. Specifications for Incinerator Testing at Federal Facilities. PHS, NCAPA. 1967.

14. Standard Method for Sampling Stacks for Particulate Matter. In: 1971 Annual Book of ASTM Standards, Part 23. ASTM Designation D–2928–71. Philadelphia, PA. 1971.

15. Vennard, J.K. Elementary Fluid Mechanics. John Wiley and Sons, Inc. New York. 1947.

16. Mitchell, W.J., and M.R. Midgett. Improved Procedure for Determining Mercury Emissions from Mercury Cell Chlor-Alkali Plants. J. APCA. *26*: 674–677. July 1976.

17. Shigehara, R.T. Adjustments in the EPA Nomograph for Different Pitot Tube Coefficients and Dry Molecular Weights. Stack Sampling News. *2*:4–11. October 1974.

18. Vollaro, R.F. Recommended Procedure for Sample Traverses in Ducts Smaller than 12 Inches in Diameter. U.S. Environmental Protection Agency. Emission Measurement Branch. Research Triangle Park, NC. November 1976.

19. Klein, R., and C. Hach. Standard Additions: Uses and Limitation in Spectrophotometric Measurements. Amer. Lab. *9*:21. 1977.

20. Water, Atmospheric Analysis. In: Annual Book of ASTM Standards, Part 31. ASTM Designation D–1193–74. Philadelphia, PA. 1974.

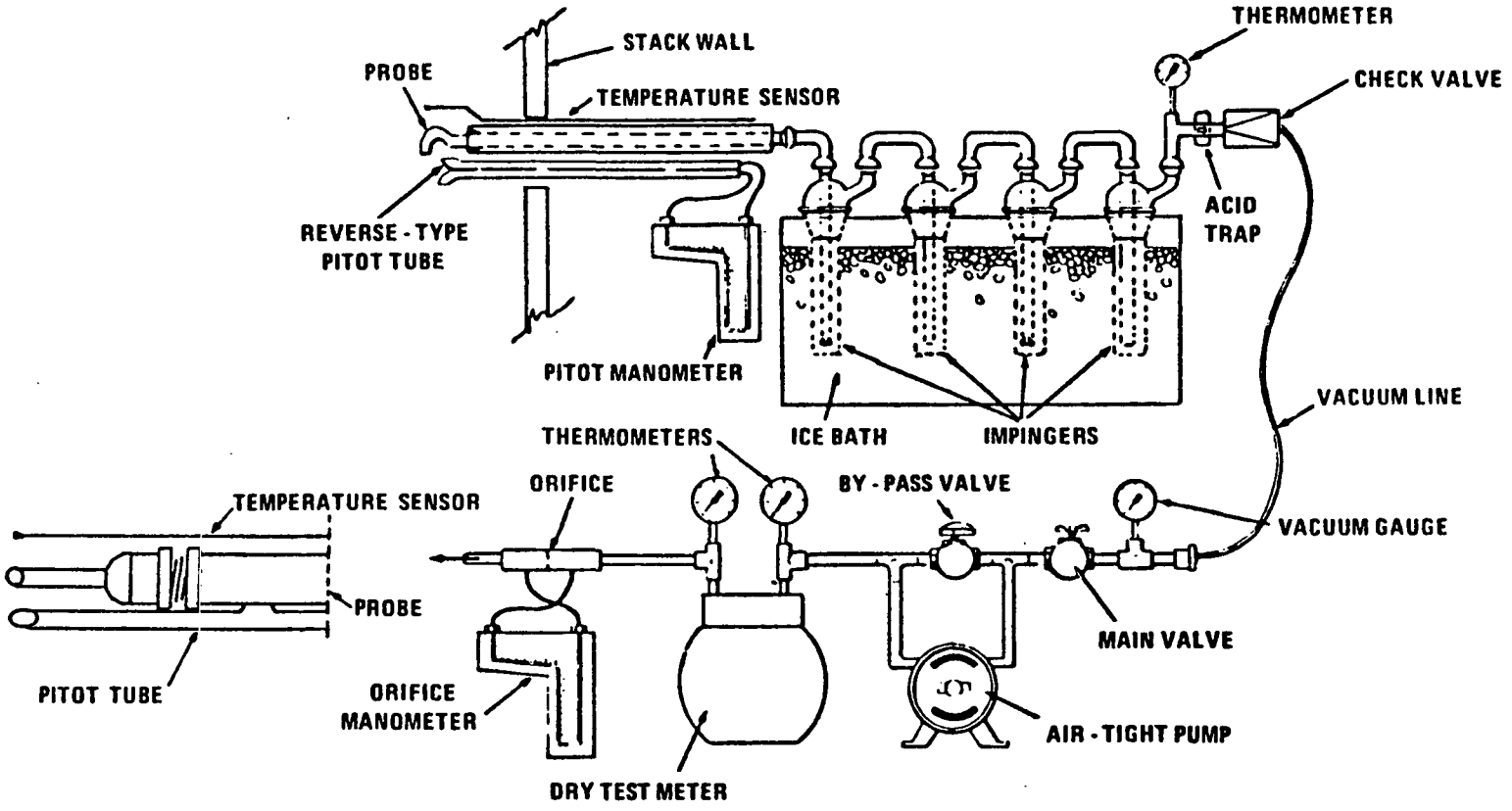


Figure 101-1 Mercury sampling train.

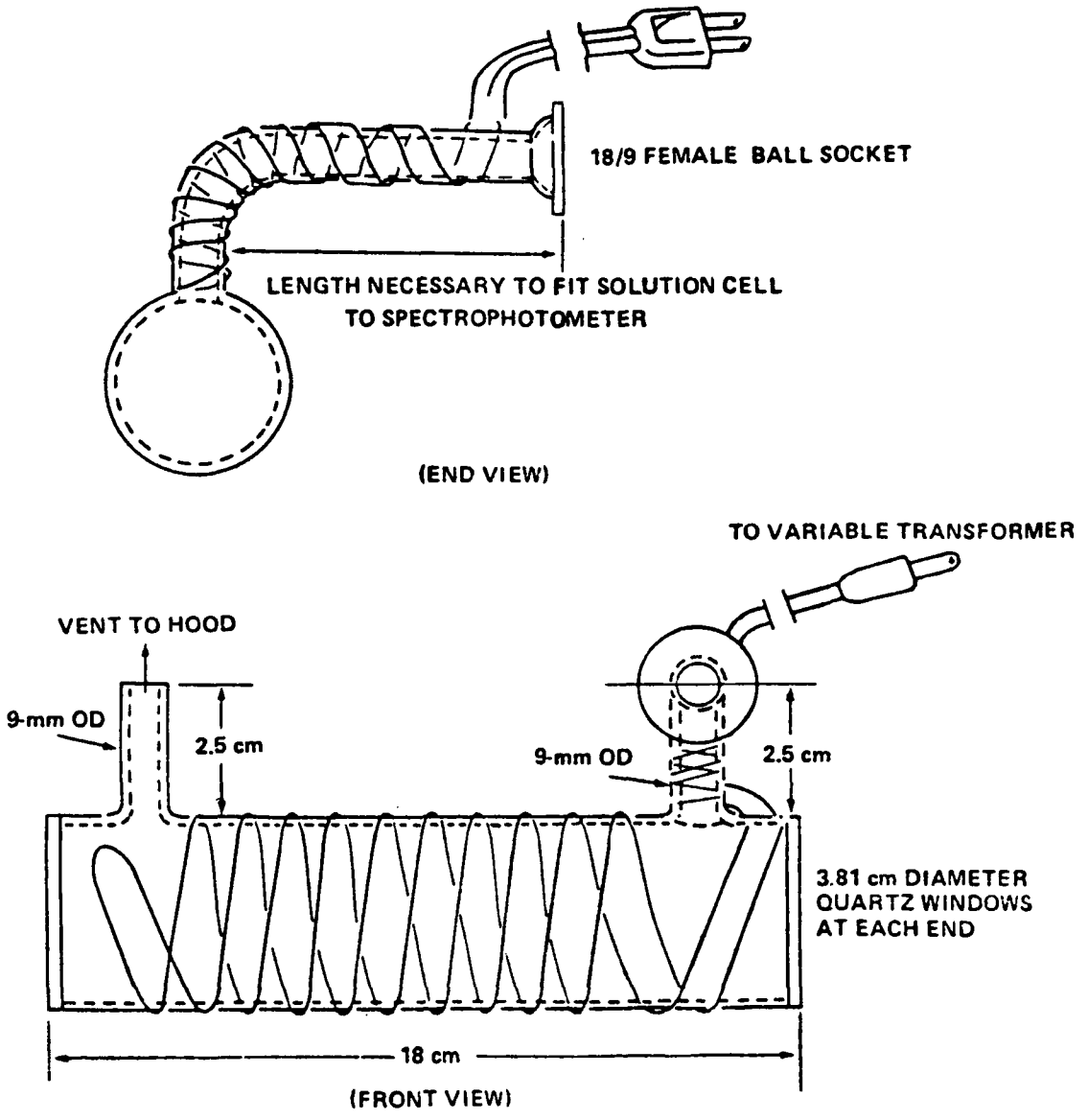


Figure 101-2. Optical cell.

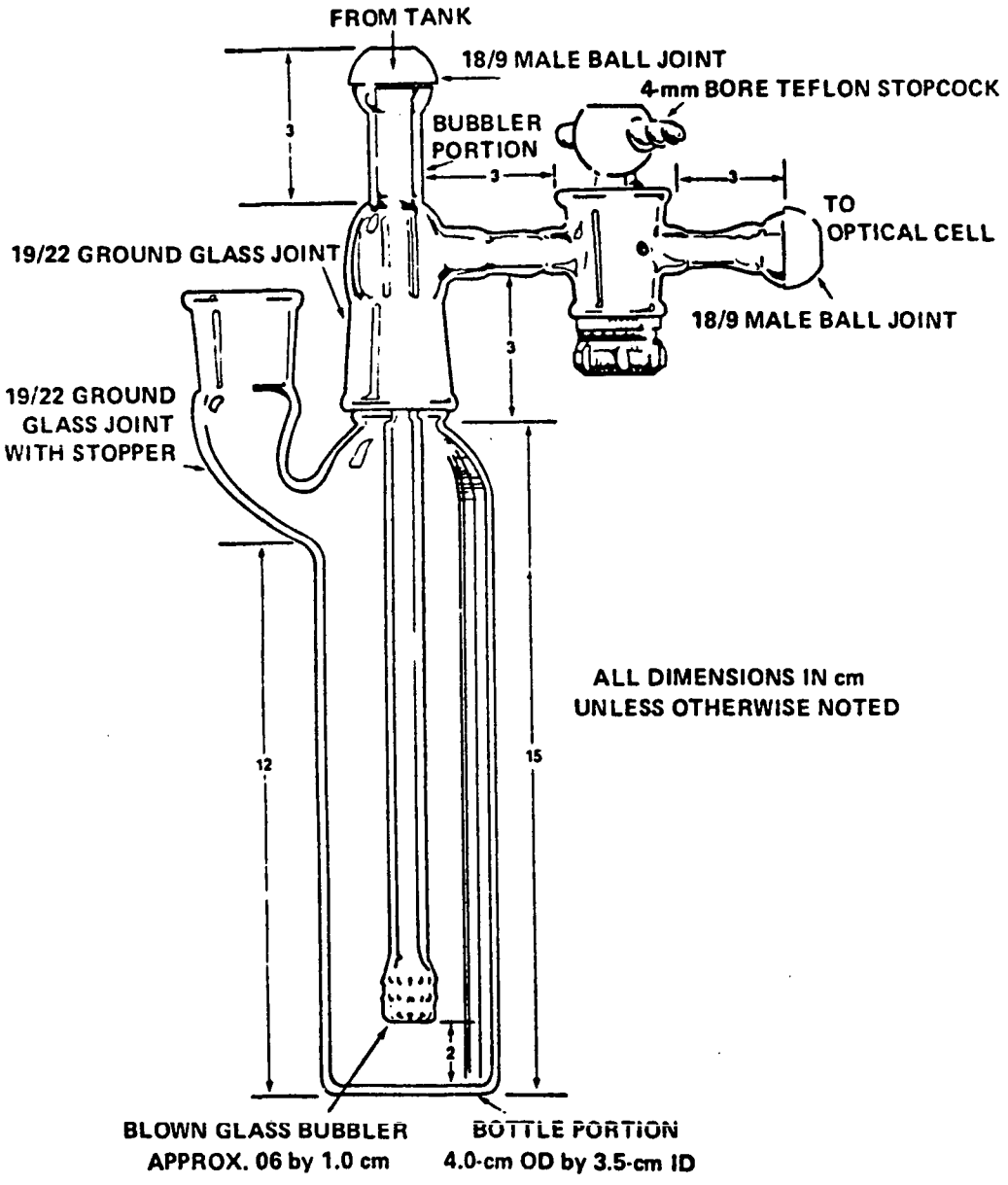


Figure 101-3. Aeration cell.

PLANT _____

LOCATION _____

OPERATOR _____

DATE _____

RUN NO. _____

SAMPLE BOX NO. _____

FILTER BOX NO. _____

METER ΔH@ _____

C FACTOR _____

PITOT TUBE COEFFICIENT, C_p _____

SCHEMATIC OF STACK CROSS SECTION

AMBIENT TEMPERATURE _____

BAROMETRIC PRESSURE _____

ASSUMED MOISTURE, % _____

PROBE LENGTH, m (ft) _____

NOZZLE IDENTIFICATION NO. _____

AVERAGE CALIBRATED NOZZLE DIAMETER, cm (in.) _____

PROBE HEATER SETTING* _____

LEAK RATE, m^3/min (cfm) _____

PROBE LINER MATERIAL _____

STATIC PRESSURE, mm Hg (in. Hg) _____

FILTER NO.* _____

TRAVERSE POINT NUMBER	SAMPLING TIME (θ), min.	VACUUM mm Hg (in. Hg)	STACK TEMPERATURE (T_S) °C (°F)	VELOCITY HEAD (ΔP_S)	PRESSURE DIFFERENTIAL ACROSS ORIFICE METER mm H_2O (in. H_2O)	GAS SAMPLE VOLUME m^3 (ft^3)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		FILTER HOLDER* TEMPERATURE, °C (°F)	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER, °C (°F)
							INLET °C (°F)	OUTLET °C (°F)		
TOTAL							Avg.	Avg.		
AVERAGE							Avg.			

*IF APPLICABLE

Fig. 101-4. Mercury field data.

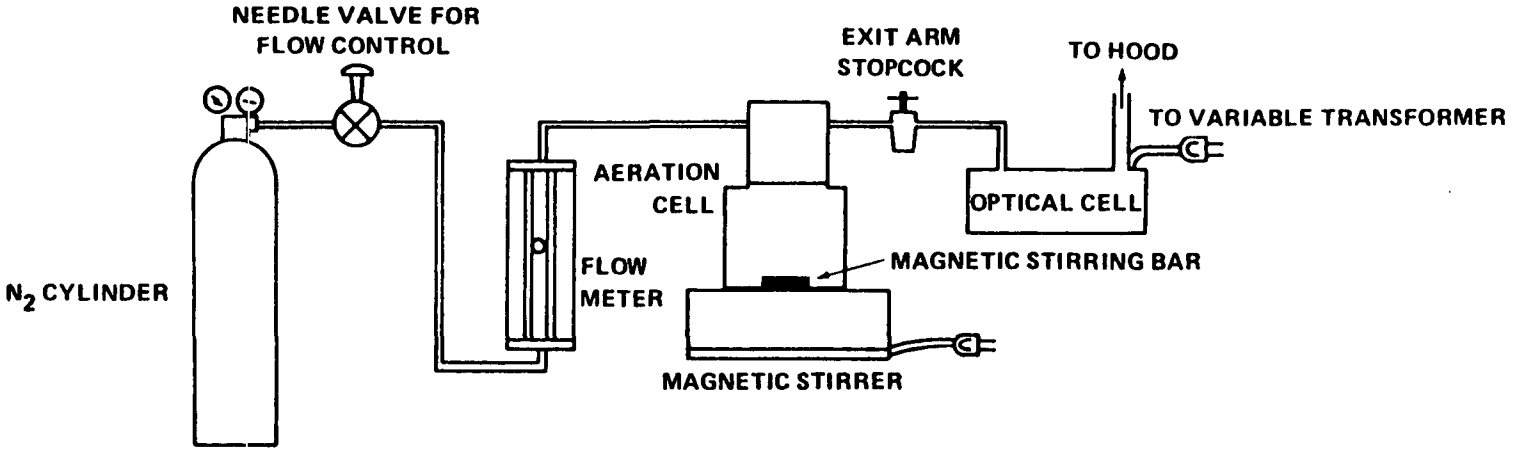


Figure 101-5. Schematic of aeration system.

Method 101A. Determination of Particulate and Gaseous Mercury Emissions From Sewage Sludge Incinerators[66]

Introduction

This method is similar to Method 101, except acidic potassium permangante solution is used instead of acidic iodine monochloride for collection.

1. *Applicability and Principle*—1.1 *Applicability.* This method applies to the determination of particulate and gaseous mercury (Hg) emissions from sewage sludge incinerators and other sources as specified in the regulations.

1.2 *Principle.* Particulate and gaseous Hg emissions are withdrawn isokinetically from the source and collected in acidic potassium permanganate ($KMnO_4$) solution. The Hg collected (in the mercuric form) is reduced to elemental Hg, which is then aerated from the solution into an optical cell and measured by atomic absorption spectrophotometry.

2. *Range and Sensitivity*—2.1 *Range.* After initial dilution, the range of this method is 20 to 800 ng Hg/ml. The upper limit can be extended by further dilution of the sample.

2.2 *Sensitivity.* The sensitivity of the method depends on the recorder/spectrophotometer combination selected.

3. *Interfering Agents*—3.1 *Sampling.* Excessive oxidizable organic matter in the stack gas prematurely depletes the $KMnO_4$ solution and thereby prevents further collection of Hg.

3.2 *Analysis.* Condensation of water vapor on the optical cell windows causes a positive interference.

4. *Precision*—Based on eight paired-train tests, the within-laboratory standard deviation was estimated to be 4.8 μg Hg/ml in the concentration range of 50 to 130 μg Hg/m^3.

5. *Apparatus*—5.1 *Sampling Train and Sample Recovery.* Same as Method 101, Sections 5.1 and 5.2, respectively, except for the following variations:

5.1.1 *Probe Liner.* Same as Method 101, Section 5.1.2, except that if a filter is used ahead of the impingers, the tester must use the probe heating system to minimize the condensation of gaseous Hg.

5.1.2 *Filter Holder (Optional).* Borosilicate glass with a rigid stainless-steel wire-screen filter support (do not use glass frit supports) and a silicone rubber of Teflon gasket, designed to provide a positive seal against leakage from outside or around the filter. The filter holder must be equipped with a filter heating system capable of maintaining a temperature around the filter holder of 120 ± 15° C (248 ± 25° F) during sampling to minimize both water and gaseous Hg condensation. The tester may use a filter in cases where the stream contains large quantities of particulate matter.

5.2 *Analysis.* The apparatus needed for analysis is the same as Method 101, Sections 5.3 and 5.4, except as follows:

5.2.1 *Volumetric Pipets.* Class A; 1–, 2–, 3–, 4–, 5–, 10–, and 20-ml.

5.2.2 *Graduated Cylinder.* 25–ml.

5.2.3 *Steam Bath.*

6. *Reagents—Use ACS reagent-grade chemicals or equivalent, unless otherwise specified.*

6.1 *Sampling and Recovery.* The reagents used in sampling and recovery are as follows:

6.1.1 *Water.* Deionized distilled, meeting ASTM Specifications for Type I Reagent Water—ASTM Test Method D1193–77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter. Use this water in all dilutions and solution preparations.[79]

6.1.2 *Nitric Acid (HNO_3), 50 Percent (V/V).* Mix equal volumes of concentrated HNO_3 and deionized distilled water, being careful to slowly add the acid to the water.

6.1.3 *Silica Gel.* Indicating type, 6- to 16-mesh. If previously used, dry at 175° C (350° F) for 2 hr. The tester may use new silica gel as received.

6.1.4 *Filter (Optional).* Glass fiber filter, without organic binder, exhibiting at least 99.95 percent efficiency on 0.3 μm dioctyl phthalate smoke particles. The tester may use the filter in cases where the gas stream contains large quantities of particulate matter, but he should analyze blank filters for Hg content.

6.1.5 *Sulfuric Acid (H_2SO_4), 10 Percent (V/V).* Add and mix 100 ml of concentrated H_2SO_4 with 800 ml of deionized distilled water.

6.1.6 *Absorbing Solution, 4 Percent $KMnO_4$ (W/V).* Prepare fresh daily. Dissolve 40 g of $KMnO_4$ in sufficient 10 percent H_2SO_4 to make 1 liter. Prepare and store in glass bottles to prevent degradation.

6.2 *Analysis.* The reagents needed for analysis are listed below:

6.2.1 *Tin (II) Solution.* Prepare fresh daily and keep sealed when not being used. Competely dissolve 20 g of tin (II) chloride [or 25 g of tin (II) sulfate] crystals (Baker Analyzed reagent grade or any other brand that will give a clear solution) in 25 ml of concentrated HCl. Dilute to 250 ml with deionized distilled water. Do not substitute HNO_3, H_2SO_4, or other strong acids for the HCl.

6.2.2 *Sodium Chloride—Hydroxylamine Solution.* Dissolve 12 g of sodium chloride and 12 g of hydroxylamine sulfate (or 12 g of hydroxylamine hydrochloride) in deionized distilled water and dilute to 100 ml.

6.2.3 *Hydrochloric Acid (HCl), 8 N.* Dilute 67 ml of concentrated HNO_3 to 100 ml with deionzed distilled water (slowly add the HCl to the water).

6.2.4 *Nitric Acid, 15 Percent (V/V).* Dilute 15 ml of concentrated HNO_3 to 100 ml with deionized distilled water.

6.2.5 *Mercury Stock Solution, 1 mg Hg/ml.* Prepare and store all mercury standard solutions in borosilicate glass containers. Completely dissolve 0.1354 g of mercury (II) chloride in 75 ml of deionized distilled water. Add 100 ml of concentrated HNO_3, and adjust the volume to exactly 100 ml with deionized distilled water. Mix thoroughly. This solution is stable for at least 1 month.

6.2.6 *Intermediate Mercury Standard Solution, 10 μg Hg/ml.* Prepare fresh weekly. Pipet 5.0 ml of the mercury stock solution (Section 6.2.5) into a 500-ml volumetric flask and add 20 ml of 15 percent HNO_3 solution. Adjust the volume to exactly 500 ml with deionized distilled water. Thoroughly mix the solution.

6.2.7 *Working Mercury Standard Solution, 200 ng Hg/ml.* Prepare fresh daily. Pipet 5.0 ml from the "Intermediate Mercury Standard Solution" (Section 6.2.6) into a 250-ml volumetric flask. Add 5 ml of 4 percent $KMnO_4$ absorbing solution and 5 ml of 15 percent HNO_3. Adjust the volume to exactly 250 ml with deionized distilled water. Mix thoroughly.

6.2.8 *Potassium Permanganate, 5 Percent (W/V).* Dissolve 5 g of $KMnO_4$ in deionized distilled water and dilute to 100 ml.

6.2.9 *Filter.* Whatman No. 40 or equivalent.

7. *Procedure*—7.1 *Sampling.* The sampling procedure is the same as Method 101, except for changes due to the use of $KMnO_4$ instead of ICl absorbing solution and the possible use of a filter. These changes are as follows:

7.1.1 *Preliminary Determinations.* The preliminary determinations are the same as those given in Method 101, Section 7.1.2, except for the absorbing solution depletion sign. In this method, high oxidizable organic content may make it impossible to sample for the desired minimum time. This problem is indicated by the complete bleaching of the purple color of the $KMnO_4$ solution. In these cases, the tester may divide the sample run into two or more subruns to insure that the absorbing solution would not be depleted. In cases where an excess of water condensation is encountered, collect two runs to make one sample.

7.1.2 *Preparation of Sampling Train.* The preparation of the sampling train is the same as that given in Method 101, Section 7.1.3, except for the cleaning of the glassware [probe, filter holder (if used), impingers, and connectors] and the charging of the first three impingers. In this method, clean all the glass components by rinsing with 50 percent HNO_3, tap water, 8 N HCl, tap water, and finally deionized distilled water. Then place 50 ml of 4 percent $KMnO_4$ in the first impinger and 100 ml in each of the second and third impingers.

If a filter is used, use a pair of tweezers to place the filter in the filter holder. Be sure to center the filter and place the gasket in proper position to prevent the sample gas stream from by-passing the filter. Check the filter for tears after assembly is completed. Be sure also to set the filter heating system at the desired operating temperature after the sampling train has been assembled.

7.1.3 *Sampling Train Operation.* In addition to the procedure given in Method 101, Section 7.1.5, maintain a temperature around the filter (if applicable) of 120°±14° C (248°±25° F).

7.2 *Sample Recovery.* Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When it can be safely handled, wipe off any external particulate matter near the tip of the probe nozzle and place a cap over it. Do not cap off the probe tip tightly while the sampling train is cooling because the resultant vacuum would draw liquid out from the impingers.

Before moving the sample train to the cleanup site, remove the probe from the train, wipe off the silicone grease, and cap the open

outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the impinger. Use either ground-glass stoppers, plastic caps, or serum caps to close these openings.

Transfer the probe, impinger assembly, and (if applicable) filter assembly to a cleanup area that is clean, protected from the wind, and free of Hg contamination. The ambient air in laboratories located in the immediate vicinity of Hg-using facilities is not normally free of Hg contamination.

Inspect the train before and during disassembly, and note any abnormal conditions. Treat the sample as follows:

7.2.1 *Container No. 1* (Impinger, Probe, and Filter Holder). Use a graduated cylinder; measure the liquid in the first three impingers to within ±1 ml. Record the volume of liquid present (e.g., see Figure 5–3 of Method 5 in Part 60 of 40 CFR). This information is needed to calculate the moisture content of the effluent gas. (Use only graduated cylinder and glass storage bottles that have been precleaned as in Section 7.1.2.) Place the contents of the first three impingers into a 1000-ml glass sample bottle.

(Note.—If a filter is used, remove the filter from its holder, as outlined under "Container No. 3" below.)

Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover the Hg (and any condensate) from the probe nozzle, probe fitting, probe liner and front half of the filter holder (if applicable) as follows: Rinse these components with a total of 250 to 400 ml of fresh 4 percent $KMnO_4$ solution; add all washings to the 1000-ml glass sample bottle; remove any residual brown deposits on the glassware using the minimum amount of 8 N HCl required; and add this HCl rinse to this sample container.

After all washings have been collected in the sample container, tighten the lid on the container to prevent leakage during shipment to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to clearly identify its contents.

7.2.2. *Container No. 2* (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use as aids a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. It is not necessary to remove the small amount of particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g; record this weight.

7.2.3 *Container No. 3* (Filter). If a filter was used, carefully remove it from the filter holder, place it in a 100-ml glass sample bottle, and add 20 to 40 ml of 4 percent $KMnO_4$. If it is necessary to fold the filter, be sure that the particulate cake is inside the fold. Carefully transfer to the 150-ml sample bottle any particulate matter and filter fibers that adhere to the filter holder gasket by using a dry Nylon bristle brush and a sharp-edged blade. Seal the container. Label the container to clearly identify its contents. Mark the height of the fluid level to determine whether leakage occurs during transport.

7.2.4 *Container No. 4* (Filter Blank). If a filter was used, treat an unused filter from the same filter lot used for sampling in the same manner as Container No. 3.

7.2.5 *Container No. 5* (Absorbing Solution Blank). For a blank, place 500 ml of 4 percent $KMnO_4$ absorbing solution in a 1000-ml sample bottle. Seal the container.

7.3 *Sample Preparation.* Check liquid level in each container to see if liquid was lost during transport. If a noticeable amount of leakage occurred, either void the sample or use methods subject to the approval of the Administrator to account for the losses. Then follow the procedures below.

7.3.1 *Containers No. 3 and No. 4* (Filter and Filter Blank). If a filter was used, place the contents, including the filter, of Containers No. 3 and No. 4 in separate 250-ml beakers and heat the beakers on a steam bath until most of the liquid has evaporated. Do not take to dryness. Add 20 ml of concentrated HNO_3 to the beakers, cover them with a glass, and heat on a hot plate at 70° C for 2 hours. Remove from the hot plate and filter the solution through Whatman No. 40 filter paper. Save the filtrate for Hg analysis. Discard the filter.

7.3.2 *Container No. 1* (Impingers, Probe, and Filter Holder). Filter the contents of Container No. 1 through Whatman 40 filter paper to remove the brown MnO_2 precipitate. Wash the filter with 50 ml of 4 percent $KMnO_4$ absorbing solution and add this wash to the filtrate. Discard the filter. Combine the filtrates from Containers No. 1 and No. 3 (if applicable), and dilute to a known volume with deionized distilled water. Mix thoroughly.

7.3.3 *Container No. 5* (Absorbing Solution Blank). Treat this container as described in Section 7.3.2. Combine this filtrate with the filtrate with Container No. 4 and dilute to a known volume with deionized distilled water. Mix thoroughly.

7.4 *Analysis.* Calibrate the spectrophotometer and recorder and prepare the calibration curve as described in Sections 8.1 to 8.4. Then repeat the procedure used to establish the calibration curve with appropriately sized aliquots (1 to 10 ml) of the samples (from Sections 7.3.2 and 7.3.3) until two consecutive peak heights agree within ±3 percent of their average value. If the 10-ml sample is below the detectable limit, use a larger aliquot (up to 20 ml), but decrease the volume of water added to the aeration cell accordingly to prevent the solution volume from exceeding the capacity of the aeration bottle. If the peak maximum of a 1.0-ml aliquot is off scale, further dilute the original sample to bring the Hg concentration into the calibration range of the spectrophotometer. If the Hg content of the absorbing solution and filter blank is below the working range of the analytical method, use zero for the blank.

Run a blank and standard at least after every five samples to check the spectrophotometer calibration; recalibrate as necessary.

It is also recommended that at least one sample from each stack test be checked by the Method of Standard Additions to confirm that matrix effects have not interfered in the analysis.

8. *Calibration and Standards*—The calibration and standards are the same as Method 101, Section 8, except for the following variations:

8.1 *Optical Cell Heating System Calibration.* Same as method 101, Section 8.2, except use a 25-ml graduated cylinder to add 25 ml of deionized distilled water to the bottle section of the aeration cell.

8.2 *Spectrophotometer and Recorder Calibration.* The mercury response may be measured by either peak height or peak area. (Note: the temperature of the solution affects the rate at which elemental Hg is released from a solution and, consequently, it affects the shape of the absorption curve (area) and the point of maximum absorbance (peak height). To obtain reproducible results, all solutions must be brought to room temperature before use.) Set the spectrophotometer wave length at 253.7 nm and make certain the optical cell is at the minimum temperature that will prevent water condensation.

Then set the recorder scale as follows: Using a 25-ml graduated cylinder, add 25 ml of deionized distilled water to the aeration cell bottle and pipet 5.0 ml of the working mercury standard solution into the aeration cell. (Note: Always add the Hg-containing solution to the aeration cell after the 25 ml of deionized distilled water.) Place a Teflon-coated stirring bar in the bottle. Add 5 ml of the 4 percent $KMnO_4$ absorbing solution followed by 5 ml of 15 percent HNO_3 and 5 ml of 5 percent $KMnO_4$ to the aeration bottle and mix well. Now, attach the bottle section to the bubbler section of the aeration cell and make certain that (1) the aeration cell exit arm stopcock (Figure 101–3 of Method 101) is closed (so that Hg will not prematurely enter the optical cell when the reducing agent is being added) and (2) there is no flow through the bubbler. Add 5 ml of sodium chloride hydroxylamine in 1-ml increments until the solution is colorless. Now add 5 ml of tin (II) solution to the aeration bottle through the side arm, and immediately stopper the side arm. Stir the solution for 15 seconds, turn on the recorder, open the aeration cell exit arm stopcock, and immediately initiate aeration with continued stirring. Determine the maximum absorbance of the standard and set this value to read 80 percent of the recorder full scale.[106]

9. *Calculations*—9.1 *Dry Gas Volume, Volume of Water Vapor and Moisture Content, Stack Gas Velocity, Isokinetic Variation and Acceptable Results, and Determination of Compliance.* Same as Method 101, Sections 9.1, 9.2, 9.3, 9.6, and 9.7, respectively, except use data obtained from this test.

9.2 *Total Mercury.* For each source sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agreed within ±3 percent of their average for the contribution of the field blank. Then calculate the total Hg content in μg in each sample. Correct for any

dilutions made to bring the sample into the working range of the spectrophotometer.

9.3 *Mercury Emission Rate.* Calculate the Hg emission rate R in g/day for continuous operations using Equation 101A-1. For cyclic operations, use only the time per day each stack is in operation. The total Hg emission rate from a source will be the summation of results from all stacks.

$$R = \frac{K\, m_{Hg}\, v_s\, A_s\, (86{,}400 \times 10^{-6})}{[V_m(std) + V_{w(std)}]\,(T_s/P_s)}$$

Eq. 101A-1

Where:

m_{Hg} = Total Hg content in each sample, μg.
v_s = Average stack gas velocity, m/sec (fps).
A_s = Stack cross-sectional area, m^2 (ft^2).
86,400 = Conversion factor, sec/day.
10^{-6} = Conversion factor, g/μg.
$V_{m(std)}$ = Dry gas sample volume at standard conditions, corrected for leakage (if any), m^3 (ft^3).
$V_{w(std)}$ = Volume of water vapor at standard conditions, m^3 (ft^3).
T_s = Absolute average stack gas temperature, °K (°R).
P_s = Absolute stack gas pressure, mm Hg (in. Hg).
K = 0.3858 °K/mm Hg for metric units.
= 17.64 °R/in. Hg for English units.

10. *Bibliography.* 1. Same as Method 101, Section 10.

2. Mitchell, W. J., M. R. Midgett, J. C. Suggs, and D. Albrinck.
Test Methods to Determine the Mercury Emissions from Sludge Incineration Plants. U.S. Environmental Protection Agency. Research Triangle Park, North Carolina. Publication No. EPA-600/4-79-058. September 1979.

Method 102. Determination of Particulate and Gaseous Mercury Emissions From Chlor-Alkali Plants—Hydrogen Streams

1. *Introduction*—Although similar to Method 101, Method 102 requires changes to accommodate the sample being extracted from a hydrogen stream. Conduct the test according to Method 101, except as shown below:

2. *Mercury Train Operation*—2.1 *Probe Heating System.* Do not use, unless otherwise specified.

2.2 *Glass Fiber Filter.* Do not use, unless otherwise specified.

2.3 *Safety Procedures.* The sampler must conduct the source test under conditions of utmost safety, because hydrogen and air mixtures are explosive. Since the sampling train essentially is leakless, attention to safe operation can be concentrated at the inlet and outlet. If a leak does occur, however, remove the meter box cover to avoid a possible explosive mixture. The following specific precautions are recommended:

2.3.1 *Operate only the vacuum pump during the test.* The other electrical equipment, e.g., heaters, fans, and timers, normally are not essential to the success of a hydogen stream test.

2.3.2 *Seal the sample port to minimize leakage of hydrogen from the stack.*

2.3.3 *Vent sampled hydrogen at least 3 m (10 feet) away from the train.* This can be accomplished by attaching a 13-mm-ID (0.50-in) Tygon tube to the exhaust from the orifice meter. (Note: A smaller ID tubing may cause the orifice meter calibration to be erroneous.) Take care to ensure that the exhaust line is not bent or pinched.

2.4 *Setting of Isokinetic Rates.*

2.4.1 If a nomograph is used, take special care in the calculation of the molecular weight of the stack gas and in the setting of the nomograph to maintain isokinetic conditions during sampling (Sections 2.4.1.1 through 2.4.1.3 below).

2.4.1.1 *Calibrate the meter box orifice.* Use the techniques described in APTD-0576 (see Citation 9 in Section 10 of Method 101). Calibration of the orifice meter at flow conditions that simulate the conditions at the source is suggested. Calibration should either be done with hydrogen or with some other gas having a similar Reynolds Number so that there is similarity between the Reynolds Numbers during calibration and during sampling.

2.4.1.2 The nomograph described in APTD-0576 cannot be used to calculate the C factor because the nomograph is designed for use when the stack gas dry molecular weight is 20±4. Instead, the following calculation should be made to determine the proper C factor:

$$C = 0.00154\ \Delta H_@\ C_p^2 T_m (P_s/P_m) \frac{(1-B_{ws})^2}{(1-B_{ws})+18\ B_{ws}/M_d}$$

Where:

$\Delta H_@$ = Meter box calibration factor obtained in Section 2.4.1.1, in. H_2O.

C_p = Pitot tube calibration coefficient, dimensionless.

T_m = Absolute temperature of gas at the orifice, °R.

P_s = Absolute pressure of stack gas, in Hg.

P_m = Absolute pressure of gas at the meter, in Hg.

B_{ws} = Fraction by volume of water vapor in the stack gas.

M_d = Dry molecular weight of stack gas, lb/lb-mole.

Note. This calculation is left in English units, and is not converted to metric units because nomographs are based on English units.

2.4.1.3 Set the calculated C factor on the operating nomograph and select the proper nozzle diameter and K factor as specified in APTD-0576. If the C factor obtained in Section 2.4.1.2 exceeds the values specified on the existing operating nomograph, expand the C scale logarithmically so that the values can be properly located.

2.4.2 If a calculator is used to set isokinetic rates, it is suggested that the isokinetic equation presented in Citation 17 in the Bibliography of Method 101 be used.

2.5 Sampling in Small (<12-in.-Diameter) Stacks. When the stack diameter (or equivalent diameter) is less than 12 inches, conventional pitot tube-probe assemblies should not be used. For sampling guidelines, see Citation 18 in the Bibliography of Method 101.

Method 103—Beryllium Screening Method[89]

1. *Applicability and Principle.*

1.1 Applicability. This procedure details guidelines and requirements for methods acceptable for use in determining beryllium (Be) emissions in ducts or stacks at stationary sources as specified under the provisions of § 61.14 of the regulations.

1.2 Principle. Be emissions are isokinetically sampled from three points in a duct or stack. The collected sample is analyzed for Be using an appropriate technique.

2. *Apparatus.*

2.1 Sampling Train. A schematic of the required sampling train configuration is shown in Figure 103–1. The essential components of the train are the following:

2.1.1 Nozzle. Stainless steel, or equivalent, with sharp, tapered leading edge.

2.1.2 Probe. Sheathed borosilicate or quartz glass tubing.

2.1.3 Filter. Millipore AA (*Note:* Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency), or equivalent, with appropriate filter holder that provides a positive seal against leakage from outside or around the filter. It is suggested that a Whatman 41, or equivalent, be placed immediately against the back side of the Millipore filter as a guard against breakage of the Millipore. Include the backup filter in the analysis. To be equivalent, other filters shall exhibit at least 99.95 percent efficiency (0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles, and be amenable to the Be analysis procedure. The filter efficiency tests shall be conducted in accordance with American Society for Testing and Materials (ASTM) Standard Method D 2986–71 (reapproved 1978) (incorporated by reference—see § 61.18). Test data from the supplier's quality control program are sufficient for this purpose.

2.1.4 Meter-Pump System. Any system that will maintain isokinetic sampling rate, determine sample volume, and is capable of a sampling rate of greater than 14 1 pm (0.5 cfm).

2.2 Measurement of Stack Conditions. The following equipment is used to measure stack conditions:

2.2.1 Pitot Tube. Type S, or equivalent, with a coefficient within 5 percent over the working range.

2.2.2 Inclined Manometer, or Equivalent. To measure velocity head to within 10 percent of the minimum value.

2.2.3 Temperature Measuring Device. To measure stack temperature to within 1.5 percent of the minimum absolute stack temperature.

2.2.4 Pressure Measuring Device. To measure stack pressure to within 2.5 mm Hg (0.1 in. Hg).

2.2.5 Barometer. To measure atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg).

2.2.6 Wet and Dry Bulb Thermometers, Drying Tubes, Condensers, or Equivalent. To determine stack gas moisture content to within 1 percent.

2.3 Sample Recovery.

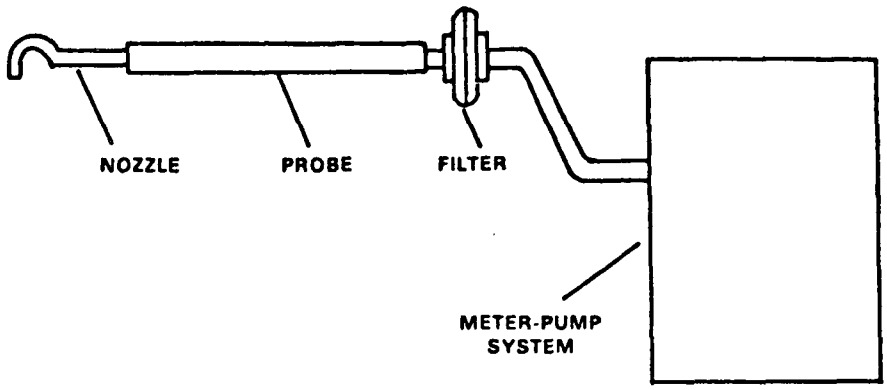


Figure 103-1. Beryllium screening method; sample train schematic.

2.3.1 Probe Cleaning Equipment. Probe brush or cleaning rod at least as long as probe, or equivalent. Clean cotton balls, or equivalent, should be used with the rod.

2.3.2 Leakless Glass Sample Bottles. To contain sample.

2.4 Analysis. Use equipment necessary to perform an atomic absorption, spectrographic, fluorometric, chromatographic, or equivalent analysis.

3. *Reagents.*

3.1 Sample Recovery.

3.1.1 Water. Distilled water.

3.1.2 Acetone. Reagent grade.

3.1.3 Wash Acid, 50 Percent (V/V) Hydrochloric Acid (HCl).

Mix equal volumes of concentrated HCl and water, being careful to add the acid slowly to the water.

3.2 Analysis. Reagents as necessary for the selected analytical procedure.

4. *Procedure.* Guidelines for source testing are detailed in the following sections. These guidelines are generally applicable; however, most sample sites differ to some degree and temporary alterations such as stack extensions or expansions often are required to insure the best possible sample site. Further, since Be is hazardous, care should be taken to minimize exposure. Finally, since the total quantity of Be to be collected is quite small, the test must be carefully conducted to prevent contamination or loss of sample.

4.1 Selection of a Sampling Site and Number of Sample Runs. Select a suitable sample site that is as close as practicable to the point of atmospheric emission. If possible, stacks smaller than 1 foot in diameter should not be sampled.

4.1.1 Ideal Sampling Site. The ideal sampling site is at least eight stack or duct diameters downstream and two diameters upstream from any flow disturbance such as a bend, expansion or contraction. For rectangular cross sections, use Equation 103–1 to determine an equivalent diameter, D_e.

Eq. 103–1

$$D_e = \frac{2LW}{L+W}$$

Where:
L = length
W = width

4.1.2 Alternate Sampling Site. Some sampling situations may render the above sampling site criteria impractical. In such cases, select an alternate site no less than two diameters downstream and one-half diameter upstream from any point of flow disturbance. Additional sample runs are recommended at any sample site not meeting the criteria of Section 4.1.1.

4.1.3 Number of Sample Runs Per Test. Three sample runs constitute a test. Conduct each run at one of three different points. Select three points that proportionately divide the diameter, or are located at 25, 50, and 75 percent of the diameter from the inside wall. For horizontal ducts, sample on a vertical line through the centroid. For rectangular ducts, sample on a line through the centroid and parallel to a side. If additional sample runs are performed per Section 4.1.2, proportionately divide the duct to accommodate the total number of runs.

4.2 Measurement of Stack Conditions. Using the equipment described in Section 2.2, measure the stack gas pressure, moisture, and temperature to determine the molecular weight of the stack gas. Sound engineering estimates may be made in lieu of direct measurements. Describe the basis for such estimates in the test report.

4.3 Preparation of Sampling Train. Assemble the sampling train as shown in Figure 103–1. It is recommended that all glassware be precleaned by soaking in wash acid for 2 hours.

Leak check the sampling train at the sampling site. The leakage rate should not be in excess of 1 percent of the desired sample rate.

4.4 Beryllium Train Operation. For each run, measure the velocity at the selected sampling point. Determine the isokinetic sampling rate. Record the velocity head and the required sampling rate. Place the nozzle at the sampling point with the tip pointing directly into the gas stream. Immediately

start the pump and adjust the flow to isokinetic conditions. At the conclusion of the test, record the sampling rate. Again measure the velocity head at the sampling point. The required isokinetic rate at the end of the period should not have deviated more than 20 percent from that originally calculated. Describe the reason for any deviation beyond 20 percent in the test report.

Sample at a minimum rate of 14 lpm (0.5 cfm). Obtain samples over such a period or periods of time as are necessary to determine the maximum emissions which would occur in a 24-hour period. In the case of cyclic operations, perform sufficient sample runs so as to allow determination or calculation of the emissions that occur over the duration of the cycle. A minimum sampling time of 2 hours per run is recommended.

4.5 Sample Recovery. It is recommended that all glassware be precleaned as in Section 4.3. Sample recovery should also be performed in an area free of possible Be contamination. When the sampling train is moved, exercise care to prevent breakage and contamination. Set aside a portion of the acetone used in the sample recovery as a blank for analysis. The total amount of acetone used should be measured for accurate blank correction. Blanks can be eliminated if prior analysis shows negligible amounts.

Remove the filter (and backup filter, if used) and any loose particulate matter from filter holder, and place in a container.

Clean the probe with acetone and a brush or long rod and cotton balls. Wash into the container with the filter. Wash out the filter holder with acetone, and add to the same container.

4.6 Analysis. Make the necessary preparation of samples and analyze for Be. Any currently acceptable method such as atomic absorption, spectrographic, fluorometric, chromatographic, or equivalent may be used.

5. *Calibration and Standards.*

5.1 Sampling Train. As a procedural check, compare the sampling rate regulation with a dry gas meter, spirometer, rotameter (calibrated for prevailing atmospheric conditions), or equivalent, attached to the nozzle inlet of the complete sampling train.

5.2 Analysis. Perform the analysis standardization as suggested by the manufacturer of the instrument, or the procedures for the analytical method in use.

6. *Calculations.*

Calculate the Be emission rate R in g/day for each stack using Equation 103–2. For cyclic operations, use only the time per day each stack is in operation. The total Be emission rate from a source is the summation of results from all stacks.

Eq. 103–2

$$R = \frac{W_t \cdot v_s(avg)\ A_s\ (86{,}400 \times 10^{-6})}{V_{total}}$$

Where:

W_t = Total weight of Be collected, μg.

$v_s(avg)$ = Average stack gas velocity, m/sec (ft/sec).

$A_s(avg)$ = Stack area, m^2 (ft^2).

86,400 = Conversion factor, sec/day.

10^{-6} = Conversion factor, $g/\mu g$.

V_{total} = Total volume of gas sampled, m^3 (ft^3).

7. *Test Report.*

Prepare a test report that includes as a minimum: A detailed description of the sampling train used, results of the procedural check described in Section 5.1 with all data and calculations made, all pertinent data taken during the test, the basis for any estimates made, isokinetic sampling calculations, and emission results. Include a description of the test site, with a block diagram and brief description of the process, location of the sample points in the stack cross section, and stack dimensions and distances from any point of disturbance.

Method 104—Reference Method for Determination of Beryllium Emissions From Stationary Sources[89]

1. *Applicability and Principle.*

1.1 Applicability. This method is applicable for the determination of beryllium (Be) emissions in ducts or stacks at stationary sources. Unless otherwise specified, this method is not intended to apply to gas streams other than those emitted directly to the atmosphere without further processing.

1.2 Principle. Be emissions are isokinetically sampled from the source, and the collected sample is digested in an acid solution and analyzed by atomic absorption spectrophotometry.

2. *Apparatus.*

2.1 Sampling Train. The sampling train is identical to the Method 5 train as shown in Figure 5–1 (mention of Method 5 refers to 40 CFR Part 60). The sampling train consists of the following components:

2.1.1 Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.1, 2.1.3, 2.1.4, 2.1.8, 2.1.9, and 2.1.10, respectively.

2.1.2 Probe Liner. Borosilicate or quartz glass tubing. The tester may use a heating system capable of maintaining a gas temperature of 120±14°C (248±25°F) at the probe exit during sampling to prevent water condensation. *Note:* Do not use metal probe liners.

2.1.3 Filter Holder. Borosilicate glass, with a glass frit filter support and a silicone rubber gasket. Other materials of construction (e.g., stainless steel, Teflon, Viton) may be used, subject to the approval of the Administrator. (*Note*: Mention of trade names of specific products does not constitute endorsement by the Environmental Protection Agency.) The holder design shall provide a positive seal against leakage from the outside or around the filter. The holder shall be attached immediately at the outlet of the probe. A heating system capable of maintaining the filter at a minimum temperature in the range of the stack temperature may be used to prevent condensation from occurring.

2.1.4 Impingers. Four Greenburg-Smith impingers connnected in series with leak-free ground glass fittings or any similar leak-free noncontaminating fittings. For the first, third, and fourth impingers, the tester may use impingers that are modified by replacing the tip with a 13-mm-ID (0.5-in.) glass tube extending to 13 mm (0.5 in.) from the bottom of the flask.

2.2 Sample Recovery. The following items are needed:

2.2.1 Probe Cleaning Rod. At least as long as probe.

2.2.2 Glass Sample Bottles. Leakless, with Teflon-lined caps, 500-ml.

2.2.3 Graduated Cylinder. 250-ml.

2.2.4 Funnel and Rubber Policeman. To aid in transfer of silica gel to container; not necessary if silica gel is weighed in the field.

2.2.5 Funnel. Glass, to aid in sample recovery.

2.2.6 Plastic Jar. Approximately 500-ml.

2.3 Analysis. The following equipment is needed:

2.3.1 Atomic Absorption Spectrophotometer. Perkin-Elmer 303, or equivalent, with nitrous oxide/acetylene burner.

2.3.2 Hot Plate.

2.3.3 Perchloric Acid Fume Hood.

3. *Reagents.*

Use ACS reagent-grade chemicals or equivalent, unless otherwise specified.

3.1 Sampling and Recovery. The reagents used in sampling and recovery are as follows:

3.1.1 Filter. Millipore AA, or equivalent. It is suggested that a Whatman 41 filter or equivalent be placed immediately against the back side of the Millipore filter as a guard against breaking the Millipore filter. To be equivalent, other filters shall exhibit at least 99.95 percent efficiency (0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles. The filter efficiency tests shall be conducted in accordance with ASTM Standard Method D 2986–71 (reapproved 1978) (incorporated by reference—see § 61.18). Test data from the supplier's quality control program are sufficient for this purpose.

3.1.2 Water. Deionized distilled, meeting ASTM Specifications for Type 3 Reagent Water—ASTM Test Method D 1193–77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter.

3.1.3 Silica Gel. Indicating type, 6- to 16-mesh. If previously used, dry at 175° C (350° F) for 2 hours. The tester may use new silica gel as received.

3.1.4 Acetone.

3.1.5 Wash Acid, 50 Percent (V/V) Hydrochloric Acid (HCl).

Mix equal volumes of concentrated HCl and water, being careful to add the acid slowly to the water.

3.2 Sample Preparation and Analysis. The reagents needed are listed below:

3.2.1 Water. Same as Section 3.1.2.

3.2.2. Perchloric Acid ($HClO_4$). Concentrated (70 percent).

3.2.3 Nitric Acid (HNO_3). Concentrated.

3.2.4 Beryllium Powder. Minimum purity 98 percent.

3.2.5 Sulfuric Acid (H_2SO_4) Solution, 12 N. Dilute 33 ml of concentrated H_2SO_4 to 1 liter with water.

3.2.6 Hydrochloric Acid Solution, 25 percent HCl (V/V).

3.2.7 Standard Beryllium Solution, 1 μg Be/ml. Dissolve 10 mg of Be in 80 ml of 12N H_2SO_4 solution, and dilute to 1000 ml with water. Dilute a 10-ml aliquot to 100 ml with 25 percent HCl solution to give a concentration of 1 μg/ml. Prepare this dilute stock solution fresh daily. Equivalent strength Be stock solutions may be prepared from Be salts such as $BeCl_2$ and $Be(NO_3)_2$ (98 percent minimum purity).

4. *Procedure.*

4.1 Sampling. Because of the complexity of this method testers should be trained and experienced with the test procedures to ensure reliable results. As Be is hazardous, testers should take precautions to minimize exposure. The amount of Be that is collected is generally small, therefore, it is necessary to exercise particular care to prevent contamination or loss of sample.

4.1.1 Pretest Preparation. Follow the general procedure given in Method 5, Section 4.1.1. Omit the directions of filters, except check them visually against light for irregularities and flaws such as pinholes.

4.1.2 Preliminary Determinations. Follow the general procedure given in Method 5, Section 4.1.2, except as follows: Select a nozzle size based on the range of velocity heads to assure that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates below 28 liters/min (1.0 cfm).

Obtain samples over a period or periods of time that accurately determine the maximum emissions that occur in a 24-hour period. In the case of cyclic operations, perform sufficient sample runs for the accurate determination of the emissions that occur over the duration of the cycle. A minimum sample time of 2 hours per run is recommended.

4.1.3 Prior to assembly, clean all glassware (probe, impingers, and connectors) by first soaking in wash acid for 2 hours, followed by rinsing with water. Place 100 ml of water in each of the first two impingers, and leave the third impinger empty. Save a portion of the water for a blank analysis. Place approximately 200 g of preweighted silica gel in the fourth impinger. The tester may use more silica gel, but should be careful to ensure that it is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place for later use in the sample recovery. As an alternative, determine and record the weight of the silica gel plus impinger to the nearest 0.5 g.

Install the selected nozzel using a Viton A O-ring when stack temperatures are less the 260°C (500°F). Use a fiberglass string gasket if temperatures are higher. See APTD–0576 (Citation 9 in Section 10 of Method 101) for details. Other connecting systems using either 316 stainless steel or Teflon ferrules may be used.

If condensation in the probe or filter is a problem, probe and filter heaters will be required. Adjust the heaters to provide a temperature at or above the stack temperature. However, membrane filters such as the Millipore AA are limited to about 225°F. If the stack gas is in excess of about 200°F, consideration should be given to an alternate procedure such as moving the filter holder downstream of the first impinger to insure that the filter does not exceed its temperature limit. Mark the probe with heat resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point. Assemble the train as shown in Figure 5–1 of Method 5, using (if necessary) a very light coat of silicone grease on all ground glass joints. Grease only the outer portion (see APTD–0576) to avoid possibility of contamination by the silicon grease. *Note:* An empty impinger may be inserted between the third impinger and the silica gel to remove excess moisture from the sample stream.

After the sampling train has been assembled, turn on and set the probe, if applicable, at the desired operating

temperature. Allow time for the temperatures to stabilize. Place crushed ice around the impingers.

4.1.4. Leak-Check Procedures. Follow the leak-check procedures outlined in Method 5, Sections 4.1.4.1 (Pretest Leak Check), 4.1.4.2 (Leak Checks During Sample Run), and 4.1.4.3 (Post-Test Leak Check).

4.1.5 Beryllium Train Operation. Follow the general procedure given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

4.1.6 Calculation of Percent Isokinetic Same as Method 5, Section 4.1.6.

4.2 Sample Recovery. Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period.

Allow the probe to cool. When it can be safely handled, wipe off any external particulate matter near the tip of the probe nozzle, and place a cap over it. Do not cap off the probe tip tightly while the sampling train is cooling. Capping would create a vacuum and draw liquid out from the impingers.

Before moving the sampling train to the cleanup site, remove the probe from the train, wipe off the silicone grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the impinger. Use either ground-glass stoppers, plastic caps, or serum caps to close these openings.

Transfer the probe and impinger assembly to a cleanup area that is clean, protected from the wind, and free of Be contamination

Inspect the train before and during this assembly, and note any abnormal conditions. Treat the sample as follows:

Disconnect the probe from the impinger train. Remove the filter and any loose particulate matter from the filter holder, and place in a sample bottle. Place the contents (measured to ±1 ml) of the first three impingers into another sample bottle. Rinse the probe and all glassware between it and the back half of the third impinger with water and acetone, and add this to the latter sample bottle. Clean the probe with a brush or a long slender rod and cotton balls. Use acetone while cleaning. Add these to the sample bottle. Retain a sample of the water and acetone as a blank. The total amount of water and acetone used should be measured for accurate blank correction. Place the silica gel in the plastic jar. Seal and secure all sample containers for shipment. If an additional test is desired, the glassware can be carefully double rinsed with water and reassembled. However, if the glassware is out of use more than 2 days, repeat the initial acid wash procedure.

4.3 Analysis.

4.3.1 Apparatus Preparation. Before use, clean all glassware according to the procedure of Section 4.1.3. Adjust the instrument settings according to the instrument manual, using an absorption wavelength of 234.8 nm.

4.3.2 Sample Preparation. The digestion of Be samples is accomplished in part in concentrated $HClO_4$. *Caution:* The analyst must insure that the sample is heated to light brown fumes after the initial HNO_3 addition; otherwise, dangerous perchlorates may result from the subsequent $HClO_4$ digestion. $HClO_4$ should be used only under a hood.

4.3.2.1 Filter Preparation. Transfer the filter and any loose particulate matter from the sample container to a 150-ml beaker. Add 35 ml concentrated HNO_3. Heat on a hotplate until light brown fumes are evident to destroy all organic matter. Cool to room temperature, and add 5 ml concentrated H_2SO_4 and 5 ml concentrated $HClO_4$. Then proceed with step 4.3.2.4.

4.3.2.2 Water Preparation. Place a portion of the water and acetone sample into a 150-ml beaker, and put on a hotplate. Add portions of the remainder as evaporation proceeds and evaporate to dryness. Cool the residue, and add 35 ml concentrated HNO_3. Heat on a hotplate until light brown fumes are evident to destroy any organic matter. Cool to room temperature, and add 5 ml concentrated H_2SO_4 and 5 ml concentrated $HClO_4$. Then proceed with step 4.3.2.4.

4.3.2.3 Silica Gel Preparation Analyses. Weigh the spent silica gel, and report to the nearest gram.

4.3.2.4 Final Sample Preparation. Samples from 4.3.2.1 and 4.3.2.2 may be combined here for ease of analysis. Replace on a hotplate, and evaporate to dryness in a $HClO_4$ hood. Cool and dissolve the residue in 10.0 ml of 25 percent V/V HCl. Samples are now ready for the atomic absorption unit. It is necessary for the Be concentration of the sample to be within the calibration range of the unit. If necessary, perform further dilution of sample with 25 percent V/V HCl to bring the sample within the calibration range.

4.3.3 Beryllium Determination. Analyze the samples prepared in 4.3.2 at 234.8 nm using a nitrous oxide/acetylene flame. Aluminum, silicon and other elements can interfere with this method if present in large quantities. Standard methods are available, however, that may be used to effectively eliminate these interferences (see Citation 2 in Section 8).

5. *Calibration.*

5.1 Sampling Train. Calibrate the sampling train components according to the procedures outlined in the following sections of Method 5: Section 5.1 (Probe Nozzle), Section 5.2 (Pitot Tube), Section 5.3 (Metering System), Section 5.4 (Probe Heater), Section 5.5 (Temperature Gauges), Section 5.7 (Barometer). Note that the leak check described in Section 5.6 of Method 5 applies to this method.

6. *Calculations.*

6.1 Dry Gas Volume. Using the data from each sample run, calculate the dry gas sample volume at standard conditions $V_{m(std)}$ (corrected for leakage, if necessary) as outlined in Section 6.3 of Method 5.

6.2 Volume of Water Vapor in Sample and Moisture Content of Stack Gas. Using the data obtained from each sample run, calculate the volume of water vapor $V_{w(std)}$ in the sample, and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

6.3 Stack Gas Velocity. Using the data from each sample run and Equation 2-9 of Method 2, calculate the average stack gas velocity $v_{s(avg)}$.

6.4 Beryllium Emission Rate. Calculate the Be emission rate R in g/day for each stack using Equation 104-1. For cyclic operations, use only the time per day each stack is in operation. The total Be emission rate from a source will be the summation of results from all stacks.

Eq. 104-1

$$R = K \frac{W_t v_{s(avg)} A_s (86{,}400 \times 10^{-6})}{[V_{m(std)} + V_{w(std)}](T_s/P_s)}$$

Where:

W_t = Total weight of Be collected, μg.

A_s = Stack cross-sectional area, M^2 (ft^2).

86,400 = Conversion factor, sec/day.

10^{-6} = Conversion factor, g/μg.

T_s = Absolute average stack gas temperature, °K (°P).

P_s = Absolute stack gas pressure, mm Hg (in. Hg).

K = 0.3858 °K/mm Hg for metric units.
= 17.64 °P/in. Hg for English units.

6.5 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

7. *Determination of Compliance.* Each performance test consists of three sample runs of the applicable test method. For the purpose of determining compliance with an applicable national emission standard, use the average of the results of all sample runs.

8. *Bibliography.*

In addition to Citations 1-3 and 5-15 of Section 10 of Method 101, the following citations may be helpful:

1. Amos, M.D., and J. B. Willis. Use of High-Temperature Pre-Mixed Flames in Atomic Absorption Spectroscopy. Spectrochim. Acta. *22*:1325. 1966.

2. Fleet, B., K. V. Liberty, and T. S. West. A Study of Some Matrix Effects in the Determination of Beryllium by Atomic Absorption Spectroscopy in the Nitrous Oxide-Acetylene Flame. Talanta *17*:203. 1970.

1. *Applicability and Principle.* 1.1 Applicability. This method applies to the determination of total organic and inorganic mercury (Hg) content in sewage sludges. The range of this method is 0.2 to 5 μg/g; it may be extended by increasing or decreasing sample size.

1.2 Principle. Time-composite sludge samples are withdrawn from the conveyor belt after dewatering and before incineration or drying. A weighed portion of the sludge is digested in aqua regia and oxidized by potassium permanganate ($KMnO_4$). Hg in the digested sample is then measured by the conventional spectrophotometric cold-vapor technique.

2. *Apparatus.* 2.1 Sampling.

2.1.1 Container. Plastic, 50-liter.

2.1.2 Scoop. To remove 950-ml (1-qt.) sludge sample.

2.2 Sludge Sample Preparation.

2.2.1 Mixer. Mortar mixer, wheelbarrow-type, 57-liter (or equivalent) with electricity driven motor.

2.2.2 Blender. Waring-type, 2-liter. (Note: Mention of specific trade names does not constitute endorsement by the Environmental Protection Agency.)

2.2.3 Scoop. To remove 100-ml and 20-ml samples of blended sludge.

2.3 Analysis. Same as Method 101, Sections 5.3 and 5.4, except for the following:

2.3.1 Balance. The balance of Method 101, Section 5.3.17, is not needed.

2.3.2 Filter Paper. S and S No. 588 (or equivalent).

3. *Reagents.* 3.1 Water. Same as Method 101A, Section 6.1.1.

3.2 Aqua Regia. Prepare immediately before use. Carefully add one volume of concentrated nitric acid (HNO_3) to three volumes of concentrated hydrochloric acid (HCl).

3.3 Antifoam B Silicon Emulsion. J.T. Baker Company (or equivalent).

3.4 Mercury (II) Stock Solution, 1 mg Hg/ml. Completely dissolve 135.4 mg of ACS reagent-grade $HgCl_2$ in 75 ml of water, add 10 ml of concentrated HNO_3, and adjust the volume to 100.0 ml with water. Mix thoroughly. (This solution is stable for at least 1 month.)

3.5 Intermediate Mercury Standard Solution, 10 μg Hg/ml. Prepare fresh weekly. Pipet 5.0 ml of the Hg stock solution into a 500-ml volumetric flask, and add 20 ml of the 15-percent HNO_3 solution. Adjust the volume to 500 ml with water. Thoroughly mix the solution.

3.6 Working Mercury Standard Solution, 200 ng Hg/ml. Prepare fresh daily. Pipet 5.0 ml of the "Intermediate Mercury Standard Solution" into a 250-ml volumetric flask. Add 20 ml of 15-percent HNO_3, and adjust the volume to 250 ml with water. Mix thoroughly.

3.7 Tin (II) Solution, Sodium Chloride-Hydroxylamine Solution, 15-Percent Nitric Acid, and Potassium Permanganate Solution. Same as Method 101A, Section 6.2.

4. *Procedure.* 4.1 Sludge Sampling. Withdraw equal-volume increments of sludge (for a total of at least 15 liters (10-qt.)) at intervals of 30 min over an 8-hr period, and place in a rigid plastic container.

4.2 Sludge Mixing. Transfer the entire 15-liter sample to a 57-liter capacity (2-ft³) mortar mixer. Mix the sample for a minimum of 30 min at 30 rpm. Using a 250-ml beaker, take six 100-ml portions of sludge, and combine in a 2-liter blender. Blend sludge for 5 min; add water as necessary to give a fluid consistency. Immediately after stopping the blender, use a 50-ml beaker to withdraw four 20-ml portions of blended sludge, and place them in separate, tared 125-ml Erlenmeyer flasks. Reweigh each flask to determine the exact amount of sludge added. (Use three of the samples to determine the mercury content in the sludge, and use the fourth to measure the solids content of the blended sludge.)

4.3 Solids Content of Blended Sludge. Dry one of the 20-ml blended samples from Section 4.2 in an oven at 105 °C to constant weight. Cool in a desiccator, and weigh and record the dry weight of the sample.

4.4 Aqua Regia Digestion of Blended Samples. To each of the three remaining 20-ml samples from Section 4.2, add 25 ml of aqua regia, and digest the samples on a hot plate at low heat (do not boil) for 30 min, or until samples are a pale yellow-brown color and are void of the dark brown color characteristic of organic matter. Remove from the hot plate, and allow to cool.

Filter each digested sample separately through an S and S No. 588 filter, or equivalent, and rinse the filter contents with 50 ml of water. Transfer the filtrate and filter washing to a 100-ml volumetric flask, and carefully dilute to volume with water.

4.5 Solids Content of Sludge Before Blending. Using a 250-ml beaker, remove two 100-ml portions of mixed sludge from the mortar mixer, and place in separate, tared 400-ml beakers. Reweigh each beaker to determine the exact amount of sludge added. Dry in an oven at 105 °C, and cool in a desiccator to constant weight.

4.6 Analysis for Mercury. The same as Method 101A, Sections 7.4 and 8, except for the following variation.

4.6.1 Spectrophotometer and Recorder Calibration. The mercury response may be measured by either peak height or peak area. Note: The temperature of the solution affects the rate at which elemental Hg is released from solution and, consequently, it affects the shape of the absorption curve (area) and the point of maximum absorbance (peak height). Therefore, to obtain reproducible results, bring all solutions to room temperature before use.

Set the spectrophotometer wavelength to 253.7 nm. Make certain the optical cell is at the minimum temperature that will prevent water condensation from occurring. Then set the recorder scale as follows: Using a 25-ml graduated cylinder, add 25 ml of water to the aeration-cell bottle. Add three drops of Antifoam B to the bottle, and then pipet 5.0 ml of the working Hg standard solution into the aeration cell.

Note.—Always add the Hg containing solution to the aeration cell after the 25 ml of water.

Place a Teflon-coated stirring bar in the bottle. Add 5 ml of 15-percent HNO_3 and 5 ml of 5-percent $KMnO_4$ to the aeration bottle, and mix well. Next, attach the bottle section to the bubbler section of the aeration cell, and make certain that: (1) the exit arm stopcock of the aeration cell (Figure 105-3) is closed (so that Hg will not prematurely enter the optical cell when the reducing agent is being added), and (2) there is no flow through the bubbler. Add 5 ml of sodium chloride-hydroxylamine solution to the aeration bottle through the side arm, and mix. If the solution does not become colorless, add additional sodium chloride-hydroxylamine solution in 1-ml increments until the solution is colorless. Now add 5 ml of tin (II) solution to the aeration bottle through the side arm, and immediately stopper the side arm. Stir the solution for 15 sec, turn on the recorder, open the aeration cell exit arm stopcock, and then immediately initiate aeration with continued stirring. Determine the maximum absorbance of the standard, and set this value to read 80 percent of the recorder full scale.

5. *Calculations.*

5.1 Nomenclature.

C_D = Concentration of Hg in the digested sample, μg/g.

F_D = Weight fraction of solids in the blended sludge.

F_m = Weight fraction of solids in the collected sludge after mixing.

M = Hg content of the sewage sludge (on a dry basis), μg/g.

m = Mass of Hg in the aliquot of digested sample analyzed, μg.

V_a = Volume of digested sample analyzed, ml.

V_s = Volume of digested sample, ml.

W_f = Weight of empty sample flask, g.

W_b = Weight of sample flask and sample, g.

W_D = Weight of sample flask and sample after drying, g.

W_b = Weight of empty sample beaker, g.

W_b = Weight of sample beaker and sample, g.

W_D = Weight of sample beaker and sample after drying, g.

5.2 Mercury Content of Digested Sample (Wet Basis). For each sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agree with ±3 percent of their average for the contribution of the blank. Use the calibration curve and these corrected averages to determine the final Hg concentration in the solution cell for each sludge sample.

Calculate the total Hg content in each gram of digested sample correcting for any dilutions made to bring the sample into the working range of the spectrophotometer and for the weight of the sludge portion digested.

$$C_D = \frac{mV_s}{V_a(W_b - W_f)} \qquad \text{Eq. 105-1}$$

5.3 Solids Content of Blended Sludge. Determine the solids content of the 20-ml aliquot dried in the oven at 105 °C (Section 4.3).

$$F_{sb} = 1 - \frac{W_b - W_{bd}}{W_b - W_f} \quad \text{Eq. 105-2}$$

5.4 Solids Content of Bulk Sample (after mixing in mortar mixer). Determine the solids content of each 100-ml aliquot (Section 4.5), and average the results.

$$F_{sm} = 1 - \frac{W_{bs} - W_{bd}}{W_{bs} - W_b} \quad \text{Eq. 105-3}$$

5.5 Mercury Content of Bulk Sample (Dry Basis). Average the results from the three samples from each 8-hr composite sample, and calculate the Hg concentration of the composite sample on a dry basis.

$$M = \frac{C_m(\text{avg})}{F_{sb}} \quad \text{Eq. 105-4}$$

6. *Bibliography.*

1. Bishop, J.N. Mercury in Sediments, Ontario Water Resources Commission. Toronto, Ontario, Canada. 1971.

2. Salma, M. Private Communication. EPA California/Nevada Basin Office. Alameda, California.

3. Hatch, W.R. and W.L. Ott. Determination of Sub-Microgram Quantities of Mercury by Atomic Absorption Spectrophotometry. Analytical Chemistry. *40*:2085. 1968.

4. Bradenberger, H. and H. Bader. The Determination of Nanogram Levels of Mercury in Solution by a Flameless Atomic Absorption Technique. Atomic Absorption Newsletter. *6*:101. 1967.

5. Analytical Quality Control Laboratory (AQCL). Mercury in Sediment (Cold Vapor Technique) (Provisional Method). U.S. Environmental Protection Agency. Cincinnati, Ohio. April 1972.

6. Kopp, J.F., M.C. Longbottom, and L.B. Lobring. "Cold Vapor" Method for Determining Mercury. Journal AWWA. *64*(1):20-25. 1972.

7. Manual of Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency. Cincinnati, Ohio. Publication No. EPA-624/2-74-003. December 1974. p. 118-138.

8. Mitchell, W.J., M.R. Midgett, J. Suggs, R.J. Velton, and D. Albrinch. Sampling and Homogenizing Sewage for Analysis. Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. Environmental Protection Agency. Research Triangle Park, N.C. March 1979. 7 p.

Method 106—Determination of Vinyl Chloride From Stationary Sources [70]

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC) nor by those who are unfamiliar with source sampling, because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. Applicability and Principle

1.1 Applicability. The method is applicable to the measurement of vinyl chloride in stack gases from ethylene dichloride, vinyl chloride, and polyvinyl chloride manufacturing processes. The method does not measure vinyl chloride contained in particulate matter.

1.2 Principle. An integrated bag sample of stack gas containing vinyl chloride (chloroethene) is subjected to GC analysis using a flame ionization detector (FID).

2. Range and Sensitivity

This method is designed for the 0.1 to 50 ppm range. However, common GC instruments are capable of detecting 0.02 ppm vinyl chloride. With proper calibration, the upper limit may be extended as needed.

3. Interferences

The chromatographic columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride; however, resolution interferences may be encountered on some sources. Therefore, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis requirements, subject to the approval of the Administrator. Approval is automatic, provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. Apparatus

4.1 Sampling (see Figure 106–1). The sampling train consists of the following components:

4.1.1 Probe. Stainless steel, Pyrex glass, or Teflon tubing (as stack temperature permits) equipped with a glass wool plug to remove particulate matter.

4.1.2 Sample Lines. Teflon, 6.4-mm outside diameter, of sufficient length to connect probe to bag. Use a new unused piece for each series of bag samples that constitutes an emission test, and discard upon completion of the test.

4.1.3 Quick Connects. Stainless steel, male (2) and female (2), with ball checks (one pair without), located as shown in Figure 106–1.

4.1.4 Tedlar Bags. 50- to 100-liter capacity, to contain sample. Aluminized Mylar bags may be used if the samples are analyzed within 24 hours of collection.

4.1.5 Bag Containers. Rigid leak-proof containers for sample bags, with covering to protect contents from sunlight.

4.1.6 Needle Valve. To adjust sample flow rates.

4.1.7 Pump. Leak-free, with minimum of 2-liter/min capacity.

4.1.8 Charcoal Tube. To prevent admission of vinyl chloride and other organics to the atmosphere in the vicinity of samplers.

4.1.9 Flowmeter. For observing sampling flow rate; capable of measuring a flow range from 0.10 to 1.00 liter/min.

4.1.10 Connecting Tubing. Teflon, 6.4-mm outside diameter, to assemble sampling train (Figure 106–1).

4.1.11 Tubing Fittings and Connectors. Teflon or stainless steel, to assemble sampling train.

4.2 Sample Recovery. Teflon tubing, 6.4-mm outside diameter, to connect bag to GC sample loop for sample recovery. Use a new unused piece for each series of bag samples that constitutes an emission test, and discard upon conclusion of analysis of those bags.

4.3 Analysis. The following equipment is required:

4.3.1 Gas Chromatograph. With FID, potentiometric strip chart recorder and 1.0- to 5.0-ml heated sampling loop in automatic sample valve. The chromatographic system shall be capable of producing a response to 0.1-ppm vinyl chloride that is at least as great as the average noise level. (Response is measured from the average value of the base line to the maximum of the wave form, while standard operating conditions are in use.)

4.3.2 Chromatographic Columns. Columns as listed below. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interferent peak. Calculation of area overlap is explained in Appendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.")

4.3.2.1 Column A. Stainless steel, 2.0 m by 3.2 mm, containing 80/100-mesh Chromasorb 102.

4.3.2.2 Column B. Stainless steel, 2.0 m by 3.2 mm, containing 20 percent GE SF-96 on 60/80-mesh Chromasorb P AW; or stainless steel, 1.0 m by 3.2 mm containing 80/100-mesh Porapak T. Column B is required as a secondary column if acetaldehyde is present. If used, column B is placed after column A. The combined columns should be operated at 120° C.

4.3.3 Flowmeters (2). Rotameter type, 100-ml/min capacity, with flow control valves.

4.3.4 Gas Regulators. For required gas cylinders.

4.3.5 Thermometer. Accurate to 1° C, to measure temperature of heated sample loop at time of sample injection.

4.3.6 Barometer. Accurate to 5 mm Hg, to measure atmospheric pressure around GC during sample analysis.

4.3.7 Pump. Leak-free, with minimum of 100-ml/min capacity.

4.3.8 Recorder. Strip chart type, optionally equipped with either disc or electronic integrator.

4.3.9 Planimeter. Optional, in place of disc or electronic integrator on recorder, to measure chromatograph peak areas.

4.4 Calibration. Sections 4.4.2 through 4.4.4 are for the optional procedure in Section 7.1.

4.4.1 Tubing. Teflon, 6.4-mm outside diameter, separate pieces marked for each calibration concentration.

4.4.2 Tedlar Bags. Sixteen-inch-square size, with valve; separate bag marked for each calibration concentration.

4.4.3 Syringes. 0.5-ml and 50-μl, gas tight, individually calibrated to dispense gaseous vinyl chloride.

4.4.4 Dry Gas Meter, with Temperature and Pressure Gauges. Singer model DTM–115 with 802 index, or equivalent, to meter nitrogen in preparation of standard gas mixtures, calibrated at the flow rate used to prepare standards.

5. Reagents

Use only reagents that are of chromatograph grade.

5.1 Analysis. The following are required for analysis.

5.1.1 Helium or Nitrogen. Zero grade, for chromatographic carrier gas.

5.1.2 Hydrogen. Zero grade.

5.1.3 Oxygen or Air. Zero grade, as required by the detector.

5.2 Calibration. Use one of the following options: either 5.2.1 and 5.2.2, or 5.2.3.

5.2.1 Vinyl Chloride. Pure vinyl chloride gas certified by the manufacturer to contain a minimum of 99.9 percent vinyl chloride, for use in the preparation of standard gas mixtures in Section 7.1. If the gas manufacturer maintains a bulk cylinder supply of 99.9+ percent vinyl chloride, the certification analysis may have been performed on this supply rather than on each gas cylinder prepared from this bulk supply. The date of gas cylinder preparation and the certified analysis must have been affixed to the cylinder before shipment from the gas manufacturer to the buyer.

5.2.2 Nitrogen. Zero grade, for preparation of standard gas mixtures as described in Section 7.1.

5.2.3 Cylinder Standards (3). Gas mixture standards (50-, 10-, and 5-ppm vinyl chloride in nitrogen cylinders). The tester may use cylinder standards to directly prepare a chromatograph calibration curve as described in Section 7.2.2, if the following conditions are met: (a) The manufacturer certifies the gas composition with an accuracy of ±3 percent or better (see Section 5.2.3.1). (b) The manufacturer recommends a maximum shelf life over which the gas concentration does not change by greater than ±5 percent from the certified value. (c) The manufacturer affixes the date of gas cylinder preparation, certified vinyl chloride

concentration, and recommended maximum shelf life to the cylinder before shipment to the buyer.

5.2.3.1 Cylinder Standards Certification. The manufacturer shall certify the concentration of vinyl chloride in nitrogen in each cylinder by (a) directly analyzing each cylinder and (b) calibrating his analytical procedure on the day of cylinder analysis. To calibrate his analytical procedure, the manufacturer shall use, as a minimum, a three-point calibration curve. It is recommended that the manufacturer maintain (1) a high-concentration calibration standard (between 50 and 100 ppm) to prepare his calibration curve by an appropriate dilution technique and (2) a low-concentration calibration standard (between 5 and 10 ppm) to verify the dilution technique used. If the difference between the apparent concentration read from the calibration curve and the true concentration assigned to the low-concentration calibration standard exceeds 5 percent of the true concentration, the manufacturer shall determine the source of error and correct it, then repeat the three-point calibration.

5.2.3.2 Verification of Manufacturer's Calibration Standards. Before using a standard, the manufacturer shall verify each calibration standard (a) by comparing it to gas mixtures prepared (with 99 mole percent vinyl chloride) in accordance with the procedure described in Section 7.1 or (b) calibrating it against vinyl chloride cylinder Standard Reference Materials (SRM's) prepared by the National Bureau of Standards, if such SRM's are available. The agreement between the initially determined concentration value and the verification concentration value must be within ±5 percent. The manufacturer must reverify all calibration standards on a time interval consistent with the shelf life of the cylinder standards sold.

5.2.4 Audit Cylinder Standards (2). Gas mixture standards with concentrations known only to the person supervising the analysis of samples. The audit cylinder standards shall be identically prepared as those in Section 5.2.3 (vinyl chloride in nitrogen cylinders). The concentrations of the audit cylinder should be: one low-concentration cylinder in the range of 5 to 20 ppm vinyl chloride and one high-concentration cylinder in the range of 20 to 50 ppm. When available, the tester may obtain audit cylinders by contacting: Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Quality Assurance Division (MD–77), Research Triangle Park, North Carolina 27711. Audit cylinders obtained from a commercial gas manufacturer may be used provided: (a) the gas manufacturer certifies the audit cylinder as described in Section 5.2.3.1, and (b) the gas manufacturer obtains an independent analysis of the audit cylinders to verify this analysis. Independent analysis is defined here to mean analysis performed by an individual different than the individual who performs the gas manufacturer's analysis, while using calibration standards and analysis equipment different from those used for the gas manufacturer's analysis. Verification is complete and acceptable when the independent analysis concentration is within ±5 percent of the gas manufacturer's concentration.

6. Procedure

6.1 Sampling. Assemble the sample train as shown in Figure 106–1. A bag leak check should have been performed previously according to Section 7.3.2. Join the quick connects as illustrated, and determine that all connection between the bag and the probe are tight. Place the end of the probe at the centroid of the stack and start the pump with the needle valve adjusted to yield a flow that will fill over 50 percent of bag volume in the specific sample period. After allowing sufficient time to purge the line several times, change the vacuum line from the container to the bag and evacuate the bag until the rotameter indicates no flow. Then reposition the sample and vacuum lines and begin the actual sampling, keeping the rate proportional to the stack velocity. At all times, direct the gas exiting the rotameter away from sampling personnel. At the end of the sample period, shut off the pump, disconnect the sample line from the bag, and disconnect the vacuum line from the bag container. Protect the bag container from sunlight.

6.2 Sample storage. Keep the sample bags out of direct sunlight. When at all possible, analysis is to be performed within 24 hours, but in no case in excess of 72 hours of sample collection. Aluminized Mylar bag samples must be analyzed within 24 hours.

6.3 Sample Recovery. With a new piece of Teflon tubing identified for that bag, connect a bag inlet valve to the gas chromatograph sample valve. Switch the valve to receive gas from the bag through the sample loop. Arrange the equipment so the sample gas passes from the sample valve to 100-ml/min rotameter with flow control valve followd by a charcoal tube and a 1-in. H_2O pressure gauge. The tester may maintain the sample flow either by a vacuum pump or container pressurization if the collection bag remains in the rigid container. After sample loop purging is ceased, allow the pressure gauge to return to zero before activating the gas sampling valve.

6.4 Analysis. Set the column temperature to 100° C and the detector temperature to 150° C. When optimum hydrogen and oxygen flow rates have been determined, verify and maintain these flow rates during all chromatography operations. Using zero helium or nitrogen as the carrier gas, establish a flow rate in the range consistent with the manufacturer's requirements for satisfactory detector operation. A flow rate of approximately 40 ml/min should produce adequate separations. Observe the base line periodically and determine that the noise level has stabilized and that base line drift has ceased. Purge the sample loop for 30 seconds at the rate of 100 ml/min, shut off flow, allow the sample loop pressure to reach atmospheric pressure as indicated by the H_2O manometer, then activate the sample valve. Record the injection time (the position of the pen on the chart at the time of sample injection), sample number, sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator setting. Record the barometeric pressure. From the chart, note the peak having the retention time corresponding to vinyl chloride as determined in Section 7.2.1. Measure the vinyl chloride peak area, A_m, by use of a disc integrator, electronic integrator, or a planimeter. Measure and record the peak heights, H_m. Record A_m and retention time. Repeat the injection at least two times or until two consecutive values for the total area of the vinyl chloride peak do not vary more than 5 percent. Use the average value for these two total areas to compute the bag concentration.

Compare the ratio of H_m to A_m for the vinyl chloride sample with the same ratio for the standard peak that is closest in height. If these ratios differ by more than 10 percent, the vinyl chloride peak may not be pure (possibly acetaldehyde is present) and the secondary column should be employed (see Section 4.3.2.2).

6.5 Determination of Bag Water Vapor Content. Measure the ambient temperature and barometric pressure near the bag. From a water saturation vapor pressure table, determine and record the water vapor content of the bag as a decimal figure. (Assume the relative humidity to be 100 percent unless a lesser value is known.)

7. Preparation of Standard Gas Mixtures, Calibration, and Quality Assurance

7.1 Preparation of Vinyl Chloride Standard Gas Mixtures. (Optional Procedure—delete if cylinder standards are used.) Evacuate a 16-inch square Tedlar bag that has passed a leak check (described in Section 7.3.2) and meter in 5.0 liters of nitrogen. While the bag is filling, use the 0.5-ml syringe to inject 250 μl of 99.9+ percent vinyl chloride gas through the wall of the bag. Upon withdrawing the syringe, immediately cover the resulting hole with a piece of adhesive tape. The bag now contains a vinyl chloride concentration of 50 ppm. In a like manner use the 50 μl syringe to prepare gas mixtures having 10- and 5-ppm vinyl chloride concentrations. Place each bag on a smooth surface and alternately depress opposite sides of the bag 50 times to further mix the gases. These gas mixture standards may be used for 10 days from the date of preparation, after which time new gas mixtures must be prepared. (Caution: Contamination may be a problem when a bag is reused if the new gas mixture standard is a lower concentration than the previous gas mixture standard.)

7.2 Calibration.

7.2.1 Determination of Vinyl Chloride Retention Time. (This section can be performed simultaneously with Section 7.2.2.) Establish chromatograph conditions identical with those in Section 6.4 above. Determine proper attenuator position. Flush the sampling loop with zero helium or nitrogen and activate the sample valve. Record the injection time, sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator setting. Record peaks and detector responses that occur in the absence of vinyl chloride. Maintain

conditions with the equipment plumbing arranged identically to Section 6.3, and flush the sample loop for 30 seconds at the rate of 100 ml/min with one of the vinyl chloride calibration mixtures. Then activate the sample valve. Record the injection time. Select the peak that corresponds to vinyl chloride. Measure the distance on the chart from the injection time to the time at which the peak maximum occurs. This quantity divided by the chart speed is defined as the retention time. Since other organics may be present in the sample, positive identification of the vinyl chloride peak must be made.

7.2.2 Preparation of Chromatograph Calibration Curve. Make a GC measurement of each gas mixture standard (described in Section 5.2.3 or 7.1) using conditions identical with those listed in Sections 6.3 and 6.4. Flush the sampling loop for 30 seconds at the rate of 100 ml/min with one of the standard mixtures, and activate the sample valve. Record the concentration of vinyl chloride injected (C_c), attenuator setting, chart speed, peak area, sample loop temperature, column temperature, carrier gas flow rate, and retention time. Record the barometric pressure. Calculate A_c, the peak area multiplied by the attenuator setting. Repeat until two consecutive injection areas are within 5 percent, then plot the average of those two values versus C_c. When the other standard gas mixtures have been similarly analyzed and plotted, draw a straight line through the points derived by the least squares method. Perform calibration daily, or before and after the analysis of each emission test set of bag samples, whichever is more frequent. For each group of sample analyses, use the average of the two calibration curves which bracket that group to determine the respective sample concentrations. If the two calibration curves differ by more than 5 percent from their mean value, then report the final results by both calibration curves.

7.3 Quality Assurance.

7.3.1 Analysis Audit. Immediately after the preparation of the calibration curve and prior to the sample analyses, perform the analysis audit described in Appendix C, Procedure 2: "Procedure for Field Auditing GC Analysis."

7.3.2 Bag Leak Checks. Checking of bags for leaks is required after bag use and strongly recommended before bag use. After each use, connect a water manometer and pressurize the bag to 5 to 10 cm H_2O (2 to 4 in. H_2O). Allow to stand for 10 min. Any displacement in the water manometer indicates a leak. Also, check the rigid container for leaks in this manner. (Note: An alternative leak check method is to pressurize the bag to 5 to 10 cm H_2O and allow it to stand overnight. A deflated bag indicates a leak.) For each sample bag in its rigid container, place a rotameter in line between the bag and the pump inlet. Evacuate the bag. Failure of the rotameter to register zero flow when the bag appears to be empty indicates a leak.

8. *Calculations.*

8.1 Determine the sample peak area, A_c, as follows:

$$A_c = A_m A_f \qquad \text{Eq. 106-1}$$

Where:

A_m = Measured peak area.

A_f = Attenuation factor.

8.2 Vinyl Chloride Concentrations. From the calibration curves described in Section 7.2.2, determine the average concentration value of vinyl chloride, C_c, that corresponds to A_c, the sample peak area. Calculate the concentration of vinyl chloride in the bag, C_b, as follows:

$$C_b = \frac{C_c P_r T_i}{P_i T_r (1 - B_{wb})} \qquad \text{Eq. 106-2}$$

Where:

P_r = Reference pressure, the laboratory pressure recorded during calibration, mm Hg.

T_i = Sample loop temperature on the absolute scale at the time of analysis, °K.

P_i = Laboratory pressure at time of analysis, mm Hg.

T_r = Reference temperature, the sample loop temperature recorded during calibration, °K.

B_{wb} = Water vapor content of the bag sample, as analyzed.

9. *Bibliography.*

1. Brown D.W., E.W. Loy, and M.H. Stephenson, Vinyl Chloride Monitoring Near the B. F. Goodrich Chemical Company in Louisville, KY. Region IV, U.S. Environmental Protection Agency, Surveillance and Analysis Division, Athens, GA. June 24, 1974.

2. G.D. Clayton and Associates. Evaluation of a Collection and Analytical Procedure for Vinyl Chloride in Air. U.S. Environmental Protection Agency, Research Triangle Park, N.C. EPA Contract No. 68-02-1408, Task Order No. 2, EPA Report No. 75-VCL-1. December 13, 1974.

3. Midwest Research Institute. Standardization of Stationary Source Emission Method for Vinyl Chloride. U.S. Environmental Protection Agency, Research Triangle Park, N.C. Publication No. EPA-600/4-77-026. May 1977.

4. Scheil, G. and M.C. Sharp. Collaborative Testing of EPA Method 106 (Vinyl Chloride) that Will Provide for a Standardized Stationary Source Emission Measurement Method. U.S. Environmental Protection Agency, Research Triangle Park, N.C. Publication No. EPA 600/4-78-058. October 1978.

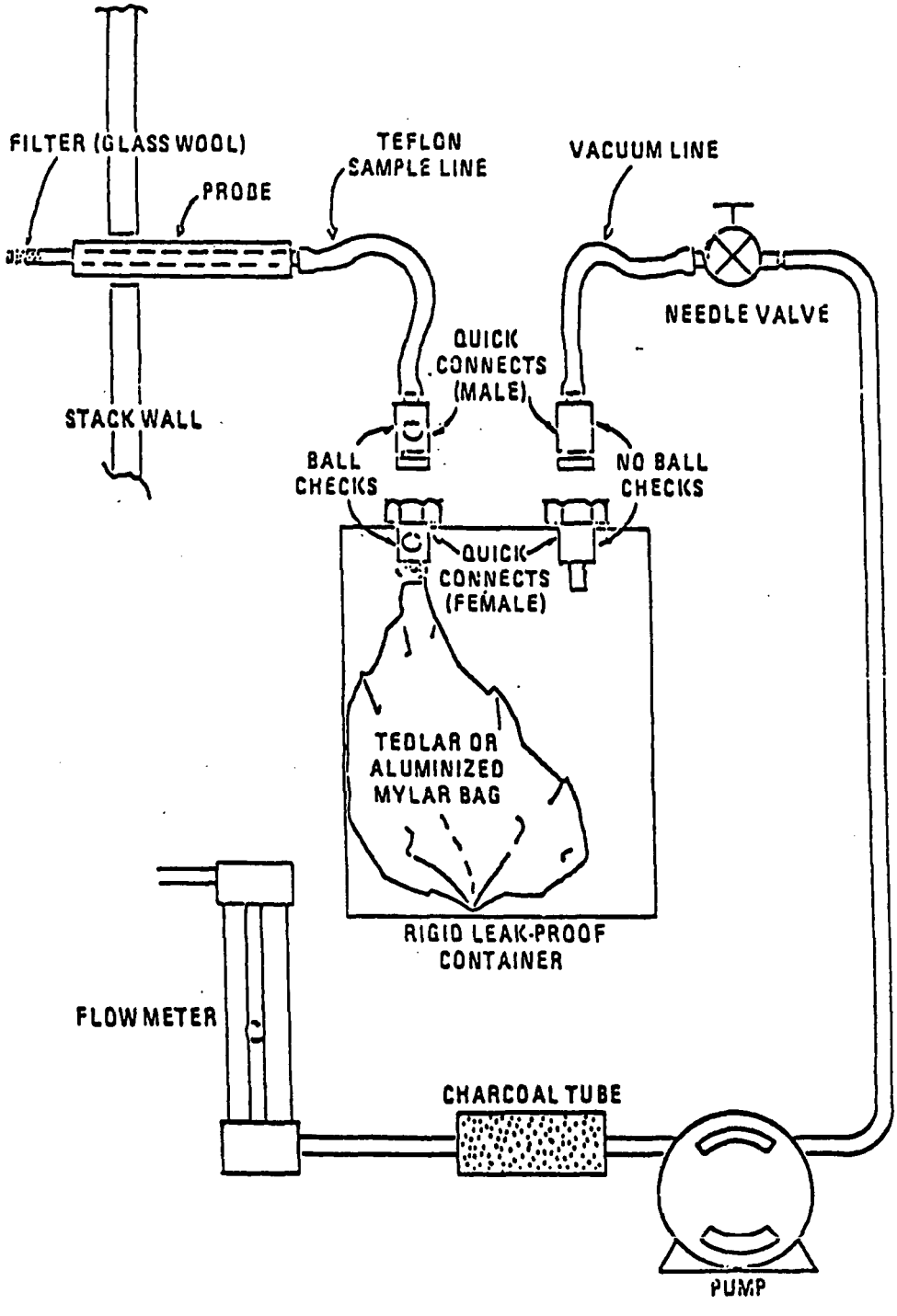


Figure 106-1. Integrated-bag sampling train. (Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.)

Method 107—Determination of Vinyl Chloride Content of Inprocess Wastewater Samples, and Vinyl Chloride Content of Polyvinyl Chloride Resin, Slurry, Wet Cake, and Latex Samples [70]

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC), nor by those who are unfamiliar with source sampling, because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. *Applicability and Principle.*

1.1 Applicability. This method applies to the measurement of the vinyl chloride monomer (VCM) content of inprocess wastewater samples, and the residual vinyl chloride monomer (RVCM) content of polyvinyl chloride (PVC) resins, wet cake, slurry, and latex samples. It cannot be used for polymer in fused forms, such as sheet or cubes. This method is not acceptable where methods from Section 304(h) of the Clean Water Act, 33 U.S.C. 1251 et seq. (the Federal Water Pollution Control Amendments of 1972 as amended by the Clean Water Act of 1977) are required.

1.2 Principle. The basis for this method relates to the vapor equilibrium that is established between RVCM, PVC resin, water, and air in a closed system. The RVCM in a PVC resin will equilibrate rapidly in a closed vessel, provided that the temperature of the PVC resin is maintained above the glass transition temperature of that specific resin.

2. Range and Sensitivity. The lower limit of detection of vinyl chloride will vary according to the chromatograph used. Values reported include 1×10^{-7} mg and 4×10^{-7} mg. With proper calibration, the upper limit may be extended as needed.

3. *Interferences.* The chromatograph columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride; however, resolution interferences may be encountered on some sources. Therefore, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis requirements, subject to the approval of the Administrator. Approval is automatic provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. *Precision and Reproducibility.* An interlaboratory comparison between seven laboratories of three resin samples, each split into three parts, yielded a standard deviation of 2.63 percent for a sample with a mean of 2.09 ppm, 4.16 percent for a sample with a mean of 1.66 ppm, and 5.29 percent for a sample with a mean of 62.66 ppm.

5. *Safety.* Do not release vinyl chloride to the laboratory atmosphere during preparation of standards. Venting or purging with VCM/air mixtures must be held to a minimum. When they are required, the vapor must be routed to outside air. Vinyl chloride, even at low ppm levels, must never be vented inside the laboratory. After vials have been analyzed, the gas must be vented prior to removal of the vial from the instrument turntable. Vials must be vented through a hypodermic needle connected to an activated charcoal tube to prevent release of vinyl chloride into the laboratory atmosphere. The charcoal must be replaced prior to vinyl chloride breakthrough.

6. *Apparatus.*

6.1 Sampling. The following equipment is required:

6.1.1 Glass bottles. 60-ml (2-oz) capacity, with wax-lined screw-on tops, for PVC samples.

6.1.2 Glass Vials. 50-ml capacity Hypo-vial, sealed with Teflon faced Tuf-Bond discs, for water samples.

6.1.3 Adhesive Tape. To prevent loosening of bottle tops.

6.2 Sample Recovery. The following equipment is required:

6.2.1 Glass Vials. With butyl rubber septa, Perkin-Elmer Corporation Nos. 0105–0129 (glass vials), B001–0728 (gray butyl rubber septum, plug style), 0105–0131 (butyl rubber septa), or equivalents. The seals must be made from butyl rubber. Silicone rubber seals are not acceptable.

6.2.2 Analytical Balance. Capable of weighing to ±0.0001 gram.

6.2.3 Vial Sealer. Perkin-Elmer No. 105–0106, or equivalent.

6.2.4 Syringe. 100-μl capacity, precision series "A" No. 010025, or equivalent.

6.3 Analysis. The following equipment is required:

6.3.1 Gas Chromatograph. Perkin-Elmer Corporation Model F–40, F–42, or F–45 Head-Space Analyzer, or equivalent. Equipped with backflush accessory.

6.3.2 Chromatographic Columns. Stainless steel 1 m by 3.2 mm and 2 m by 3.2 mm, both containing 50/80-mesh Porapak Q. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interferent peak. Calculation of area overlap is explained in Appendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.") Two 1.83 m columns, each containing 1 percent Carbowax 1500 on Carbopak B, have been suggested for samples containing acetaldehyde.

6.3.3 Thermometer. 0 to 100° C, accurate to ±0.1° C, Perkin-Elmer No. 105–0109, or equivalent.

6.3.4 Sample Tray Thermostat System. Perkin-Elmer No. 105–0103, or equivalent.

6.3.5 Septa. Sandwich type, for automatic dosing, 13 mm, Perkin-Elmer No. 105–1008, or equivalent.

6.3.6 Integrator-Recorder. Hewlett-Packard Model 3380A, or equivalent.

6.3.7 Filter Drier Assembly (3). Perkin-Elmer No. 2230117, or equivalent.

6.3.8 Soap Film Flowmeter. Hewlett Packard No. 0101–0113, or equivalent.

6.3.9 Regulators. For required gas cylinders.

6.3.10 Headspace Vial Pre-Pressurizer. Nitrogen pressurized hypodermic needle inside protective shield. (Blueprint available from Test Support Section, Emission Measurement Branch, Office of Air Quality Planning and Standards, Environmental Protection Agency, Mail Drop 19, Research Triangle Park, N.C. 27711.)

7. *Reagents.* Use only reagents that are of chromatographic grade.

7.1 Analysis. The following items are required for analysis:

7.1.1 Hydrogen. Zero grade.

7.1.2 Nitrogen. Zero grade.

7.1.3 Air. Zero grade.

7.2 Calibration. The following items are required for calibration:

7.2.1 Cylinder Standards (4). Gas mixture standards (50-, 500-, 2000- and 4000-ppm vinyl chloride in nitrogen cylinders). The tester may use cylinder standards to directly prepare a chromatograph calibration curve as described in Section 9.2, if the following conditions are met: (a) The manufacturer certifies the gas composition with an accuracy of ±3 percent or better (see Section 7.2.1.1). (b) The manufacturer recommends a maximum shelf life over which the gas concentration does not change by greater than ±5 percent from the certified value. (c) The manufacturer affixes the date of gas cylinder preparation, certified vinyl chloride concentration, and recommended maximum shelf life to the cylinder before shipment to the buyer.

7.2.1.1 Cylinder Standards Certification. The manufacturer shall certify the concentration of vinyl chloride in nitrogen in each cylinder by (a) directly analyzing each cylinder and (b) calibrating his analytical procedure on the day of cylinder analysis. To calibrate his analytical procedure, the manufacturer shall use, as a minimum, a 3-point calibration curve. It is recommended that the manufacturer maintain (1) a high-concentration calibration standard (between 4000 and 8000 ppm) to prepare his calibration curve by an appropriate dilution technique and (2) a low-concentration calibration standard (between 50 and 500 ppm) to verify the dilution technique used. If the difference between the apparent concentration read from the calibration curve and the true concentration assigned to the low-concentration calibration standard exceeds 5 percent of the true concentration, the manufacturer shall determine the source of error and correct it, then repeat the 3-point calibration.

7.2.1.2 Verification of Manufacturer's Calibration Standards. Before using, the manufacturer shall verify each calibration standard by (a) comparing it to gas mixtures prepared (with 99 mole percent vinyl chloride) in accordance with the procedure described in Section 7.1 of Method 106 or by (b) calibrating it against vinyl chloride cylinder Standard Reference Materials (SRM's) prepared by the National Bureau of Standards, if such SRM's are available. The agreement between the initially determined concentration value and the verification concentration value must be within ±5

percent. The manufacturer must reverify all calibration standards on a time interval consistent with the shelf life of the cylinder standards sold.

8. *Procedure.*

8.1 Sampling.

8.1.1 PVC Sampling. Allow the resin or slurry to flow from a tap on the tank or silo until the tap line has been well purged. Extend and fill a 60-ml sample bottle under the tap, and immediately tighten a cap on the bottle. Wrap adhesive tape around the cap and bottle to prevent the cap from loosening. Place an identifying label on each bottle, and record the date, time, and sample location both on the bottles and in a log book.

8.1.2 Water Sampling. Prior to use, the 50-ml vials (without the discs) must be capped with aluminum foil and heated in a muffle furnace at 400° C for at least 1 hour to destroy or remove any organic matter that could interfere with analysis. At the sampling location fill the vials bubble-free to overflowing so that a convex meniscus forms at the top. The excess water is displaced as the sealing disc is carefully placed, with the Teflon side down, on the opening of the vial.

Place the aluminum seal over the disc and the neck of the vial, and crimp into place. Affix an identifying label on the bottle, and record the date, time, and sample location both on the vials and in a log book. All samples must be kept refrigerated until analyzed.

8.2 Sample Recovery. Samples must be run within 24 hours.

8.2.1 Resin Samples. The weight of the resin used must be between 3.5 and 4.5 grams. An exact weight must be obtained (±0.0001 g) for each sample. In the case of suspension resins, a volumetric cup can be prepared for holding the required amount of sample. When the cup is used, open the sample bottle, and add the cup volume of resin to the tared sample vial (tared, including septum and aluminum cap). Obtain the exact sample weight, add 100μl or about two equal drops of distilled water, and immediately seal the vial. Report this value on the data sheet; it is required for calculation of RVCM. In the case of dispersion resins, the cup cannot be used. Weigh the sample in an aluminum dish, transfer the sample to the tared vial, and accurately weigh it in the vial. After prepressurization of the samples, condition them for a minimum of 1 hour in the 90° C bath. Do not exceed 5 hours.

Note.—Some aluminum vial caps have a center section that must be removed prior to placing into sample tray. If the cap is not removed, the injection needle will be damaged.

8.2.2 Suspension Resin Slurry and Wet Cake Samples. Decant the water from a wet cake sample, and turn the sample bottle upside down onto a paper towel. Wait for the water to drain, place approximately 0.2 to 4.0 grams of the wet cake sample in a tared vial (tared, including septum and aluminum cap) and seal immediately. Then determine the sample weight (±0.0001 g). All samples must be prepressurized and then conditioned for 1 hour at 90° C. A sample of wet cake is used to determine total solids (TS). This is required for calculating the RVCM.

8.2.3 Dispersion Resin Slurry and Geon Latex Samples. The materials should not be filtered. Sample must be thoroughly mixed. Using a tared vial (tared, including septum and aluminum cap) add approximately eight drops (0.25 to 0.35 g) of slurry or latex using a medicine dropper. This should be done immediately after mixing. Seal the vial as soon as possible. Determine sample weight (±0.0001 g). After prepressurization, condition the vial for 1 hour at 90° C in the analyzer bath. Determine the TS on the slurry sample (Section 8.3.5).

8.2.4 Inprocess Wastewater Samples. Using a tared vial (tared, including septum and aluminum cap) quickly add approximately 1 cc of water using a medicine dropper. Seal the vial as soon as possible. Determine sample weight (±0.0001 g). Prepressurize the vial, and then condition for 1 to 2 hours as required at 90° C in the analyzer bath.

8.3 Analysis.

8.3.1 Preparation of Equipment. Install the chromatographic column and condition overnight at 160° C. In the first operation, Porapak columns must be purged for 1 hour at 230° C.

Do not connect the exit end of the column to the detector while conditioning. Hydrogen and air to the detector must be turned off while the column is disconnected.

8.3.1.1 Flow Rate Adjustments. Adjust flow rates as follows:

a. Nitrogen Carrier Gas. Set regulator on cylinder to read 50 psig. Set regulator on chromatograph to produce a flow rate of 30.0 cc/min. Accurately measure the flow rate at the exit end of the column using the soap film flowmeter and a stopwatch, with the oven and column at the analysis temperature. After the instrument program advances to the "B" (backflush) mode, adjust the nitrogen pressure regulator to exactly balance the nitrogen flow rate at the detector as was obtained in the "A" mode.

b. Vial Prepressurizer Nitrogen. After the nitrogen carrier is set, solve the following equation and adjust the pressure on the vial prepressurizer accordingly.

$$P = \frac{T_1}{T_2}\left[P_1 - \frac{P_{w1} - P_{w2}}{7.50}\right] - 10 \text{ k Pa}$$

Where:

T_1 = Ambient temperature, °K.

T_2 = Conditioning bath temperature, °K.

P_1 = Gas chromatograph absolute dosing pressure (analysis mode), k Pa.

P_{w1} = Water vapor pressure @ 90° C (525.8 mm Hg).

P_{w2} = Water vapor pressure @ 22° C (19.8 mm Hg).

7.50 = mm Hg per k Pa.

10 k Pa = Factor to adjust the prepressurized pressure to slightly less than the dosing pressure.

Because of gauge errors, the apparatus may over-pressurize the vial. If the vial pressure is at or higher than the dosing pressure, an audible double injection will occur. If the vial pressure is too low, errors will occur on resin samples because of inadequate time for headspace gas equilibrium. This condition can be avoided by running several standard gas samples at various pressures around the calculated pressure, and then selecting the highest pressure that does not produce a double injection. All samples and standards must be pressurized for 60 seconds using the vial prepressurizer. The vial is then placed into the 90° C conditioning bath and tested for leakage by placing a drop of water on the septum at the needle hole. A clean, burr-free needle is mandatory.

c. Burner Air Supply. Set regulator on cylinder to read 50 psig. Set regulator on chromatograph to supply air to burner at a rate between 250 and 300 cc/min. Check with bubble flowmeter.

d. Hydrogen Supply. Set regulator on cylinder to read 30 psig. Set regulator on chromatograph to supply approximately 35 ± 5 cc/min. Optimize hydrogen flow to yield the most sensitive detector response without extinguishing the flame. Check flow with bubble meter and record this flow.

8.3.1.2 Temperature Adjustments. Set temperatures as follows:

a. Oven (chromatograph column), 140° C.

b. Dosing Line, 150° C.

c. Injection Block, 170° C.

d. Sample Chamber, Water Temperature, 90° C ± 1.0° C.

8.3.1.3 Ignition of Flame Ionization Detector. Ignite the detector according to the manufacturer's instructions.

8.3.1.4 Amplifier Balance. Balance the amplifier according to the manufacturer's instructions.

8.3.2 Programming the Chromatograph. Program the chromatograph as follows:

a. I—Dosing or Injection Time. The normal setting is 2 seconds.

b. A—"Analysis Time." The normal setting is approximately 70 percent of the VCM retention time. When this timer terminates, the programmer initiates backflushing of the first column.

c. B—Backflushing Time. The normal setting is double the "analysis time."

d. W—Stabilization Time. The normal setting is 0.5 min to 1.0 min.

e. X—Number of Analyses Per Sample. The normal setting is one.

8.3.3 Preparation of Sample Turntable. Before placing any sample into turntable, be certain that the center section of the aluminum cap has been removed. All samples and standards must be pressurized for 60 seconds by using the vial prepressurizer. The numbered sample vials should be placed in the corresponding numbered positions in the turntable. Insert samples in the following order:

Position 1 and 2—Old 2000-ppm standards for conditioning. These are necessary only after the analyzer has not been used for 24 hours or longer.

Position 3—50-ppm standard, freshly prepared.

Position 4—500-ppm standard, freshly prepared.

Position 5—2000-ppm standard, freshly prepared.

Position 6—4000-ppm standard, freshly prepared.

Position 7—Sample No. 7 (This is the first sample of the day, but is given as 7 to be consistent with the turntable and the integrator printout.)

After all samples have been positioned, insert the second set of 50-, 500-, 2000-, and 4000-ppm standards. Samples, including standards, must be conditioned in the bath of 90° C for 1 hour (not to exceed 5 hours).

8.3.4 Start Chromatograph Program. When all samples, including standards, have been conditioned at 90° C for 1 hour, start the analysis program according to the manufacturer's instructions. These instructions must be carefully followed when starting and stopping a program to prevent *damage to the dosing assembly.*

8.3.5 Determination of TS. For wet cake, slurry, resin solution, and PVC latex samples, determine TS for each sample by accurately weighing approximately 3 to 4 grams of sample in an aluminum pan before and after placing in a draft oven (105 to 110° C). Samples must be dried to constant weight. After first weighing, return the pan to the oven for a short period of time, and then reweigh to verify complete dryness. The TS are then calculated as the final sample weight divided by initial sample weight.

9. *Calibration.* Calibration is to be performed each 8-hour period when the instrument is used. Each day, prior to running samples, the column should be conditioned by running two 2000-ppm standards from the previous day.

9.1 Preparation of Standards. Calibration standards are prepared as follows: Place 100μl or about two equal drops of distilled water in the sample vial, then fill the vial with the VCM/nitrogen standard, rapidly seat the septum, and seal with the aluminum cap. Use a ⅛-in. stainless steel line from the cylinder to the vial. Do not use rubber or tygon tubing. The sample line from the cylinder must be purged (into a properly vented hood) for several minutes prior to filling the vials. After purging, reduce the flow rate to 500 to 1000 cc/min. Place end of tubing into vial (near bottom). Position a septum on top of the vial, pressing it against the ⅛-in. filling tube to minimize the size of the vent opening. This is necessary to mimimize mixing air with the standard in the vial. Each vial is to be purged with standard for 90 seconds, during which time the filling tube is gradually slid to the top of the vial. After the 90 seconds, the tube is removed with the septum, simultaneously sealing the vial. Practice will be necessary to develop good technique. Rubber gloves should be worn during the above operations. The sealed vial must then be pressurized for 60 seconds using the vial prepressurizer. Test the vial for leakage by placing a drop of water on the septum at the needle hole.

9.2 Preparation of Chromatograph Calibration Curve.

Prepare two 50-, 500-, 2000-, and 4000-ppm standard samples. Run the calibration samples in exactly the same manner as regular samples. Plot A_s, the integrator area counts for each standard sample, versus C_c, the concentration of vinyl chloride in each standard sample. Draw a straight line through the points derived by the least squares method.

10. *Calculations.*

10.1 Response Factor. If the calibration curve described in Section 9.2 passes through zero, a response factor, R_f, may be used to compute vinyl chloride concentrations. To compute a response factor, divide any particular A_s by the corresponding C_c.

$$R_f = \frac{A_s}{C_c} \qquad \text{Eq. 107-1}$$

Where:

A_s = Chromatograph area counts of vinyl chloride for the sample.

P_a = Ambient atmospheric pressure, mm Hg.

R_f = Response factor in area counts per ppm VCM.

T_1 = Ambient laboratory temperature, °K.

M_v = Molecular weight of VCM, 62.5 g/mole.

V_g = Volume of the vapor phase, cm^3.

R = Gas constant, (62360 cm_3) (mm Hg/mole) (°K).

m = Sample weight, g.

K_p = Henry's Law Constant for VCM in PVC @ 90° C, 6.52×10^{-6} g/g/mm Hg.

If the calibration curve does not pass through zero, the calibration curve must be employed to calculate each sample concentration unless the error introduced by using a particular R_f is known.

10.2 Residual Vinyl Chloride Monomer Concentration, (C_{rvc}) or Vinyl Chloride Monomer Concentration. Calculate C_{rvc} in ppm or mg/kg as follows:

$$C_{rvc} = \frac{A_s P_a}{R_f T_1}\left[\frac{M_v V_g}{R m} + K_p (TS) T_2 + K_w (1 - TS) T_2\right] \qquad \text{Eq. 107-2}$$

TS = Total solids expressed as a decimal fraction.

T_2 = Equilibrium temperature, °K.

K_w = Henry's Law Constant for VCM in water @ 90° C, 7×10^{-7} g/g/mm Hg.

Assuming the following conditions are met, these values can be substituted into Equation 107-2:

P_a = 750 mm Hg.

V_g = Vial volume—sample volume (Fisher vials are 22.0 cm^3 and Perkin-Elmer vials are 21.8 cm^3).

T_1 = 23° C or 296° K.

T_2 = 90° C or 363° K.

$$C_{rvc} = \frac{A_s}{R_f}\frac{750}{296}\left[\frac{65.5\left(21.8 - \frac{m(TS)}{1.36} - \frac{m(1-TS)}{0.9653}\right)}{62360\ m} + 6.25 \times 10^{-6}(TS)(363) + 7.0 \times 10^{-7}(1-TS)(363)\right]$$

Results calculated using these equations represent concentration based on the total sample. To obtain results based on dry PVC content, divide by TS.

11. *References.*

1. B.F. Goodrich, Residual Vinyl Chloride Monomer Content of Polyvinyl Chloride Resins, Latex, Wet Cake, Slurry and Water Samples. B.F. Goodrich Chemical Group Standard Test Procedure No. 1005-E. B.F. Goodrich Technical Center, Avon Lake, Ohio. October 8, 1979.

2. Berens, A.R. The Diffusion of Vinyl Chloride in Polyvinyl Chloride. ACS—Division of Polymer Chemistry, Polymer Preprints *15* (2):197. 1974.

3. Berens, A.R. The Diffusion of Vinyl Chloride in Polyvinyl Chloride. ACS—Division of Polymer Chemistry, Polymer Preprints *15* (2):203. 1974.

4. Berens, A.R., L.B. Crider, C.J. Tomanek, and J.M. Whitney. Analysis for Vinyl Chloride in PVC Powders by Head—Space Gas Chromatography. Journal of Applied Polymer Science. *19*:3169–3172. 1975.

5. Mansfield, R.A. The Evaluation of Henry's Law Constant (Kp) and Water Enhancement in the Perkin-Elmer Multifract F-40 Gas Chromatograph. B.F. Goodrich. Avon Lake, Ohio. February 10, 1978.

Method 107A—Determination of Vinyl Chloride Content of Solvents, Resin-Solvent Solution, Polyvinyl Chloride Resin, Resin Slurry, Wet Resin, and Latex Samples [71]

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC) or by those who are unfamiliar with source sampling because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. Applicability and Principle

1.1 Applicability. This is an alternative method and applies to the measurement of the vinyl chloride content of solvents, resin solvent solutions, polyvinyl chloride (PVC) resin, wet cake slurries, latex, and fabricated resin samples. This method is not acceptable where methods from Section 304(h) of the Clean Water Act, 33 U.S.C. 1251 et seq., (the Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977) are required.

1.2 Principle. The basis for this method lies in the direct injection of a liquid sample into a chromatograph and the subsequent evaporation of all volatile material into the carrier gas stream of the chromatograph, thus permitting analysis of all volatile material including vinyl chloride.

2. Range and Sensitivity

The lower limit of detection of vinyl chloride in dry PVC resin is 0.2 ppm. For resin solutions, latexes, and wet resin, this limit rises inversely as the nonvolatile (resin) content decreases.

With proper calibration, the upper limit may be extended as needed.

3. Interferences

The chromatograph columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride. In cases where resolution interferences are encountered, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis problem, subject to the approval of the Administrator. Approval is automatic, provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. Precision and Reproducibility

A standard sample of latex containing 181.8 ppm vinyl chloride analyzed 10 times by the alternative method showed a standard deviation of 7.5 percent and a mean error of 0.21 percent.

A sample of vinyl chloride copolymer resin solution was analyzed 10 times by the alternative method and showed a standard deviation of 6.6 percent at a level of 35 ppm.

5. Safety

Do not release vinyl chloride to the laboratory atmosphere during preparation of standards. Venting or purging with vinyl chloride monomer (VCM) air mixtures must be held to minimum. When purging is required, the vapor must be routed to outside air. Vinyl chloride, even at low-ppm levels, must never be vented inside the laboratory.

6. Apparatus

6.1 Sampling. The following equipment is required:

6.1.1 Glass Bottles. 16-oz wide mouth wide polyethylene-lined, screw-on tops.

6.1.2 Adhesive Tape. To prevent loosening of bottle tops.

6.2 Sample Recovery. The following equipment is required:

6.2.1 Glass Vials. 20-ml capacity with polycone screw caps.

6.2.2 Analytical Balance. Capable of weighing to ±0.01 gram.

6.2.3 Syringe. 50-microliter size, with removable needle.

6.2.4 Fritted Glass Sparger. Fine porosity.

6.2.5 Aluminum Weighing Dishes.

6.2.6 Sample Roller or Shaker. To help dissolve sample.

6.3 Analysis. The following equipment is required:

6.3.1 Gas Chromatograph. Hewlett Packard Model 5720A or equivalent.

6.3.2 Chromatograph Column. Stainless steel, 6.1 m by 3.2 mm, packed with 20 percent Tergitol E-35 on Chromosorb W AW 60/80 mesh. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and that he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interfering peak. Calculation of area overlap is explained in Apendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.")

6.3.3 Valco Instrument Six-Port Rotary Valve. For column back flush.

6.3.4 Septa. For chromatograph injection port.

6.3.5 Injection Port Liners. For chromatograph used.

6.3.6 Regulators. For required gas cylinders.

6.3.7 Soap Film Flowmeter. Hewlett Packard No. 0101-0113 or equivalent.

6.4 Calibration. The following equipment is required:

6.4.1 Analytical Balance. Capable of weighing to ±0.0001 g.

6.4.2 Erlenmeyer Flask With Glass Stopper. 125 ml.

6.4.3 Pipets. 0.1, 0.5, 1, 5, 10, and 50 ml.

6.4.4 Volumetric Flasks. 10 and 100 ml.

7. Reagents

Use only reagents that are of chromatograph grade.

7.1 Analysis. The following items are required:

7.1.1 Hydrogen Gas. Zero grade.

7.1.2 Nitrogen Gas. Zero grade.

7.1.3 Air. Zero grade.

7.1.4 Tetrahydrofuran (THF). Reagent grade.

Analyze the THF by injecting 10 microliters into the prepared gas chromatograph. Compare the THF chromatogram with that shown in Figure 107A-1. If the chromatogram is comparable to A, the THF should be sparged with pure nitrogen for approximately 2 hours using the fritted glass sparger to attempt to remove the interfering peak. Reanalyze the sparged THF to determine whether the THF is acceptable for use. If the scan is comparable to B, the THF should be acceptable for use in the analysis.

7.1.5 N, N-Dimethylacetamide (DMAC). Spectrographic grade. For use in place of THF.

7.2 Calibration. The following item is required:

7.2.1 Vinyl Chloride 99.9 Percent. Ideal Gas Products lecture bottle, or equivalent. For preparation of standard solutions.

8. Procedure

8.1 Sampling. Allow the liquid or dried resin to flow from a tap on the tank, silo, or pipeline until the tap has been purged. Fill a wide-mouth pint bottle, and immediately tightly cap the bottle. Place an identifying label on each bottle and record the date, time, sample location, and material.

8.2 Sample Treatment. Sample must be run within 24 hours.

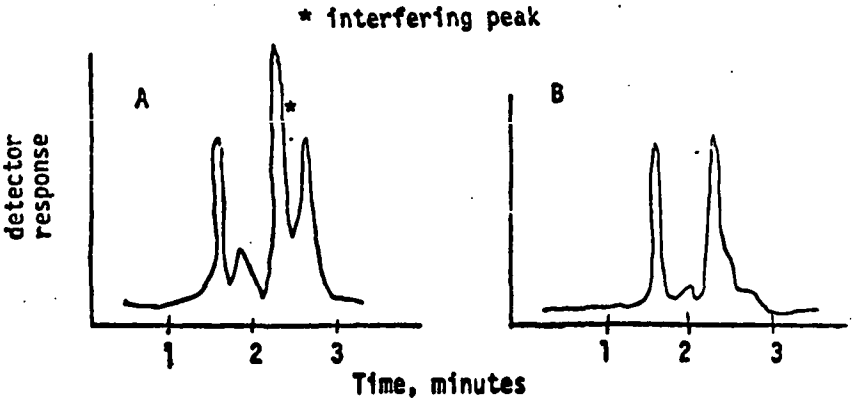


Figure 107A-1

8.2.1 Resin Samples. Weigh 9.00 ± 0.01 g of THF or DMAC in a tared 20-ml vial. Add 1.00 ± 0.01 g of resin to the tared vial containing the THF or DMAC. Close the vial tightly with the screw cap, and shake or otherwise agitate the vial until complete solution of the resin is obtained. Shaking may require several minutes to several hours, depending on the nature of the resin.

8.2.2 Suspension Resin Slurry and Wet Resin Sample. Slurry must be filtered using a small Buchner funnel with vacuum to yield a wet resin sample. The filtering process must be continued only as long as a steady stream of water is exiting from the funnel. Excessive filtration time could result in some loss of VCM. The wet resin sample is weighed into a tared 20-ml vial with THF or DMAC as described earlier for resin samples (8.2.1) and treated the same as the resin sample. A sample of the wet resin is used to determine total solids as required for calculating the residual VCM (Section 8.3.4).

8.2.3 Latex and Resin Solvent Solutions. Samples must be thoroughly mixed. Weigh 1.00 ± 0.01 g of the latex or resin-solvent solution into a 20-ml vial containing 9.00 ± 0.01 g of THF or DMAC as for the resin samples (8.2.1). Cap and shake until complete solution is obtained. Determine the total solids of the latex or resin solution sample (Section 8.3.4).

8.2.4 Solvents and Non-viscous Liquid Samples. No preparation of these samples is required. The neat samples are injected directly into the GC.

8.3 Analysis.

8.3.1 Preparation of GC. Install the chromatographic column, and condition overnight at 70° C. Do not connect the exit end of the column to the detector while conditioning.

8.3.1.1 Flow Rate Adjustments. Adjust the flow rate as follows:

a. Nitrogen Carrier Gas. Set regulator on cylinder to read 60 psig. Set column flow controller on the chromatograph using the soap film flowmeter to yield a flow rate of 40 cc/min.

b. Burner Air Supply. Set regulator on the cylinder at 40 psig. Set regulator on the chromatograph to supply air to the burner to yield a flow rate of 250 to 300 cc/min using the flowmeter.

c. Hydrogen. Set regulator on cylinder to read 60 psig. Set regulator on the chromatograph to supply 30 to 40 cc/min using the flowmeter. Optimize hydrogen flow to yield the most sensitive detector response without extinguishing the flame. Check flow with flowmeter and record this flow.

d. Nitrogen Back Flush Gas. Set regulator on the chromatograph using the soap film flowmeter to yield a flow rate of 40 cc/min.

8.3.1.2 Temperature Adjustments. Set temperature as follows:

a. Oven (chromatographic column) at 70° C.

b. Injection Port at 100° C.

c. Detector at 300° C.

8.3.1.3 Ignition of Flame Ionization Detector. Ignite the detector according to the manufacturer's instructions. Allow system to stabilize approximately 1 hour.

8.3.1.4 Recorder. Set pen at zero and start chart drive.

8.3.1.5 Attenuation. Set attenuation to yield desired peak height depending on sample VCM content.

8.3.2 Chromatographic Analyses.

a. Sample Injection. Remove needle from 50-microliter syringe. Open sample vial and draw 50-microliters of THF or DMAC sample recovery solution into the syringe. Recap sample vial. Attach needle to the syringe and while holding the syringe vertically (needle uppermost), eject 40 microliters into an absorbent tissue. Wipe needle with tissue. Now inject 10 microliters into chromatograph system. Repeat the injection until two consecutive values for the height of the vinyl chloride peak do not vary more than 5 percent. Use the average value for these two peak heights to compute the sample concentration.

b. Back Flush. After 4 minutes has elapsed after sample injection, actuate the back flush valve to purge the first 4 feet of the chromatographic column of solvent and other high boilers.

c. Sample Data. Record on the chromatograph strip chart the data from the sample label.

d. Elution Time. Vinyl chloride elutes at 2.8 minutes. Acetaldehyde elutes at 3.7 minutes. Analysis is considered complete when chart pen becomes stable. After 5 minutes, reset back flush valve and inject next sample.

8.3.3 Chromatograph Servicing.

a. Septum. Replace after five sample injections.

b. Sample Port Liner. Replace the sample port liner with a clean spare after five sample injections.

c. Chromatograph Shutdown. If the chromatogragph has been shut down overnight, rerun one or more samples from the preceding day to test stability and precision prior to starting on the current day's work.

8.3.4 Determination of Total Solids (TS). For wet resin, resin solution, and PVC latex samples, determine the TS for each sample by accurately weighing approximately 3 to 5 grams of sample into a tared aluminum pan. The initial procedure is as follows:

a. Where water is the major volatile component: Tare the weighing dish, and add 3 to 5 grams of sample to the dish. Weigh to the nearest milligram.

b. Where volatile solvent is the major volatile component: Transfer a portion of the sample to a 20-ml screw cap vial and cap immediately. Weigh the vial to the nearest milligram. Uncap the vial and transfer a 3- to 5-gram portion of the sample to a tared aluminum weighing dish. Recap the vial and reweigh to the nearest milligram. The vial weight loss is the sample weight.

To continue, now place the weighing pan in a 130° C oven for 1 hour. Remove the dish and allow to cool to room temperature in a desiccator. Weigh the pan to the nearest 0.1 mg. Total solids is the weight of material in the aluminum pan after heating divided by the net weight of sample added to the pan originally times 100.

9. *Calibration of the Chromatograph*

9.1 Preparation of Standards. Prepare a 1 percent by weight (approximate) solution of vinly chloride in THF or DMAC by bubbling vinyl chloride gas from a cylinder into a tared 125-ml glass-stoppered flask containing THF or DMAC. The weight of vinyl chloride to be added should be calculated prior to this operation, i.e., 1 percent of the weight of THF or DMAC contained in the tared flask. This must be carried out in a laboratory hood. Adjust the vinyl chloride flow from the cylinder so that the vinyl chloride dissolves essentially completely in the THF or DMAC and is not blown to the atmosphere. Take particular care not to volatize any of the solution. Stopper the flask and swirl the solution to effect complete mixing. Weigh the stoppered flask to nearest 0.1 mg to determine the exact amount of vinyl chloride added.

Pipet 10 ml of the approximately 1 percent solution into a 100-ml glass-stoppered volumetric flask, and add THF or DMAC to fill to the mark. Cap the flask and invert 10 to 20 times. This solution contains approximately 1,000 ppm by weight of vinyl chloride (note the exact concentration).

Pipet 50-, 10-, 5-, 1-, 0.5-, and 0.1-ml aliquots of the approximately 1,000 ppm solution into 10 ml glass stoppered volumetric flasks. Dilute to the mark with THF or DMAC, cap the flasks and invert each 10 to 20 times. These solutions contain approximately 500, 100, 50, 10, 5, and 1 ppm vinyl chloride. Note the exact concentration of each one. These standards are to be kept under refrigeration in stoppered bottles, and must be renewed every 3 months.

9.2 Preparation of Chromatograph Calibration Curve.

Obtain the GC for each of the six final solutions prepared in Section 9.1 by using the procedure in Section 8.3.2. Prepare a chart plotting peak height obtained from the chromatogram of each solution versus the known concentration. Draw a straight line through the points derived by the least squares methods.

10. *Calculations*

10.1 Response Factor. From the calibration curve described in Section 9.2, select the value of C_c that corresponds to H_c for each sample. Compute the response factor, R_f, for each sample as follows:

$$R_f = \frac{C_c}{H_c} \qquad \text{Eq. 107A-1}$$

10.2 Residual vinyl chloride monomer concentration (C_{rvc}) or vinyl chloride monomer concentration in resin:

$$C_{rvc} = 10 H_s R_f \qquad \text{Eq. 107A-2}$$

Where:

H_s = Peak height of sample, mm.

R_f = Chromatograph response factor.

10.3 Samples containing volatile material, i.e., resin solutions, wet resin, and latexes:

$$C_{rvc} = \frac{H_s R_f (1{,}000)}{TS} \qquad \text{Eq. 107A-3}$$

10.4 Samples of solvents and in process wastewater:

$$C_{vc} = \frac{H_s R_f}{0.888} \qquad \text{Eq. 107A-4}$$

Where:

0.888 = Specific gravity of THF.

11. *Bibliography*

1. Communication from R. N. Wheeler, Jr.; Union Carbide Corporation. Part 61 National Emissions Standards for Hazardous Air Pollutants Appendix B, Method 107—Alternate Method, September 19, 1977.

Procedure 1—Determination of Adequate Chromatographic Peak Resolution

In this method of dealing with resolution, the extent to which one chromatographic peak overlaps another is determined.

For convenience, consider the range of the elution curve of each compound as running from -2σ to $+2\sigma$. This range is used in other resolution criteria, and it contains 95.45 percent of the area of a normal curve. If two peaks are separated by a known distance, b, one can determine the fraction of the area of one curve that lies within the range of the other. The extent to which the elution curve of a contaminant compound overlaps the curve of a compound that is under analysis is found by integrating the contaminant curve over the limits $b-2\sigma_s$ to $b+2\sigma_s$, where σ_s is the standard deviation of the sample curve.

This calculation can be simplified in several ways. Overlap can be determined for curves of unit area; then actual areas can be introduced. Desired integration can be resolved into two integrals of the normal distribution function for which there are convenient calculation programs and tables. An example would be Program 15 in Texas Instruments Program Manual ST1, 1975, Texas Instruments, Inc., Dallas, Texas 75222.

In judging the suitability of alternate GC columns or the effects of altering chromatographic conditions, one can employ the area overlap as the resolution parameter with a specific maximum permissible value.

The use of Gaussian functions to describe chromatographic elution curves is widespread. However, some elution curves are highly asymmetric. In cases where the sample peak is followed by a contaminant that has a leading edge that rises sharply but the curve then tails off, it may be possible to define an effective width for t_c as "twice the distance from the leading edge to a perpendicular line through the maxim of the contaminant curve, measured along a perpendicular bisection of that line."

Procedure 2—Procedure for Field Auditing GC Analysis

Responsibilities of audit supervisor and analyst at the source sampling site include the following:

A. The audit supervisor verifies that audit cylinders are stored in a safe location both before and after the audit to prevent vandalism.

B. At the beginning and conclusion of the audit, the analyst records each cylinder number and pressure. An audit cylinder is never analyzed when the pressure drops below 200 psi.

C. During the audit, the analyst performs a minimum of two consecutive analyses of each audit cylinder gas. The audit must be conducted to coincide with the analysis of source test samples, normally immediately after GC calibration and prior to sample analyses.

D. At the end of audit analyses, the audit supervisor requests the calculated concentrations from the analyst and compares the results with the actual audit concentrations. If each measured concentration agrees with the respective actual concentration within ±10 percent, he directs the analyst to begin analyzing source samples. Audit supervisor judgment and/or supervisory policy determine action when agreement is not within ±10 percent. When a consistent bias in excess of 10 percent is found, it may be possible to proceed with the sample analysis, with a corrective factor to be applied to the results at a later time. However, every attempt should be made to locate the cause of the discrepancy, as it may be misleading. The audit supervisor records each cylinder number, cylinder pressure (at the end of the audit), and all calculated concentrations. The individual being audited must not under any circumstance be told actual audit concentrations until calculated concentrations have been submitted to the audit supervisor.

Field Audit Report

Part A.—To be filled out by organization supplying audit cylinders.

1. Organization supplying audit sample(s) and shipping address

2. Audit supervisor, organization, and phone number

3. Shipping instructions: Name, Address, Attention

4. Guaranteed arrival date for cylinders———

5. Planned shipping date for cylinders———

6. Details on audit cylinders from last analysis

	Low conc.	High conc.
a. Date of last analysis		
b. Cylinder number		
c. Cylinder pressure, psi		
d. Audit gas(es)/balance gas		
e. Audit gas(es), ppm		
f. Cylinder construction		

Part B.—To be filled out by audit supervisor.

1. Process sampled———

2. Audit location———

3. Name of individual audit———

4. Audit date———

5. Audit results:

	Low conc. cylinder	High conc. cylinder
a. Cylinder number		
b. Cylinder pressure before audit, psi		
c. Cylinder pressure after audit, psi		
d. Measured concentration, ppm		
Injection #1*		
Injection #2*		
Average		
e. Actual audit concentration, ppm (Part A, 6e)		
f. Audit accuracy:[1]		
Low Conc. Cylinder		
High Conc. Cylinder		

$$\text{Percent}^{1}\text{ accuracy} = \frac{\text{Measured Conc.} - \text{Actual Conc.}}{\text{Actual Conc.}} \times 100$$

g. Problems detected (if any		

[1] Results of two consecutive injections that meet the sample analysis criteria of the test method.

$$\frac{1}{\sqrt{2\pi}\sigma_c}\int_{b-2\sigma_s}^{b+2\sigma_s} e^{\left(\frac{-t_c^2}{2\sigma_c}\right)}dt = \frac{1}{\sqrt{2\pi}}\int_{\frac{b-2\sigma_s}{\sigma_c}}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx - \frac{1}{\sqrt{2\pi}}\int_{\frac{b+2\sigma_s}{\sigma_c}}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$$

The following calculation steps are required:*

1. $2\sigma_s = t_s/\sqrt{2 \ln 2}$
2. $\sigma_c = t_c/2\sqrt{2 \ln 2}$
3. $x_1 = (b-2\sigma_s)/\sigma_c$
4. $x_2 = (b+2\sigma_s)/\sigma_c$
5. $Q(x_1) = \frac{1}{\sqrt{2\pi}}\int_{x_1}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$
6. $Q(x_2) = \frac{1}{\sqrt{2\pi}}\int_{x_2}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$
7. $I_o = Q(x_1) - Q(x_2)$
8. $A_o = I_o A_c/A_s$
9. Percentage overlap = $A_o \times 100$,

where:

A_s = Area of the sample peak of interest determined by electronic integration or by the formula $A_s = h_s t_s$.

A_c = Area of the contaminant peak, determined in the same manner as A_s.

b = Distance on the chromatographic chart that separates the maxima of the two peaks.

H_s = Peak height of the sample compound of interest, measured from the average value of the baseline to the maximum of the curve.

t_s = Width of sample peak of interest at 1/2 peak height.

t_c = Width of the contaminant peak at 1/2 of peak height.

σ_s = Standard deviation of the sample compound of interest elution curve.

σ_c = Standard deviation of the contaminant elution curve.

$Q(x_1)$ = Integral of the normal distribution function from x_1 to infinity.

$Q(x_2)$ = Integral of the normal distribution function from x_2 to infinity.

I_o = Overlap integral.

A_o = Area overlap fraction.

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*In most instances, $Q(x_2)$ is very small and may be neglected.

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67	47 FR 30061, 7/12/82 - Delegation of Authority to the State of Arizona	121
68	47 FR 30062, 7/12/82 - Delegation of Authority to the State of California (4 documents)	122
69	47 FR 30065, 7/12/82 - Delegation of Authority to the State of Nevada	125
70	47 FR 39168, 9/7/82 - Appendix B, Test Methods, Revised 106 and 107; and Appendix C, Quality Assurance Procedures 1 and 2, Promulgated	125
71	47 FR 39485, 9/8/82 - Appendix B, Test Methods, Method 107A Promulgated	136
72	47 FR 42736, 9/29/82 - Delegation of Authority to Lincoln/ Lancaster County Health Department (Nebraska)	140
73	47 FR 43055, 9/30/82 - Delegation of Authority to States of Arizona, California, Nevada and Territory of Guam	141
74	47 FR 46085, 10/15/82 - Delegation of Authority to the State of Arizona and Delegation of Authority to the State of Nevada	146
75	47 FR 46276, 10/18/82 - Delegation of Authority to the State of New Jersey	148
76	47 FR 49969, 11/4/82 - Delegation of Authority to the State of New Mexico and Delegation of Authority to the State of Louisiana	149
77	47 FR 50863, 11/10/82 - Delegation of Authority to the State of Florida	151
	47 FR 53059, 11/24/82 - Additional Emissions Test Data from Benzene Storage Vessels	
78	47 FR 56626, 12/20/82 - Delegation of Authority to Allegheny County, Pennsylvania	152
79	48 FR 3734, 1/27/83 - Incorporation by Reference	153
	48 FR 15076, 4/6/83 - Proposed Standards for Radionuclides	
80	48 FR 20693, 5/9/83 - Delegation of Additional Authority to the State of Texas	155

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	48 FR 23665, 5/26/83 - Extension of Comment Period for for Radionuclides	
81	48 FR 28275, 6/21/83 - Delegation of Authority to the State of California and Delegation of Authority to the Maricopa County Health Department, Arizona	156
	48 FR 32126, 7/13/83 - Proposed Amendments to Asbestos Standard	
	48 FR 33112, 7/20/83 - Proposed Standards for Inorganic Arsenic	
82	48 FR 33868, 7/26/83 - Delegation of Additional Authority to the Oklahoma State Department of Health	157
83	48 FR 36579, 8/12/83 - Delegation of Authority to Connecticut, Maine, New Hampshire, Rhode Island, Vermont and Massachusetts	158
	48 FR 38009, 8/22/83 - Extension of Public Comment Period for Proposed Standards for Inorganic Arsenic	
	48 FR 40911, 9/12/83 - Corrections to Proposed Standards for Inorganic Arsenic	
84	48 FR 41407, 9/15/83 - Delegation of Authority to Hawaii Department of Health	161
85	48 FR 42815, 9/20/83 - Delegation of Authority to the State of California	163
86	48 FR 43326, 9/23/83 - Delegation of Authority to the State of California (2 documents)	164
87	48 FR 46535, 10/13/83 - Delegation of Authority to the State of New York	166
	48 FR 51064, 11/4/83 - Proposed Revision to Method 105, Determination of Mercury in Wastewater Treatment Plant Sewage Sludges	
88	48 FR 54978, 12/8/83 - Delegation of Authority to the State of Missouri	167
89	48 FR 55266, 12/9/83 - Revisions to Methods 103 and 104 of Appendix B	168
	48 FR 55880, 12/16/83 - Reopening of Public Comment Period for Proposed Standards for Inorganic Arsenic	

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90	49 FR 4471, 2/7/84 - Delegation of Authority to the State of Louisiana	173
	49 FR 8386, 3/6/84 - Proposed Withdrawal of Proposed Standards for Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, and Benzene Storage Vessels	
	49 FR 9437, 3/13/84 - Correction to Proposed Withdrawal of Proposed Benzene Standards	
	49 FR 10278, 3/20/84 - Reopening of Public Comment Period for Proposed Standards for Inorganic Arsenic	
91	49 FR 13658, 4/5/84 - Promulgation of Amendments to Asbestos Standard	175
92	49 FR 13875, 4/9/84 - Delegation of Authority to the State of Arizona	183
93	49 FR 13876, 4/9/84 - Delegation of Authority to the State of California (3 documents)	184
94	49 FR 19819, 5/10/84 - Delegation of Authority to the State of Iowa	187
95	49 FR 22283, 5/29/84 - Republication of Addresses of EPA Regional Offices	188
96	49 FR 23478, 6/6/84 - Regulation of Benzene; Response to Public Comments	190
97	49 FR 23498, 6/6/84 - National Emission Standards Promulgated for Benzene Equipment Leaks (Fugitive Emission Sources)	208
	49 FR 23522, 6/6/84 - Proposed Emission Standards for Benzene Emission from Coke By-Product Recovery Plants	
	49 FR 23558, 6/6/84 - Withdrawal of Proposed Standards for Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, and Benzene Storage Vessels	
	49 FR 23568, 6/6/84 - Proposed Amendments to General Provisions	
98	49 FR 23837, 6/8/84 - Subdelegation of Authority to Oklahoma City-County Health Department	230
99	49 FR 25453, 6/21/84 - Amendments to Asbestos Standard: Corrections	231

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100	49 FR 26229, 6/27/84 - Delegation of Authority to the State of Nevada	231
101	49 FR 26230, 6/27/84 - Delegation of Authority to the State of California	232
102	49 FR 27751, 7/6/84 - Delegation of Additional Authority to the State of Arkansas	233
103	49 FR 28556, 7/13/84 - Delegation of Authority to the City of Philadelphia	233
104	49 FR 28708, 7/16/84 - Delegation of Authority to the States of Indiana, Michigan, Ohio, Minnesota and Wisconsin	236
105	49 FR 28715, 7/16/84 - Delegation of Authority to the State of Ohio	243
	49 FR 33695, 8/24/84 - Notice of Availability of New Technical Information for Proposed Standards for Radionuclides	
	49 FR 33904, 8/27/84 - Reopening of Public Comment Period for Proposed Standards for Benzene Emissions from Coke By-Products Recovery Plants	
106	49 FR 35768, 9/12/84 - Revisions to Reference Method 105 and Corrections to Methods 101 and 101A	244
107	49 FR 35936, 9/13/84 - Supplemental Delegation of Authority to South Carolina	247
108	49 FR 36368, 9/17/84 - Delegation of Authority to States in Region VIII	248
	49 FR 36877, 9/20/84 - Reopening of Public Comment Period for Proposed Standards for Inorganic Arsenic	
109	49 FR 37064, 9/21/84 - Delegation of Authority to the State of New York	250
110	49 FR 38105, 9/27/84 - Delegation of Authority to the State of Arizona (2 documents)	251
111	49 FR 38106, 9/27/84 - Delegation of Authority to the State of Nevada	252
112	49 FR 38946, 10/2/84 - Corrections to Standard for Benzene Equipment Leaks	254

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113	49 FR 43647, 10/31/84 - Corrections to Standard for Benzene Equipment Leaks	254
	49 FR 43906, 10/31/84 - Withdrawal of Proposed Standards for Radionuclides	
	49 FR 43915, 10/31/84 - Standards for Radon-222 Emissions from Underground Uranium Mines; Advance Notice of Proposed Rulemaking	
	49 FR 43916, 10/31/84 - Standards for Radon-222 Emissions from Licensed Uranium Mills; Advance Notice of Proposed Rulemaking	
114	49 FR 44633, 11/8/84 - Relinquishment of Authority to Tennessee and Delegation of Authority to the State of Mississippi	255
115	49 FR 48692, 12/14/84 - Delegation of Authority to the State of West Virginia	256
	49 FR 50146, 12/26/84 - Review and Proposed Revision of the Standards for Mercury From Mercury-Cell Chlor-Alkali Plants, Sludge Incineration and Drying Plants, and Mercury Ore Processing Facilities	
116	49 FR 50724, 12/31/84 - Delegation of Authority to the State of Florida	258

cc: San Diego County Air Pollution Control District

With respect to San Diego County, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the San Diego County APCD at the address shown in 40 CFR Parts 60.4 and 61.4.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

(Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*))

Dated: June 29, 1982.

Sonia F. Crow,

Regional Administrator.

[FR Doc. 82-18685 Filed 7-9-82; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2165-4]

Delegation of New Source Performance Standards (NSPA) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of Nevada

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAPS) authority to the Clark County Health District (CCHD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of NSPS and NESHAPS categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift primary program responsibility for the affected NSPS and NESHAPS source categories from EPA to State and local governments.

EFFECTIVE DATE: June 3, 1982.

FOR FURTHER INFORMATION CONTACT: David Jesson; New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8220, FTS 454-8220.

SUPPLEMENTARY INFORMATION: The CCHD has requested authority for delegation of certain NSPS and NESHAPS source categories. A delegation of authority was granted by letter dated May 24, 1982 and is reproduced in its entirety as follows:

Mr. Michael H. Naylor, *P.E.*,
Director, Air Pollution Control Division, Clark County Health District, P.O. Box 4426, 625 Shadow Lane, Las Vegas, NV 89106.

Dear Mr. Naylor: I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 subpart
General Provisions	A.
Storage Vessels for Petroleum Liquids	Ka.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile and Light Duty Truck Surface Coating Operations.	MM.

NESHAPS	40 CFR Part 61 subpart
General Provisions	A.
Beryllium Rocket Motor Firing	D.

In addition, we are redelegating the following NSPS and NESHAPS categories since your revised programs and procedures are acceptable:

NSPS	40 CFR Part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Asphalt Concrete Plants	I.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Coal Preparation Plants	Y.

NESHAPS	40 CFR Part 61 subpart
Asbestos	B.
Beryllium	C.
Mercury	E.
Vinyl Chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Cordially yours,

Sonia F. Crow,

Regional Administrator.

cc: Division of Environmental Protection, Nevada Department of Conservation and Natural Resources

With respect to areas under the jurisdiction of the CCHD, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the CCHD at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

(Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*)

Dated: June 29, 1982.

Sonia F. Crow,

Regional Administrator.

[FR Doc. 82-18680 Filed 7-9-82; 8:45 am]

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40 CFR Part 61

[AD-FRL-2070-8]

Appendix B; Test Methods; Revised Methods 106 and 107; and Appendix C, Quality Assurance Procedures 1 and 2; Revision

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Revised Test Methods 106 and 107 for vinyl chloride were proposed in the **Federal Register** on November 18, 1980 (45 FR 76346). This action promulgates the revised test methods. The intended effect of this action is to require all sources of vinyl chloride specified to conduct emission tests under Subparts A and F of 40 CFR Part 61 to hereafter (see effective date below) use these methods for determining compliance.

Appendix C, Quality Assurance Procedures 1 and 2, was proposed in the **Federal Register** on April 18, 1980 (45 FR 26682). This action promulgates

Procedures 1 and 2 of Appendix C. The intended effect of Procedure 1 is to provide a method for determination of gas chromatograph (GC) column resolution, and the intended effect of Procedure 2 is to provide a method for auditing GC sample analysis.

EFFECTIVE DATE: September 7, 1982.

Under Section 307(b)(1) of the Clean Air Act, judicial review of this rulemaking is available only by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under Section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Summary of Comments and Responses.* The summary of comments and responses for the proposed test methods may be obtained from the U. S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Revised Test Methods 103 and 107—Summary of Comments and Responses, EPA 450/3-82-002." The document contains (1) a summary of the changes made to the test methods since proposal and (2) a summary of all the public comments made on the proposed revised methods and the Administrator's responses to the comments.

Docket. A docket, number A-80-50, containing information considered by EPA in the development of the test methods and docket number OAQPS 78-3 Part 2 that contains background information pertaining to Appendix C are available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (A-130), West Tower Lobby, Gallery 1, 401 M Street, S.W., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Roger T. Shigehara, Emission Measurement Branch, Emission Standards and Engineering Division (MD-19), U. S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-2237.

Public Participation

The revised test methods were proposed and published in the Federal Register on November 18, 1980 (45 FR 76346). Public comments were solicited at the time of proposal. The public comment period was from November 18, 1980, to January 19, 1981, with an extension to February 19, 1981.

Five comment letters were received concerning issues relative to the proposed test methods. The comments have been carefully considered; and where determined to be appropriate by the Administrator, changes have been made in the proposed revisions to the test methods.

Procedures 1 and 2 of Appendix C were proposed and published in the Federal Register April 18, 1980 (45 FR 26330). Public comments were solicited at the time of proposal. The public comment period was from April 18, 1980, to August 21, 1980.

No comment letters were received.

Significant Comments and Changes to the Proposed Test Methods

Comments on the proposed revisions to the test methods were received from industry, industry counsel, engineering firms, and equipment manufacturers. A detailed discussion of these comments and responses can be found in the summary of comments and responses which is referred to in the ADDRESSES section of this preamble. The summary of comments and responses serves as the basis for the revisions which have been made to the test methods between proposal and promulgation. The major comments and responses are summarized in this preamble. Most of the comment letters contained multiple comments. The comments have been divided into the following areas:

Proposal of Revised Test Methods 106 and 107

One commenter felt that EPA should publish a notice in the Federal Register to clarify the November 18, 1980, notice on Test Methods 103 and 107 (45 FR 76346) as to whether the changes in the methods were proposed or final amendments. The EPA considered the suggestion to be reasonable; and a notice was published in the Federal Register on January 8, 1981 (46 FR 1316) to clarify that the changes in Methods 103 and 107 published on November 18, 1980, were proposed changes.

Sample Analysis Procedure—Method 106

One commenter suggested that Section 7.2.2, Preparation of Chromatograph Calibration Curve, be changed to require calibration at least once every 8 hours of continuous operation of the chromatograph, whereas the method requires daily calibration. The EPA has decided it would be an unnecessary burden to arbitrarily set 8 hours as a cutoff point for valid calibration. However, the comment has identified the need for instruction in the method as to the use of multiple calibration curves in data interpretation, and Section 7.2.2 has been revised to provide that instruction.

One commenter questioned the use of Figure 103-2 because it appeared to illustrate a standards preparation procedure different from the one described in the method. Figure 106-2 did illustrate a different sample preparation procedure and has been deleted from the method.

Sample Collection and Analysis Procedure—Method 107

One commenter questioned the need for the sample prepressurization procedure that is included in the revised test method. The Agency believes the prepressurization procedure is valid as prepressurization of sample vials prior to analysis has been shown to produce k_p values which agree with theoretical values. A paper describing a study of this technique has been added to the bibliography section of the method as an aid in the use of this procedure.

Quality Assurance—Method 106

One commenter requested that Section 5.2.4, Audit Cylinder Standards, further describe commercial gas manufacturers as an alternative source of these standards. The Agency considered the request to be reasonable, and Section 5.2.4 has been revised to define the acceptability of audit cylinders obtained from commercial gas manufacturers.

Docket

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated test methods and EPA responses to significant comments, the contents of the docket will serve as the record in case of judicial review [Section 307(d)(7)(A)].

Miscellaneous

This rulemaking does not impose any additional emission measurement requirements on facilities affected by this rulemaking. Rather, this rulemaking revises the test methods to which the

affected facilities are already subject. The revisions do not affect the present emission standards. If future standards impose emission measurement requirements, the impacts of the revised test methods promulgated today will be evaluated during development of those standards.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirement of a regulatory impact analysis. This regulation is not major because it will not have an annual effect on the economy of $100 million or more; it will not result in a major increase in costs or prices; and there will be no significant effects on competition, employment, investment, productivity, innovation, or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The regulation was submitted to the Office of Management and Budget for review as required by Executive Order 12291.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

(Secs. 112, 114, 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412, 7414, 7601(a))

Dated: August 24, 1982.

John W. Hernandez,

Acting Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

40 CFR Part 61 is amended by revising Test Methods 106 and 107 of Appendix B to read as follows:

Appendix B—Test Methods

* * * * *

Method 106—Determination of Vinyl Chloride From Stationary Sources

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC) nor by those who are unfamiliar with source sampling, because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. Applicability and Principle

1.1 Applicability. The method is applicable to the measurement of vinyl chloride in stack gases from ethylene dichloride, vinyl chloride, and polyvinyl chloride manufacturing processes. The method does not measure vinyl chloride contained in particulate matter.

1.2 Principle. An integrated bag sample of stack gas containing vinyl chloride (chloroethene) is subjected to GC analysis using a flame ionization detector (FID).

2. Range and Sensitivity

This method is designed for the 0.1 to 50 ppm range. However, common GC instruments are capable of detecting 0.02 ppm vinyl chloride. With proper calibration, the upper limit may be extended as needed.

3. Interferences

The chromatographic columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride; however, resolution interferences may be encountered on some sources. Therefore, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis requirements, subject to the approval of the Administrator. Approval is automatic, provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. Apparatus

4.1 Sampling (see Figure 106-1). The sampling train consists of the following components:

4.1.1 Probe. Stainless steel, Pyrex glass, or Teflon tubing (as stack temperature permits) equipped with a glass wool plug to remove particulate matter.

4.1.2 Sample Lines. Teflon, 6.4-mm outside diameter, of sufficient length to connect probe to bag. Use a new unused piece for each series of bag samples that constitutes an emission test, and discard upon completion of the test.

4.1.3 Quick Connects. Stainless steel, male (2) and female (2), with ball checks (one pair without), located as shown in Figure 106-1.

4.1.4 Tedlar Bags. 50- to 100-liter capacity, to contain sample. Aluminized Mylar bags may be used if the samples are analyzed within 24 hours of collection.

4.1.5 Bag Containers. Rigid leak-proof containers for sample bags, with covering to protect contents from sunlight.

4.1.6 Needle Valve. To adjust sample flow rates.

4.1.7 Pump. Leak-free, with minimum of 2-liter/min capacity.

4.1.8 Charcoal Tube. To prevent admission of vinyl chloride and other organics to the atmosphere in the vicinity of samplers.

4.1.9 Flowmeter. For observing sampling flow rate; capable of measuring a flow range from 0.10 to 1.00 liter/min.

4.1.10 Connecting Tubing. Teflon, 6.4-mm outside diameter, to assemble sampling train (Figure 106-1).

4.1.11 Tubing Fittings and Connectors. Teflon or stainless steel, to assemble sampling train.

4.2 Sample Recovery. Teflon tubing, 6.4-mm outside diameter, to connect bag to GC sample loop for sample recovery. Use a new unused piece for each series of bag samples that constitutes an emission test, and discard upon conclusion of analysis of those bags.

4.3 Analysis. The following equipment is required:

4.3.1 Gas Chromatograph. With FID, potentiometric strip chart recorder and 1.0- to 5.0-ml heated sampling loop in automatic sample valve. The chromatographic system shall be capable of producing a response to 0.1-ppm vinyl chloride that is at least as great as the average noise level. (Response is measured from the average value of the base line to the maximum of the wave form, while standard operating conditions are in use.)

4.3.2 Chromatographic Columns. Columns as listed below. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interferent peak. Calculation of area overlap is explained in Appendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.")

4.3.2.1 Column A. Stainless steel, 2.0 m by 3.2 mm, containing 80/100-mesh Chromasorb 102.

4.3.2.2 Column B. Stainless steel, 2.0 m by 3.2 mm, containing 20 percent GE SF-96 on 60/80-mesh Chromasorb P AW; or stainless steel, 1.0 m by 3.2 mm containing 80/100-mesh Porapak T. Column B is required as a secondary column if acetaldehyde is present. If used, column B is placed after column A. The combined columns should be operated at 120° C.

4.3.3 Flowmeters (2). Rotameter type, 100-ml/min capacity, with flow control valves.

4.3.4 Gas Regulators. For required gas cylinders.

4.3.5 Thermometer. Accurate to 1° C. to measure temperature of heated sample loop at time of sample injection.

4.3.6 Barometer. Accurate to 5 mm Hg, to measure atmospheric pressure around GC during sample analysis.

4.3.7 Pump. Leak-free, with minimum of 100-ml/min capacity.

4.3.8 Recorder. Strip chart type, optionally equipped with either disc or electronic integrator.

4.3.9 Planimeter. Optional, in place of disc or electronic integrator on recorder, to measure chromatograph peak areas.

4.4 Calibration. Sections 4.4.2 through 4.4.4 are for the optional procedure in Section 7.1.

4.4.1 Tubing. Teflon, 6.4-mm outside diameter, separate pieces marked for each calibration concentration.

4.4.2 Tedlar Bags. Sixteen-inch-square size, with valve; separate bag marked for each calibration concentration.

4.4.3 Syringes. 0.5-ml and 50-μl, gas tight, individually calibrated to dispense gaseous vinyl chloride.

4.4.4 Dry Gas Meter, with Temperature and Pressure Gauges. Singer model DTM-115 with 802 index, or equivalent, to meter nitrogen in preparation of standard gas mixtures, calibrated at the flow rate used to prepare standards.

5. Reagents

Use only reagents that are of chromatograph grade.

5.1 Analysis. The following are required for analysis.

5.1.1 Helium or Nitrogen. Zero grade, for chromatographic carrier gas.

5.1.2 Hydrogen. Zero grade.

5.1.3 Oxygen or Air. Zero grade, as required by the detector.

5.2 Calibration. Use one of the following options: either 5.2.1 and 5.2.2, or 5.2.3.

5.2.1 Vinyl Chloride. Pure vinyl chloride gas certified by the manufacturer to contain a minimum of 99.9 percent vinyl chloride, for use in the preparation of standard gas mixtures in Section 7.1. If the gas manufacturer maintains a bulk cylinder supply of 99.9+ percent vinyl chloride, the certification analysis may have been performed on this supply rather than on each gas cylinder prepared from this bulk supply. The date of gas cylinder preparation and the certified analysis must have been affixed to the cylinder before shipment from the gas manufacturer to the buyer.

5.2.2 Nitrogen. Zero grade, for preparation of standard gas mixtures as described in Section 7.1.

5.2.3 Cylinder Standards (3). Gas mixture standards (50-, 10-, and 5-ppm vinyl chloride in nitrogen cylinders). The tester may use cylinder standards to directly prepare a chromatograph calibration curve as described in Section 7.2.2, if the following conditions are met: (a) The manufacturer certifies the gas composition with an accuracy of ±3 percent or better (see Section 5.2.3.1). (b) The manufacturer recommends a maximum shelf life over which the gas concentration does not change by greater than ±5 percent from the certified value. (c) The manufacturer affixes the date of gas cylinder preparation, certified vinyl chloride concentration, and recommended maximum shelf life to the cylinder before shipment to the buyer.

5.2.3.1 Cylinder Standards Certification. The manufacturer shall certify the concentration of vinyl chloride in nitrogen in each cylinder by (a) directly analyzing each cylinder and (b) calibrating his analytical procedure on the day of cylinder analysis. To calibrate his analytical procedure, the manufacturer shall use, as a minimum, a three-point calibration curve. It is recommended that the manufacturer maintain (1) a high-concentration calibration standard (between 50 and 100 ppm) to prepare his calibration curve by an appropriate dilution technique and (2) a low-concentration calibration standard (between 5 and 10 ppm) to verify the dilution technique used. If the difference between the apparent concentration read from the calibration curve and the true concentration assigned to the low-concentration calibration standard exceeds 5 percent of the true concentration, the manufacturer shall determine the source of error and correct it, then repeat the three-point calibration.

5.2.3.2 Verification of Manufacturer's Calibration Standards. Before using a standard, the manufacturer shall verify each calibration standard (a) by comparing it to gas mixtures prepared (with 99 mole percent vinyl chloride) in accordance with the procedure described in Section 7.1 or (b) calibrating it against vinyl chloride cylinder Standard Reference Materials (SRM's) prepared by the National Bureau of Standards, if such SRM's are available. The agreement between the initially determined concentration value and the verification concentration value must be within ±5 percent. The manufacturer must reverify all calibration standards on a time interval consistent with the shelf life of the cylinder standards sold.

5.2.4 Audit Cylinder Standards (2). Gas mixture standards with concentrations known only to the person supervising the analysis of samples. The audit cylinder standards shall be identically prepared as those in Section 5.2.3 (vinyl chloride in nitrogen cylinders). The concentrations of the audit cylinder should be: one low-concentration cylinder in the range of 5 to 20 ppm vinyl chloride and one high-concentration cylinder in the range of 20 to 50 ppm. When available, the tester may obtain audit cylinders by contacting: Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Quality Assurance Division (MD-77), Research Triangle Park, North Carolina 27711. Audit cylinders obtained from a commercial gas manufacturer may be used provided: (a) the gas manufacturer certifies the audit cylinder as described in Section 5.2.3.1, and (b) the gas manufacturer obtains an independent analysis of the audit cylinders to verify this analysis. Independent analysis is defined here to mean analysis performed by an individual different than the individual who performs the gas manufacturer's analysis, while using calibration standards and analysis equipment different from those used for the gas manufacturer's analysis. Verification is complete and acceptable when the independent analysis concentration is within ±5 percent of the gas manufacturer's concentration.

6. Procedure

6.1 Sampling. Assemble the sample train as shown in Figure 103-1. A bag leak check should have been performed previously according to Section 7.3.2. Join the quick connects as illustrated, and determine that all connection between the bag and the probe are tight. Place the end of the probe at the centroid of the stack and start the pump with the needle valve adjusted to yield a flow that will fill over 50 percent of bag volume in the specific sample period. After allowing sufficient time to purge the line several times, change the vacuum line from the container to the bag and evacuate the bag until the rotameter indicates no flow. Then reposition the sample and vacuum lines and begin the actual sampling, keeping the rate proportional to the stack velocity. At all times, direct the gas exiting the rotameter away from sampling personnel. At the end of the sample period, shut off the pump, disconnect the sample line from the bag, and disconnect the vacuum line from the bag container. Protect the bag container from sunlight.

6.2 Sample storage. Keep the sample bags out of direct sunlight. When at all possible, analysis is to be performed within 24 hours, but in no case in excess of 72 hours of sample collection. Aluminized Mylar bag samples must be analyzed within 24 hours.

6.3 Sample Recovery. With a new piece of Teflon tubing identified for that bag, connect a bag inlet valve to the gas chromatograph sample valve. Switch the valve to receive gas from the bag through the sample loop. Arrange the equipment so the sample gas passes from the sample valve to 100-ml/min rotameter with flow control valve followd by a charcoal tube and a 1-in. H_2O pressure gauge. The tester may maintain the sample flow either by a vacuum pump or container pressurization if the collection bag remains in the rigid container. After sample loop purging is ceased, allow the pressure gauge to return to zero before activating the gas sampling valve.

6.4 Analysis. Set the column temperature to 100° C and the detector temperature to 150° C. When optimum hydrogen and oxygen flow rates have been determined, verify and maintain these flow rates during all chromatography operations. Using zero helium or nitrogen as the carrier gas, establish a flow rate in the range consistent with the manufacturer's requirements for satisfactory detector operation. A flow rate of approximately 40 ml/min should produce adequate separations. Observe the base line periodically and determine that the noise level has stabilized and that base line drift has ceased. Purge the sample loop for 30 seconds at the rate of 100 ml/min, shut off flow, allow the sample loop pressure to reach atmospheric pressure as indicated by the H_2O manometer, then activate the sample valve. Record the injection time (the position of the pen on the chart at the time of sample injection), sample number, sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator setting. Record the barometeric pressure. From the chart, note the peak having the retention time corresponding to vinyl chloride as determined in Section 7.2.1. Measure the vinyl chloride peak area, $A_\square$, by use of a disc integrator, electronic integrator, or a planimeter. Measure and record the peak height, $H_\square$. Record $A_\square$ and retention time. Repeat the injection at least two times or until two consecutive values for the total area of the vinyl chloride peak do not vary more than 5 percent. Use the average value for these two total areas to compute the bag concentration.

Compare the ratio of $H_\square$ to $A_\square$ for the vinyl chloride sample with the same ratio for the standard peak that is closest in height. If these ratios differ by more than 10 percent, the vinyl chloride peak may not be pure (possibly acetaldehyde is present) and the secondary column should be employed (see Section 4.3.2.2).

6.5 Determination of Bag Water Vapor Content. Measure the ambient temperature

and barometric pressure near the bag. From a water saturation vapor pressure table, determine and record the water vapor content of the bag as a decimal figure. (Assume the relative humidity to be 100 percent unless a lesser value is known.)

7. Preparation of Standard Gas Mixtures, Calibration, and Quality Assurance

7.1 Preparation of Vinyl Chloride Standard Gas Mixtures. (Optional Procedure—delete if cylinder standards are used.) Evacuate a 16-inch square Tedlar bag that has passed a leak check (described in Section 7.3.2) and meter in 5.0 liters of nitrogen. While the bag is filling, use the 0.5-ml syringe to inject 250 μl of 99.9+ percent vinyl chloride gas through the wall of the bag. Upon withdrawing the syringe, immediately cover the resulting hole with a piece of adhesive tape. The bag now contains a vinyl chloride concentration of 50 ppm. In a like manner use the 50 μl syringe to prepare gas mixtures having 10- and 5-ppm vinyl chloride concentrations. Place each bag on a smooth surface and alternately depress opposite sides of the bag 50 times to further mix the gases. These gas mixture standards may be used for 10 days from the date of preparation, after which time new gas mixtures must be prepared. (Caution: Contamination may be a problem when a bag is reused if the new gas mixture standard is a lower concentration than the previous gas mixture standard.)

7.2 Calibration.

7.2.1 Determination of Vinyl Chloride Retention Time. (This section can be performed simultaneously with Section 7.2.2.) Establish chromatograph conditions identical with those in Section 6.4 above. Determine proper attenuator position. Flush the sampling loop with zero helium or nitrogen and activate the sample valve. Record the injection time, sample loop temperature, column temperature, carrier gas flow rate, chart speed, and attenuator setting. Record peaks and detector responses that occur in the absence of vinyl chloride. Maintain conditions with the equipment plumbing arranged identically to Section 6.3, and flush the sample loop for 30 seconds at the rate of 100 ml/min with one of the vinyl chloride calibration mixtures. Then activate the sample valve. Record the injection time. Select the peak that corresponds to vinyl chloride. Measure the distance on the chart from the injection time to the time at which the peak maximum occurs. This quantity divided by the chart speed is defined as the retention time. Since other organics may be present in the sample, positive identification of the vinyl chloride peak must be made.

7.2.2 Preparation of Chromatograph Calibration Curve. Make a GC measurement of each gas mixture standard (described in Section 5.2.3 or 7.1) using conditions identical with those listed in Sections 6.3 and 6.4. Flush the sampling loop for 30 seconds at the rate of 100 ml/min with one of the standard mixtures, and activate the sample valve. Record the concentration of vinyl chloride injected (C_c), attenuator setting, chart speed, peak area, sample loop temperature, column temperature, carrier gas flow rate, and retention time. Record the barometric pressure. Calculate A_c, the peak area multiplied by the attenuator setting. Repeat until two consecutive injection areas are within 5 percent, then plot the average of those two values versus C_c. When the other standard gas mixtures have been similarly analyzed and plotted, draw a straight line through the points derived by the least squares method. Perform calibration daily, or before and after the analysis of each emission test set of bag samples, whichever is more frequent. For each group of sample analyses, use the average of the two calibration curves which bracket that group to determine the respective sample concentrations. If the two calibration curves differ by more than 5 percent from their mean value, then report the final results by both calibration curves.

7.3 Quality Assurance.

7.3.1 Analysis Audit. Immediately after the preparation of the calibration curve and prior to the sample analyses, perform the analysis audit described in Appendix C, Procedure 2: "Procedure for Field Auditing GC Analysis."

7.3.2 Bag Leak Checks. Checking of bags for leaks is required after bag use and strongly recommended before bag use. After each use, connect a water manometer and pressurize the bag to 5 to 10 cm H_2O (2 to 4 in. H_2O). Allow to stand for 10 min. Any displacement in the water manometer indicates a leak. Also, check the rigid container for leaks in this manner. (Note: An alternative leak check method is to pressurize the bag to 5 to 10 cm H_2O and allow it to stand overnight. A deflated bag indicates a leak.) For each sample bag in its rigid container, place a rotameter in line between the bag and the pump inlet. Evacuate the bag. Failure of the rotameter to register zero flow when the bag appears to be empty indicates a leak.

8. Calculations.

8.1 Determine the sample peak area, A_c, as follows:

$$A_c = A_m A_f \qquad \text{Eq. 106-1}$$

Where:

A_m = Measured peak area.

A_f = Attenuation factor.

8.2 Vinyl Chloride Concentrations. From the calibration curves described in Section 7.2.2, determine the average concentration value of vinyl chloride, C_c, that corresponds to A_c, the sample peak area. Calculate the concentration of vinyl chloride in the bag, C_b, as follows:

$$C_b = \frac{C_c P_r T_i}{P_i T_r (1 - B_{wb})} \qquad \text{Eq. 106-2}$$

Where:

P_r = Reference pressure, the laboratory pressure recorded during calibration, mm Hg.

T_i = Sample loop temperature on the absolute scale at the time of analysis, °K.

P_i = Laboratory pressure at time of analysis, mm Hg.

T_r = Reference temperature, the sample loop temperature recorded during calibration, °K.

B_{wb} = Water vapor content of the bag sample, as analyzed.

9. Bibliography.

1. Brown D.W., E.W. Loy, and M.H. Stephenson, Vinyl Chloride Monitoring Near the B. F. Goodrich Chemical Company in Louisville, KY. Region IV, U.S. Environmental Protection Agency, Surveillance and Analysis Division, Athens, GA. June 24, 1974.

2. G.D. Clayton and Associates. Evaluation of a Collection and Analytical Procedure for Vinyl Chloride in Air. U.S. Environmental Protection Agency, Research Triangle Park, N.C. EPA Contract No. 68-02-1408, Task Order No. 2, EPA Report No. 75-VCL-1. December 13, 1974.

3. Midwest Research Institute. Standardization of Stationary Source Emission Method for Vinyl Chloride. U.S. Environmental Protection Agency, Research Triangle Park, N.C. Publication No. EPA-600/4-77-026. May 1977.

4. Scheil, G. and M.C. Sharp. Collaborative Testing of EPA Method 106 (Vinyl Chloride) that Will Provide for a Standardized Stationary Source Emission Measurement Method. U.S. Environmental Protection Agency, Research Triangle Park, N.C. Publication No. EPA 600/4-78-058. October 1978.

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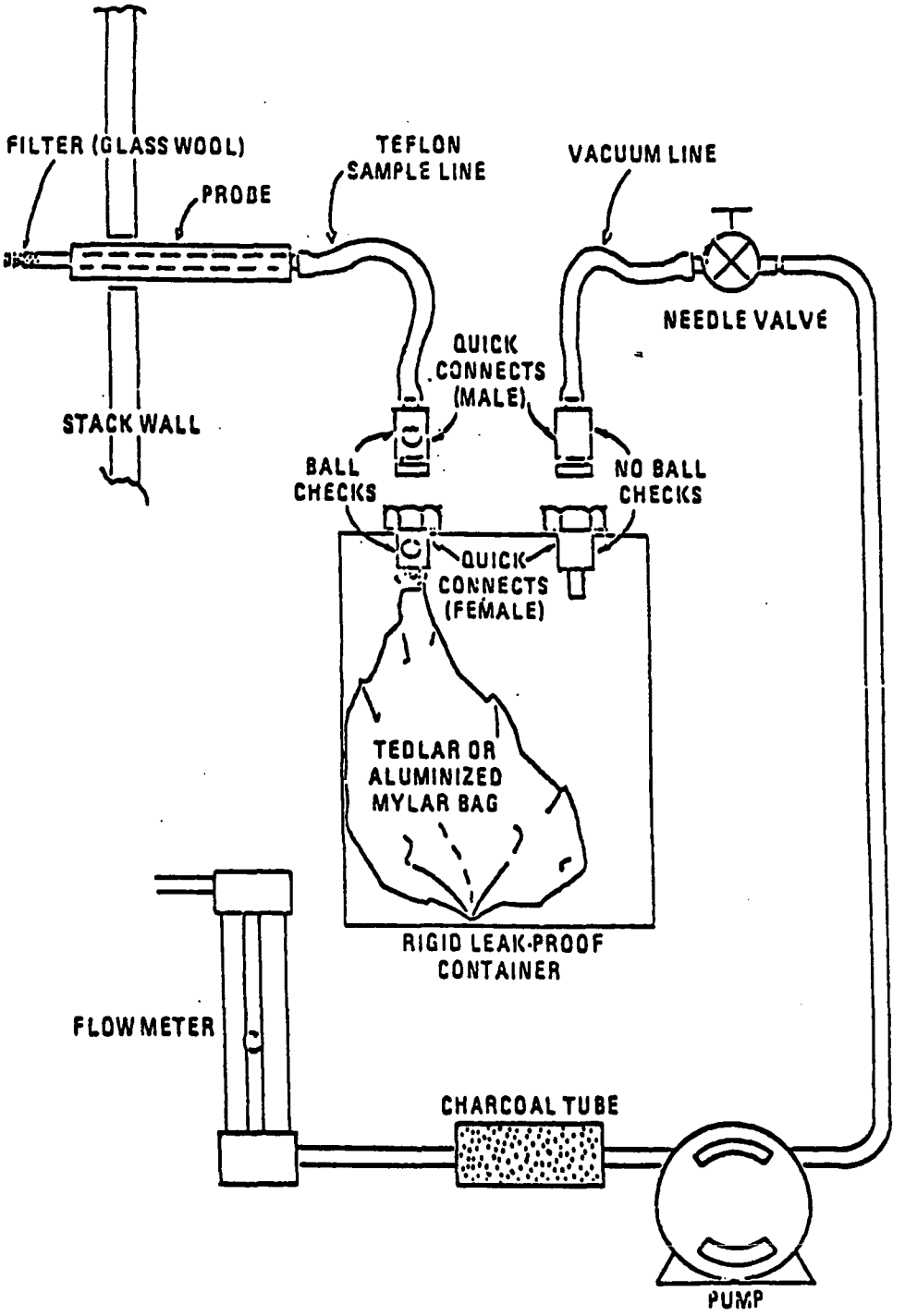

Figure 106-1. Integrated-bag sampling train. (Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency.)

Method 107—Determination of Vinyl Chloride Content of Inprocess Wastewater Samples, and Vinyl Chloride Content of Polyvinyl Chloride Resin, Slurry, Wet Cake, and Latex Samples

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC), nor by those who are unfamiliar with source sampling, because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. *Applicability and Principle.*

1.1 Applicability. This method applies to the measurement of the vinyl chloride monomer (VCM) content of inprocess wastewater samples, and the residual vinyl chloride monomer (RVCM) content of polyvinyl chloride (PVC) resins, wet cake, slurry, and latex samples. It cannot be used for polymer in fused forms, such as sheet or cubes. This method is not acceptable where methods from Section 304(h) of the Clean Water Act, 33 U.S.C. 1251 et seq. (the Federal Water Pollution Control Amendments of 1972 as amended by the Clean Water Act of 1977) are required.

1.2 Principle. The basis for this method relates to the vapor equilibrium that is established between RVCM, PVC resin, water, and air in a closed system. The RVCM in a PVC resin will equilibrate rapidly in a closed vessel, provided that the temperature of the PVC resin is maintained above the glass transition temperature of that specific resin.

2. Range and Sensitivity. The lower limit of detection of vinyl chloride will vary according to the chromatograph used. Values reported include 1×10^{-7} mg and 4×10^{-7} mg. With proper calibration, the upper limit may be extended as needed.

3. *Interferences.* The chromatograph columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride; however, resolution interferences may be encountered on some sources. Therefore, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis requirements, subject to the approval of the Administrator. Approval is automatic provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. *Precision and Reproducibility.* An interlaboratory comparison between seven laboratories of three resin samples, each split into three parts, yielded a standard deviation of 2.63 percent for a sample with a mean of 2.09 ppm, 4.16 percent for a sample with a mean of 1.66 ppm, and 5.29 percent for a sample with a mean of 62.66 ppm.

5. *Safety.* Do not release vinyl chloride to the laboratory atmosphere during preparation of standards. Venting or purging with VCM/air mixtures must be held to a minimum. When they are required, the vapor must be routed to outside air. Vinyl chloride, even at low ppm levels, must never be vented inside the laboratory. After vials have been analyzed, the gas must be vented prior to removal of the vial from the instrument turntable. Vials must be vented through a hypodermic needle connected to an activated charcoal tube to prevent release of vinyl chloride into the laboratory atmosphere. The charcoal must be replaced prior to vinyl chloride breakthrough.

6. *Apparatus.*

6.1 Sampling. The following equipment is required:

6.1.1 Glass bottles, 60-ml (2-oz) capacity, with wax-lined screw-on tops, for PVC samples.

6.1.2 Glass Vials. 50-ml capacity Hypovial, sealed with Teflon faced Tuf-Bond discs, for water samples.

6.1.3 Adhesive Tape. To prevent loosening of bottle tops.

6.2 Sample Recovery. The following equipment is required:

6.2.1 Glass Vials. With butyl rubber septa, Perkin-Elmer Corporation Nos. 0105–0129 (glass vials), B001–0728 (gray butyl rubber septum, plug style), 0105–0131 (butyl rubber septa), or equivalents. The seals must be made from butyl rubber. Silicone rubber seals are not acceptable.

6.2.2 Analytical Balance. Capable of weighing to ±0.0001 gram.

6.2.3 Vial Sealer. Perkin-Elmer No. 105–0108, or equivalent.

6.2.4 Syringe. 100-μl capacity, precision series "A" No. 010025, or equivalent.

6.3 Analysis. The following equipment is required:

6.3.1 Gas Chromatograph. Perkin-Elmer Corporation Model F–40, F–42, or F–45 Head-Space Analyzer, or equivalent. Equipped with backflush accessory.

6.3.2 Chromatographic Columns. Stainless steel 1 m by 3.2 mm and 2 m by 3.2 mm, both containing 50/80-mesh Porapak Q. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interferent peak. Calculation of area overlap is explained in Appendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.") Two 1.83 m columns, each containing 1 percent Carbowax 1500 on Carbopak B, have been suggested for samples containing acetaldehyde.

6.3.3 Thermometer. 0 to 100° C, accurate to ±0.1° C, Perkin-Elmer No. 105–0109, or equivalent.

6.3.4 Sample Tray Thermostat System. Perkin-Elmer No. 105–0103, or equivalent.

6.3.5 Septa. Sandwich type, for automatic dosing, 13 mm, Perkin-Elmer No. 105–1003, or equivalent.

6.3.6 Integrator-Recorder. Hewlett-Packard Model 3380A, or equivalent.

6.3.7 Filter Drier Assembly (3). Perkin-Elmer No. 2230117, or equivalent.

6.3.8 Soap Film Flowmeter. Hewlett Packard No. 0101–0113, or equivalent.

6.3.9 Regulators. For required gas cylinders.

6.3.10 Headspace Vial Pre-Pressurizer. Nitrogen pressurized hypodermic needle inside protective shield. (Blueprint available from Test Support Section, Emission Measurement Branch, Office of Air Quality Planning and Standards, Environmental Protection Agency, Mail Drop 19, Research Triangle Park, N.C. 27711.)

7. *Reagents.* Use only reagents that are of chromatographic grade.

7.1 Analysis. The following items are required for analysis:

7.1.1 Hydrogen. Zero grade.

7.1.2 Nitrogen. Zero grade.

7.1.3 Air. Zero grade.

7.2 Calibration. The following items are required for calibration:

7.2.1 Cylinder Standards (4). Gas mixture standards (50-, 500-, 2000- and 4000-ppm vinyl chloride in nitrogen cylinders). The tester may use cylinder standards to directly prepare a chromatograph calibration curve as described in Section 9.2, if the following conditions are met: (a) The manufacturer certifies the gas composition with an accuracy of ±3 percent or better (see Section 7.2.1.1). (b) The manufacturer recommends a maximum shelf life over which the gas concentration does not change by greater than ±5 percent from the certified value. (c) The manufacturer affixes the date of gas cylinder preparation, certified vinyl chloride concentration, and recommended maximum shelf life to the cylinder before shipment to the buyer.

7.2.1.1 Cylinder Standards Certification. The manufacturer shall certify the concentration of vinyl chloride in nitrogen in each cylinder by (a) directly analyzing each cylinder and (b) calibrating his analytical procedure on the day of cylinder analysis. To calibrate his analytical procedure, the manufacturer shall use, as a minimum, a 3-point calibration curve. It is recommended that the manufacturer maintain (1) a high-concentration calibration standard (between 4000 and 8000 ppm) to prepare his calibration curve by an appropriate dilution technique and (2) a low-concentration calibration standard (between 50 and 500 ppm) to verify the dilution technique used. If the difference between the apparent concentration read from the calibration curve and the true concentration assigned to the low-concentration calibration standard exceeds 5 percent of the true concentration, the manufacturer shall determine the source of error and correct it, then repeat the 3-point calibration.

7.2.1.2 Verification of Manufacturer's Calibration Standards. Before using, the manufacturer shall verify each calibration standard by (a) comparing it to gas mixtures prepared (with 99 mole percent vinyl chloride) in accordance with the procedure described in Section 7.1 of Method 106 or by (b) calibrating it against vinyl chloride cylinder Standard Reference Materials (SRM's) prepared by the National Bureau of Standards, if such SRM's are available. The agreement between the initially determined concentration value and the verification concentration value must be within ± 5

percent. The manufacturer must reverify all calibration standards on a time interval consistent with the shelf life of the cylinder standards sold.

8. *Procedure.*

8.1 Sampling.

8.1.1 PVC Sampling. Allow the resin or slurry to flow from a tap on the tank or silo until the tap line has been well purged. Extend and fill a 60-ml sample bottle under the tap, and immediately tighten a cap on the bottle. Wrap adhesive tape around the cap and bottle to prevent the cap from loosening. Place an identifying label on each bottle, and record the date, time, and sample location both on the bottles and in a log book.

8.1.2 Water Sampling. Prior to use, the 50-ml vials (without the discs) must be capped with aluminum foil and heated in a muffle furnace at 400° C for at least 1 hour to destroy or remove any organic matter that could interfere with analysis. At the sampling location fill the vials bubble-free to overflowing so that a convex meniscus forms at the top. The excess water is displaced as the sealing disc is carefully placed, with the Teflon side down, on the opening of the vial.

Place the aluminum seal over the disc and the neck of the vial, and crimp into place. Affix an identifying label on the bottle, and record the date, time, and sample location both on the vials and in a log book. All samples must be kept refrigerated until analyzed.

8.2 Sample Recovery. Samples must be run within 24 hours.

8.2.1 Resin Samples. The weight of the resin used must be between 3.5 and 4.5 grams. An exact weight must be obtained (±0.0001 g) for each sample. In the case of suspension resins, a volumetric cup can be prepared for holding the required amount of sample. When the cup is used, open the sample bottle, and add the cup volume of resin to the tared sample vial (tared, including septum and aluminum cap). Obtain the exact sample weight, add 100μl or about two equal drops of distilled water, and immediately seal the vial. Report this value on the data sheet; it is required for calculation of RVCM. In the case of dispersion resins, the cup cannot be used. Weigh the sample in an aluminum dish, transfer the sample to the tared vial, and accurately weigh it in the vial. After prepressurization of the samples, condition them for a minimum of 1 hour in the 80° C bath. Do not exceed 5 hours.

Note.—Some aluminum vial caps have a center section that must be removed prior to placing into sample tray. If the cap is not removed, the injection needle will be damaged.

8.2.2 Suspension Resin Slurry and Wet Cake Samples. Decant the water from a wet cake sample, and turn the sample bottle upside down onto a paper towel. Wait for the water to drain, place approximately 0.2 to 4.0 grams of the wet cake sample in a tared vial (tared, including septum and aluminum cap) and seal immediately. Then determine the sample weight (±0.0001 g). All samples must be prepressurized and then conditioned for 1 hour at 80° C. A sample of wet cake is used to determine total solids (TS). This is required for calculating the RVCM.

8.2.3 Dispersion Resin Slurry and Geon Latex Samples. The materials should not be filtered. Sample must be thoroughly mixed. Using a tared vial (tared, including septum and aluminum cap) add approximately eight drops (0.25 to 0.35 g) of slurry or latex using a medicine dropper. This should be done immediately after mixing. Seal the vial as soon as possible. Determine sample weight (±0.0001 g). After prepressurization, condition the vial for 1 hour at 80° C in the analyzer bath. Determine the TS on the slurry sample (Section 8.3.5).

8.2.4 Inprocess Wastewater Samples. Using a tared vial (tared, including septum and aluminum cap) quickly add approximately 1 cc of water using a medicine dropper. Seal the vial as soon as possible. Determine sample weight (±0.0001 g). Prepressurize the vial, and then condition for 1 to 2 hours as required at 80° C in the analyzer bath.

8.3 Analysis.

8.3.1 Preparation of Equipment. Install the chromatographic column and condition overnight at 160° C. In the first operation, Porapak columns must be purged for 1 hour at 230° C.

Do not connect the exit end of the column to the detector while conditioning. Hydrogen and air to the detector must be turned off while the column is disconnected.

8.3.1.1 *Flow Rate Adjustments.* Adjust flow rates as follows:

a. Nitrogen Carrier Gas. Set regulator on cylinder to read 50 psig. Set regulator on chromatograph to produce a flow rate of 30.0 cc/min. Accurately measure the flow rate at the exit end of the column using the soap film flowmeter and a stopwatch, with the oven and column at the analysis temperature. After the instrument program advances to the "B" (backflush) mode, adjust the nitrogen pressure regulator to exactly balance the nitrogen flow rate at the detector as was obtained in the "A" mode.

b. Vial Prepressurizer Nitrogen. After the nitrogen carrier is set, solve the following equation and adjust the pressure on the vial prepressurizer accordingly.

$$P = \frac{T_1}{T_2}\left[P_1 - \frac{P_{w1} - P_{w2}}{7.50}\right] - 10 \text{ k Pa}$$

Where:

T_1 = Ambient temperature, °K.

T_2 = Conditioning bath temperature, °K.

P_1 = Gas chromatograph absolute dosing pressure (analysis mode), k Pa.

P_{w1} = Water vapor pressure @ 80° C (525.8 mm Hg).

P_{w2} = Water vapor pressure @ 22° C (19.8 mm Hg).

7.50 = mm Hg per k Pa.

10 k Pa = Factor to adjust the prepressurized pressure to slightly less than the dosing pressure.

Because of gauge errors, the apparatus may over-pressurize the vial. If the vial pressure is at or higher than the dosing pressure, an audible double injection will occur. If the vial pressure is too low, errors will occur on resin samples because of inadequate time for head-space gas equilibrium. This condition can be avoided by running several standard gas samples at various pressures around the calculated pressure, and then selecting the highest pressure that does not produce a double injection. All samples and standards must be pressurized for 60 seconds using the vial prepressurizer. The vial is then placed into the 80° C conditioning bath and tested for leakage by placing a drop of water on the septum at the needle hole. A clean, burr-free needle is mandatory.

c. Burner Air Supply. Set regulator on cylinder to read 50 psig. Set regulator on chromatograph to supply air to burner at a rate between 250 and 300 cc/min. Check with bubble flowmeter.

d. Hydrogen Supply. Set regulator on cylinder to read 30 psig. Set regulator on chromatograph to supply approximately 35 ± 5 cc/min. Optimize hydrogen flow to yield the most sensitive detector response without extinguishing the flame. Check flow with bubble meter and record this flow.

8.3.1.2 Temperature Adjustments. Set temperatures as follows:

a. Oven (chromatograph column), 140° C.

b. Dosing Line, 150° C.

c. Injection Block, 170° C.

d. Sample Chamber, Water Temperature, 80° C ± 1.0° C.

8.3.1.3 *Ignition of Flame Ionization Detector.* Ignite the detector according to the manufacturer's instructions.

8.3.1.4 Amplifier Balance. Balance the amplifier according to the manufacturer's instructions.

8.3.2 Programming the Chromatograph. Program the chromatograph as follows:

a. I—Dosing or Injection Time. The normal setting is 2 seconds.

b. A—"Analysis Time." The normal setting is approximately 70 percent of the VCM retention time. When this timer terminates, the programmer initiates backflushing of the first column.

c. B—Backflushing Time. The normal setting is double the "analysis time."

d. W—Stabilization Time. The normal setting is 0.5 min to 1.0 min.

e. X—Number of Analyses Per Sample. The normal setting is one.

8.3.3 Preparation of Sample Turntable. Before placing any sample into turntable, be certain that the center section of the aluminum cap has been removed. All samples and standards must be pressurized for 60 seconds by using the vial prepressurizer. The numbered sample vials should be placed in the corresponding numbered positions in the turntable. Insert samples in the following order:

Position 1 and 2—Old 2000-ppm standards for conditioning. These are necessary only after the analyzer has not been used for 24 hours or longer.

Position 3—50-ppm standard, freshly prepared.

Position 4—500-ppm standard, freshly prepared.

Position 5—2000-ppm standard, freshly prepared.

Position 6—4000-ppm standard, freshly prepared.

Position 7—Sample No. 7 (This is the first sample of the day, but is given as 7 to be consistent with the turntable and the integrator printout.)

After all samples have been positioned, insert the second set of 50-, 500-, 2000-, and 4000-ppm standards. Samples, including standards, must be conditioned in the bath of 80° C for 1 hour (not to exceed 5 hours).

8.3.4 *Start Chromatograph Program.* When all samples, including standards, have been conditioned at 80° C for 1 hour, start the analysis program according to the manufacturer's instructions. These instructions must be carefully followed when starting and stopping a program to prevent damage to the dosing assembly.

8.3.5 Determination of TS. For wet cake, slurry, resin solution, and PVC latex samples, determine TS for each sample by accurately weighing approximately 3 to 4 grams of sample in an aluminum pan before and after placing in a draft oven (105 to 110° C). Samples must be dried to constant weight. After first weighing, return the pan to the oven for a short period of time, and then reweigh to verify complete dryness. The TS are then calculated as the final sample weight divided by initial sample weight.

9. *Calibration.* Calibration is to be performed each 8-hour period when the instrument is used. Each day, prior to running samples, the column should be conditioned by running two 2000-ppm standards from the previous day.

9.1 Preparation of Standards. Calibration standards are prepared as follows: Place 100μl or about two equal drops of distilled water in the sample vial, then fill the vial with the VCM/nitrogen standard, rapidly seat the septum, and seal with the aluminum cap. Use a ⅛-in. stainless steel line from the cylinder to the vial. Do not use rubber or tygon tubing. The sample line from the cylinder must be purged (into a properly vented hood) for several minutes prior to filling the vials. After purging, reduce the flow rate to 500 to 1000 cc/min. Place end of tubing into vial (near bottom). Position a septum on top of the vial, pressing it against the ⅛-in. filling tube to minimize the size of the vent opening. This is necessary to mimimize mixing air with the standard in the vial. Each vial is to be purged with standard for 20 seconds, during which time the filling tube is gradually slid to the top of the vial. After the 20 seconds, the tube is removed with the septum, simultaneously sealing the vial. Practice will be necessary to develop good technique. Rubber gloves should be worn during the above operations. The sealed vial must then be pressurized for 60 seconds using the vial prepressurizer. Test the vial for leakage by placing a drop of water on the septum at the needle hole.

9.2 Preparation of Chromatograph Calibration Curve.

Prepare two 50-, 500-, 2000-, and 4000-ppm standard samples. Run the calibration samples in exactly the same manner as regular samples. Plot A_c, the integrator area counts for each standard sample, versus C_c, the concentration of vinyl chloride in each standard sample. Draw a straight line through the points derived by the least squares method.

10. *Calculations.*

10.1 Response Factor. If the calibration curve described in Section 9.2 passes through zero, a response factor, R_f, may be used to compute vinyl chloride concentrations. To compute a response factor, divide any particular A_c by the corresponding C_c.

$$R_f = \frac{A_s}{C_c} \qquad \text{Eq. 107-1}$$

Where:

A_c = Chromatograph area counts of vinyl chloride for the sample.

P_a = Ambient atmospheric pressure, mm Hg.

R_f = Response factor in area counts per ppm VCM.

T_1 = Ambient laboratory temperature, °K.

M_v = Molecular weight of VCM, 62.5 g/mole.

V_g = Volume of the vapor phase, cm^3.

R = Gas constant, (62360 cm_3) (mm Hg/mole) (°K).

m = Sample weight, g.

K_p = Henry's Law Constant for VCM in PVC @ 80° C, 6.52×10^{-6} g/g/mm Hg.

If the calibration curve does not pass through zero, the calibration curve must be employed to calculate each sample concentration unless the error introduced by using a particular R_f is known.

10.2 Residual Vinyl Chloride Monomer Concentration, (C_{rvc}) or Vinyl Chloride Monomer Concentration. Calculate C_{rvc} in ppm or mg/kg as follows:

$$C_{rvc} = \frac{A_s P_a}{R_f T_1}\left[\frac{M_v V_g}{R m} + K_p (TS) T_2 + K_w (1 - TS) T_2\right] \qquad \text{Eq. 107-2}$$

Results calculated using these equations represent concentration based on the total sample. To obtain results based on dry PVC content, divide by TS.

TS = Total solids expressed as a decimal fraction.

T_2 = Equilibrium temperature, °K.

K_w = Henry's Law Constant for VCM in water @ 80° C, 7×10^{-7} g/g/mm Hg.

Assuming the following conditions are met, these values can be substituted into Equation 107-2:

P_a = 750 mm Hg.

V_g = Vial volume—sample volume (Fisher vials are 22.0 cm^3 and Perkin-Elmer vials are 21.8 cm^3).

T_1 = 23° C or 296° K.

T_2 = 80° C or 363° K.

$$C_{rvc} = \frac{A_s}{R_f} \frac{750}{296}\left[\frac{65.5\left(21.8 - \frac{g(TS)}{1.36} - \frac{g(1-TS)}{0.9953}\right)}{62360\, m} + 6.25 \times 10^{-6}(TS)(363) + 7.0 \times 10^{-7}(1-TS)(363)\right]$$

11. *References.*

1. B.F. Goodrich, Residual Vinyl Chloride Monomer Content of Polyvinyl Chloride Resins, Latex, Wet Cake, Slurry and Water Samples. B.F. Goodrich Chemical Group Standard Test Procedure No. 1005-E. B.F. Goodrich Technical Center, Avon Lake, Ohio. October 8, 1979.

2. Berens, A.R. The Diffusion of Vinyl Chloride in Polyvinyl Chloride. ACS—Division of Polymer Chemistry, Polymer Preprints *15* (2):197. 1974.

3. Berens, A.R. The Diffusion of Vinyl Chloride in Polyvinyl Chloride. ACS—Division of Polymer Chemistry, Polymer Preprints *15* (2):203. 1974.

4. Berens, A.R., L.B. Crider, C.J. Tomanek, and J.M. Whitney. Analysis for Vinyl Chloride in PVC Powders by Head—Space Gas Chromatography. Journal of Applied Polymer Science. *19*:3169–3172. 1975.

5. Mansfield, R.A. The Evaluation of Henry's Law Constant (Kp) and Water Enhancement in the Perkin-Elmer Multifract F-40 Gas Chromatograph. B.F. Goodrich. Avon Lake, Ohio. February 10, 1978.

40 CFR Part 61 is amended by adding Appendix C as follows:

Appendix C.—Quality Assurance Procedures

* * * * *

Procedure 1—Determination of Adequate Chromatographic Peak Resolution

In this method of dealing with resolution, the extent to which one chromatographic peak overlaps another is determined.

For convenience, consider the range of the elution curve of each compound as running from -2σ to $+2\sigma$. This range is used in other resolution criteria, and it contains 95.45 percent of the area of a normal curve. If two

$$\frac{1}{\sqrt{2\pi}\sigma_c}\int_{b-2\sigma_s}^{b+2\sigma_s} e^{\left(\frac{-t_c^2}{2\sigma_c}\right)}dt = \frac{1}{\sqrt{2\pi}}\int_{\frac{b-2\sigma_s}{\sigma_c}}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx - \frac{1}{\sqrt{2\pi}}\int_{\frac{b+2\sigma_s}{\sigma_c}}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$$

peaks are separated by a known distance, b, one can determine the fraction of the area of one curve that lies within the range of the other. The extent to which the elution curve of a contaminant compound overlaps the curve of a compound that is under analysis is found by integrating the contaminant curve over the limits $b-2\sigma_s$ to $b+2\sigma_s$, where σ_s is the standard deviation of the sample curve.

This calculation can be simplified in several ways. Overlap can be determined for curves of unit area; then actual areas can be introduced. Desired integration can be resolved into two integrals of the normal distribution function for which there are convenient calculation programs and tables. An example would be Program 15 in Texas Instruments Program Manual ST1, 1975, Texas Instruments, Inc., Dallas, Texas 75222.

The following calculation steps are required:*

1. $2\sigma_s = t_s/\sqrt{2 \ln 2}$
2. $\sigma_c = t_c/2\sqrt{2 \ln 2}$
3. $x_1 = (b-2\sigma_s)/\sigma_c$
4. $x_2 = (b+2\sigma_s)/\sigma_c$
5. $Q(x_1) = \frac{1}{\sqrt{2\pi}}\int_{x_1}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$
6. $Q(x_2) = \frac{1}{\sqrt{2\pi}}\int_{x_2}^{\infty} e^{\left(\frac{-x^2}{2}\right)}dx$
7. $I_o = Q(x_1) - Q(x_2)$
8. $A_o = I_o A_c/A_s$
9. Percentage overlap = $A_o \times 100$

where:

A_s = Area of the sample peak of interest determined by electronic integration or by the formula $A_s = h_s t_s$.

A_c = Area of the contaminant peak, determined in the same manner as A_s.

b = Distance on the chromatographic chart that separates the maxima of the two peaks.

H_s = Peak height of the sample compound of interest, measured from the average value of the baseline to the maximum of the curve.

t_s = Width of sample peak of interest at 1/2 peak height.

t_c = Width of the contaminant peak at 1/2 of peak height.

σ_s = Standard deviation of the sample compound of interest elution curve.

σ_c = Standard deviation of the contaminant elution curve.

$Q(x_1)$ = Integral of the normal distribution function from x_1 to infinity.

$Q(x_2)$ = Integral of the normal distribution function from x_2 to infinity.

I_o = Overlap integral.

A_o = Area overlap fraction.

*In most instances, $Q(x_2)$ is very small and may be neglected.

In judging the suitability of alternate GC columns or the effects of altering chromatographic conditions, one can employ the area overlap as the resolution parameter with a specific maximum permissible value.

The use of Gaussian functions to describe chromatographic elution curves is widespread. However, some elution curves are highly asymmetric. In cases where the sample peak is followed by a contaminant that has a leading edge that rises sharply but the curve then tails off, it may be possible to define an effective width for t_r as "twice the distance from the leading edge to a perpendicular line through the maxim of the contaminant curve, measured along a perpendicular bisection of that line."

Procedure 2—Procedure for Field Auditing GC Analysis

Responsibilities of audit supervisor and analyst at the source sampling site include the following:

A. The audit supervisor verifies that audit cylinders are stored in a safe location both before and after the audit to prevent vandalism.

B. At the beginning and conclusion of the audit, the analyst records each cylinder number and pressure. An audit cylinder is never analyzed when the pressure drops below 200 psi.

C. During the audit, the analyst performs a minimum of two consecutive analyses of each audit cylinder gas. The audit must be conducted to coincide with the analysis of source test samples, normally immediately after GC calibration and prior to sample analyses.

D. At the end of audit analyses, the audit supervisor requests the calculated concentrations from the analyst and compares the results with the actual audit concentrations. If each measured concentration agrees with the respective actual concentration within ±10 percent, he directs the analyst to begin analyzing source samples. Audit supervisor judgment and/or supervisory policy determine action when agreement is not within ±10 percent. When a consistent bias in excess of 10 percent is found, it may be possible to proceed with the sample analysis, with a corrective factor to be applied to the results at a later time. However, every attempt should be made to locate the cause of the discrepancy, as it may be misleading. The audit supervisor records each cylinder number, cylinder pressure (at the end of the audit), and all calculated concentrations. The individual being audited must not under any circumstance be told actual audit concentrations until calculated concentrations have been submitted to the audit supervisor.

Field Audit Report

Part A.—To be filled out by organization supplying audit cylinders.

1. Organization supplying audit sample(s) and shipping address

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2. Audit supervisor, organization, and phone number

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3. Shipping instructions: Name, Address, Attention

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4. Guaranteed arrival date for cylinders———

5. Planned shipping date for cylinders———

6. Details on audit cylinders from last analysis

	Low conc.	High conc.
a. Date of last analysis		
b. Cylinder number		
c. Cylinder pressure, psi		
d. Audit gas(es)/balance gas		
e. Audit gas(es), ppm		
f. Cylinder construction		

Part B.—To be filled out by audit supervisor.

1. Process sampled———

2. Audit location———

3. Name of individual audit———

4. Audit date———

5. Audit results:

	Low conc. cylinder	High conc. cylinder
a. Cylinder number		
b. Cylinder pressure before audit, psi		
c. Cylinder pressure after audit, psi		
d. Measured concentration, ppm Injection #1* Injection #2* Average		
e. Actual audit concentration, ppm (Part A, 6e)		
f. Audit accuracy:[1]		
Low Conc. Cylinder		
High Conc. Cylinder		
g. Problems detected (if any		

$$\text{Percent [1] accuracy} = \frac{\text{Measured Conc.} - \text{Actual Conc.}}{\text{Actual Conc.}} \times 100$$

[1] Results of two consecutive injections that meet the sample analysis criteria of the test method.

[FR Doc. 82-24351 Filed 9-3-82; 8:45 am]

71 **40 CFR Part 61**

[AD-FRL-2115-7]

Appendix B; Test Methods; Method 107A

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Test Method 107A for vinyl chloride was proposed in the Federal Register on February 12, 1981 (46 FR 12188). This action promulgates the test method. The intended effect of this action is to allow all sources of vinyl chloride specified to conduct emission tests under Subparts A and F of 40 CFR Part 61 to hereafter (see effective date below) use this method for determining compliance.

EFFECTIVE DATE: September 8, 1982.

Under Section 307(b)(1) of the Clean Air Act, judicial review of this test method is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under Section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings bought by EPA to enforce these requirements.

ADDRESSES: *Summary of Comments and Responses.* The summary of comments and responses for the proposed test method may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Test Method 107A—Summary of Comments and Responses, EPA-450/3-82-004." The document contains a summary of all the public comments made on the proposed method and the Administrator's response to the comments.

Docket. A docket, number A-80-37, containing information considered by EPA in the development of this test method, is available for public inspection between 8:00 a.m. and 4:00 p.m. Monday through Friday, at EPA's Central Docket Section (A-130), West Tower Lobby, Gallery 1, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Roger T. Shigehara, Emission Measurement Branch, Emission Standards and Engineering Division (MD-19), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-2237.

SUPPLEMENTARY INFORMATION:.

Public Participation

The test method was proposed and published in the Federal Register on February 12, 1981 (46 FR 12188). A public hearing was scheduled for March 26, 1981, but was not held since no one requested to speak. Public comments were solicited at the time of proposal. The public comment period was from February 12, 1981, to April 13, 1981.

Seven comment letters were received concerning issues relative to the proposed test method. The comments have been carefully considered, and it was determined that no changes were necessary in the proposed test method.

Significant Comment to the Proposed Test Method

Comments on the proposed test method were received from industry, industry counsel, engineering firms, and equipment manufacturers. A detailed discussion of these comments and responses can be found in the summary of comments and responses, which is referred to in the ADDRESSES section of this preamble. The major comments and responses are summarized in this preamble. The comments have been divided into the following areas:

Prior Approval of Method 107A

One commenter felt that Method 107A is very similar to methods in use before the regulation containing Method 107 was promulgated in 1977, and a great deal of time and money could have been saved had Method 107A been permitted originally.

The commenter apparently failed to recognize that Part 61 of Title 40, CFR, provides for approval by the Administrator of methods which have been demonstrated to the Administrator's satisfaction to produce results adequate for determination of compliance. Method 107 is an automated analytical technique that is best suited for the high-volume quality control analyses that are an integral part of most polyvinyl chloride facilities, but for those who may prefer to use another method, that option has always been a possibility.

Safety of Method 107A

One commenter stated that due to the hazards involved, the Agency should not recommend the use of pure vinyl chloride to prepare liquid calibration standards. Furthermore, due to the availability of standard reference materials from the National Bureau of Standards, the commenter believes that the accuracy of commercially prepared

gaseous vinyl chloride mixtures is probably far superior to any liquid standards prepared by the procedure described in the proposed method.

The Agency recognizes the need to exercise great caution in the use of pure vinyl chloride in Section 5, Safety, and Section 9.1, Preparation of Standards. Liquid standards are an integral part of the method, and gas standards would add considerable cost to the method without increasing the accuracy to a significant or necessary degree.

Citation of Brand Name Products

A manufacturer of gas chromatographs and accessories objected to the citations of brand name products (Sections 6.3.1, 6.3.2, 6.3.7), and suggested they be replaced with generic equivalents. In their opinion, many potential method users will never question a particular brand selection if one is cited.

While this may be true, most method users find it helpful to know which particular brand has been shown to produce satisfactory results. However, as the EPA does not have the capability to screen all products to determine acceptability, it believes the best course of action is to leave the method users the option to choose some other brand by adding the phrase "or equivalent" to each brand product cited.

Docket

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to identify and locate documents readily so that they can intelligently and effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and promulgated test methods and EPA responses to significant comments, the contents of the docket will serve as the record in case of judicial review (Section 307(d)(7)(A)).

Miscellaneous

This rulemaking does not impose any additional emission measurement requirements on facilities affected by this rulemaking. Rather, this rulemaking allows the use of an alternative test method. If future standards impose different emission measurement requirements, the impacts of the alternative test method promulgated today will be evaluated during development of these standards.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirement of a regulatory impact analysis. This regulation is not major because it will not have an annual effect on the economy of $100 million or more; it will not result in a major increase in costs or prices; and there will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets. This regulation was submitted to the Office of Management and Budget for review as required by Executive Order 12291.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that the attached rule will not have a significant economic impact on a substantial number of small entities because the rule does not impose any additional requirements.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Sec. 112, 114, 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412, 7414, 7601(a))

Dated: August 24, 1982.

John W. Hernandez, Jr.,

Acting Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Secton 61.67(g) and Appendix B of 40 CFR Part 61 are amended as follows:

1. By adding a sentence to § 61.67(g) as follows:

§ 61.67 Emission tests.

* * * * *

(g) * * * alternative is withdrawn. Whenever Test Method 107 is specified, and the conditions in Section 1.1, "Applicability" of Method 107A are met, Method 107A may be used.

* * * * *

2. By adding Method 107A to Appendix B to read as follows:

Appendix B—Test Methods

* * * * *

Method 107A—Determination of Vinyl Chloride Content of Solvents, Resin-Solvent Solution, Polyvinyl Chloride Resin, Resin Slurry, Wet Resin, and Latex Samples

Introduction

Performance of this method should not be attempted by persons unfamiliar with the operation of a gas chromatograph (GC) or by those who are unfamiliar with source sampling because knowledge beyond the scope of this presentation is required. Care must be exercised to prevent exposure of sampling personnel to vinyl chloride, a carcinogen.

1. Applicability and Principle

1.1 Applicability. This is an alternative method and applies to the measurement of the vinyl chloride content of solvents, resin solvent solutions, polyvinyl chloride (PVC) resin, wet cake slurries, latex, and fabricated resin samples. This method is not acceptable where methods from Section 304(h) of the Clean Water Act, 33 U.S.C. 1251 et seq., (the Federal Water Pollution Control Act Amendments of 1972 as amended by the Clean Water Act of 1977) are required.

1.2 Principle. The basis for this method lies in the direct injection of a liquid sample into a chromatograph and the subsequent evaporation of all volatile material into the carrier gas stream of the chromatograph, thus permitting analysis of all volatile material including vinyl chloride.

2. Range and Sensitivity

The lower limit of detection of vinyl chloride in dry PVC resin is 0.2 ppm. For resin solutions, latexes, and wet resin, this limit rises inversely as the nonvolatile (resin) content decreases.

With proper calibration, the upper limit may be extended as needed.

3. Interferences

The chromatograph columns and the corresponding operating parameters herein described normally provide an adequate resolution of vinyl chloride. In cases where resolution interferences are encountered, the chromatograph operator shall select the column and operating parameters best suited to his particular analysis problem, subject to the approval of the Administrator. Approval is automatic, provided that the tester produces confirming data through an adequate supplemental analytical technique, such as analysis with a different column or GC/mass spectroscopy, and has the data available for review by the Administrator.

4. Precision and Reproducibility

A standard sample of latex containing 181.8 ppm vinyl chloride analyzed 10 times by the alternative method showed a standard deviation of 7.5 percent and a mean error of 0.21 percent.

A sample of vinyl chloride copolymer resin solution was analyzed 10 times by the alternative method and showed a standard deviation of 6.6 percent at a level of 35 ppm.

5. Safety

Do not release vinyl chloride to the laboratory atmosphere during preparation of standards. Venting or purging with vinyl chloride monomer (VCM) air mixtures must be held to minimum. When purging is required, the vapor must be routed to outside air. Vinyl chloride, even at low-ppm levels, must never be vented inside the laboratory.

6. Apparatus

6.1 Sampling. The following equipment is required:

6.1.1 Glass Bottles. 16-oz wide mouth wide polyethylene-lined, screw-on tops.

6.1.2 Adhesive Tape. To prevent loosening of bottle tops.

6.2 Sample Recovery. The following equipment is required:

6.2.1 Glass Vials. 20-ml capacity with polycone screw caps.

6.2.2 Analytical Balance. Capable of weighing to ±0.01 gram.

6.2.3 Syringe. 50-microliter size, with removable needle.

6.2.4 Fritted Glass Sparger. Fine porosity.

6.2.5 Aluminum Weighing Dishes.

6.2.6 Sample Roller or Shaker. To help dissolve sample.

6.3 Analysis. The following equipment is required:

6.3.1 Gas Chromatograph. Hewlett Packard Model 5720A or equivalent.

6.3.2 Chromatograph Column. Stainless steel, 6.1 m by 3.2 mm, packed with 20 percent Tergitol E-35 on Chromosorb W AW 60/80 mesh. The analyst may use other columns provided that the precision and accuracy of the analysis of vinyl chloride standards are not impaired and that he has available for review information confirming that there is adequate resolution of the vinyl chloride peak. (Adequate resolution is defined as an area overlap of not more than 10 percent of the vinyl chloride peak by an interfering peak. Calculation of area overlap is explained in Apendix C, Procedure 1: "Determination of Adequate Chromatographic Peak Resolution.")

6.3.3 Valco Instrument Six-Port Rotary Valve. For column back flush.

6.3.4 Septa. For chromatograph injection port.

6.3.5 Injection Port Liners. For chromatograph used.

6.3.6 Regulators. For required gas cylinders.

6.3.7 Soap Film Flowmeter. Hewlett Packard No. 0101-0113 or equivalent.

6.4 Calibration. The following equipment is required:

6.4.1 Analytical Balance. Capable of weighing to ±0.0001 g.

6.4.2 Erlenmeyer Flask With Glass Stopper. 125 ml.

6.4.3 Pipets. 0.1, 0.5, 1, 5, 10, and 50 ml.

6.4.4 Volumetric Flasks. 10 and 100 ml.

7. Reagents

Use only reagents that are of chromatograph grade.

7.1 Analysis. The following items are required:

7.1.1 Hydrogen Gas. Zero grade.

7.1.2 Nitrogen Gas. Zero grade.

7.1.3 Air. Zero grade.

7.1.4 Tetrahydrofuran (THF). Reagent grade.

Analyze the THF by injecting 10 microliters into the prepared gas chromatograph. Compare the THF chromatogram with that shown in Figure 107A-1. If the chromatogram is comparable to A, the THF should be sparged with pure nitrogen for approximately 2 hours using the fritted glass sparger to attempt to remove the interfering peak. Reanalyze the sparged THF to determine whether the THF is acceptable for use. If the scan is comparable to B, the THF should be acceptable for use in the analysis.

7.1.5 N, N-Dimethylacetamide (DMAC). Spectrographic grade. For use in place of THF.

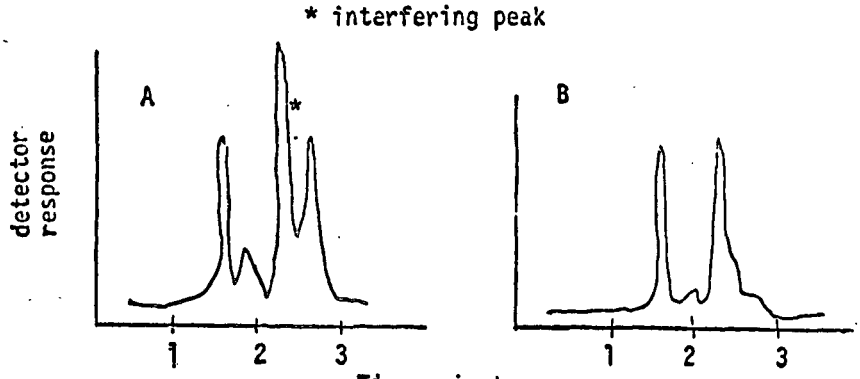

Figure 107A-1

7.2 Calibration. The following item is required:

7.2.1 Vinyl Chloride 99.9 Percent. Ideal Gas Products lecture bottle, or equivalent. For preparation of standard solutions.

8. Procedure

8.1 Sampling. Allow the liquid or dried resin to flow from a tap on the tank, silo, or pipeline until the tap has been purged. Fill a wide-mouth pint bottle, and immediately tightly cap the bottle. Place an identifying label on each bottle and record the date, time, sample location, and material.

8.2 Sample Treatment. Sample must be run within 24 hours.

8.2.1 Resin Samples. Weigh 9.00 ± 0.01 g of THF or DMAC in a tared 20-ml vial. Add 1.00 ± 0.01 g of resin to the tared vial containing the THF or DMAC. Close the vial tightly with the screw cap, and shake or otherwise agitate the vial until complete solution of the resin is obtained. Shaking may require several minutes to several hours, depending on the nature of the resin.

8.2.2 Suspension Resin Slurry and Wet Resin Sample. Slurry must be filtered using a small Buchner funnel with vacuum to yield a wet resin sample. The filtering process must be continued only as long as a steady stream of water is exiting from the funnel. Excessive filtration time could result in some loss of VCM. The wet resin sample is weighed into a tared 20-ml vial with THF or DMAC as described earlier for resin samples (8.2.1) and treated the same as the resin sample. A sample of the wet resin is used to determine total solids as required for calculating the residual VCM (Section 8.3.4).

8.2.3 Latex and Resin Solvent Solutions. Samples must be thoroughly mixed. Weigh 1.00 ± 0.01 g of the latex or resin-solvent solution into a 20-ml vial containing 9.00 ± 0.01 g of THF or DMAC as for the resin samples (8.2.1). Cap and shake until complete solution is obtained. Determine the total solids of the latex or resin solution sample (Section 8.3.4).

8.2.4 Solvents and Non-viscous Liquid Samples. No preparation of these samples is required. The neat samples are injected directly into the GC.

8.3 Analysis.

8.3.1 Preparation of GC. Install the chromatographic column, and condition overnight at 70° C. Do not connect the exit end of the column to the detector while conditioning.

8.3.1.1 Flow Rate Adjustments. Adjust the flow rate as follows:

a. Nitrogen Carrier Gas. Set regulator on cylinder to read 60 psig. Set column flow controller on the chromatograph using the soap flim flowmeter to yield a flow rate of 40 cc/min.

b. Burner Air Supply. Set regulator on the cylinder at 40 psig. Set regulator on the chromatograph to supply air to the burner to yield a flow rate of 250 to 300 cc/min using the flowmeter.

c. Hydrogen. Set regulator on cylinder to read 60 psig. Set regulator on the chromatograph to supply 30 to 40 cc/min using the flowmeter. Optimize hydrogen flow to yield the most sensitive detector response without extinguishing the flame. Check flow with flowmeter and record this flow.

d. Nitrogen Back Flush Gas. Set regulator on the chromatograph using the soap film flowmeter to yield a flow rate of 40 cc/min.

8.3.1.2 Temperature Adjustments. Set temperature as follows:

a. Oven (chromatographic column) at 70° C.

b. Injection Port at 100° C.

c. Detector at 300° C.

8.3.1.3 Ignition of Flame Ionization Detector. Ignite the detector according to the manufacturer's instructions. Allow system to stabilize approximately 1 hour.

8.3.1.4 Recorder. Set pen at zero and start chart drive.

8.3.1.5 Attenuation. Set attenuation to yield desired peak height depending on sample VCM content.

8.3.2 Chromatographic Analyses.

a. Sample Injection. Remove needle from 50-microliter syringe. Open sample vial and draw 50-microliters of THF or DMAC sample recovery solution into the syringe. Recap sample vial. Attach needle to the syringe and while holding the syringe vertically (needle uppermost), eject 40 microliters into an absorbent tissue. Wipe needle with tissue. Now inject 10 microliters into chromatograph system. Repeat the injection until two consecutive values for the height of the vinyl chloride peak do not vary more than 5 percent. Use the average value for these two peak heights to compute the sample concentration.

b. Back Flush. After 4 minutes has elapsed after sample injection, actuate the back flush valve to purge the first 4 feet of the chromatographic column of solvent and other high boilers.

c. Sample Data. Record on the chromatograph strip chart the data from the sample label.

d. Elution Time. Vinyl chloride elutes at 2.8 minutes. Acetaldehyde elutes at 3.7 minutes. Analysis is considered complete when chart pen becomes stable. After 5 minutes, reset back flush valve and inject next sample.

8.3.3 Chromatograph Servicing.

a. Septum. Replace after five sample injections.

b. Sample Port Liner. Replace the sample port liner with a clean spare after five sample injections.

c. Chromatograph Shutdown. If the chromatogragph has been shut down overnight, rerun one or more samples from the preceding day to test stability and precision prior to starting on the current day's work.

8.3.4 Determination of Total Solids (TS). For wet resin, resin solution, and PVC latex samples, determine the TS for each sample by accurately weighing approximately 3 to 5 grams of sample into a tared aluminum pan. The initial procedure is as follows:

a. Where water is the major volatile component: Tare the weighing dish, and add 3 to 5 grams of sample to the dish. Weigh to the nearest milligram.

b. Where volatile solvent is the major volatile component: Transfer a portion of the sample to a 20-ml screw cap vial and cap immediately. Weigh the vial to the nearest milligram. Uncap the vial and transfer a 3- to 5-gram portion of the sample to a tared aluminum weighing dish. Recap the vial and reweigh to the nearest milligram. The vial weight loss is the sample weight.

To continue, now place the weighing pan in a 130° C oven for 1 hour. Remove the dish and allow to cool to room temperature in a desiccator. Weigh the pan to the nearest 0.1 mg. Total solids is the weight of material in the aluminum pan after heating divided by the net weight of sample added to the pan originally times 100.

9. *Calibration of the Chromatograph*

9.1 Preparation of Standards. Prepare a 1 percent by weight (approximate) solution of vinly chloride in THF or DMAC by bubbling vinyl chloride gas from a cylinder into a tared 125-ml glass-stoppered flask containing THF or DMAC. The weight of vinyl chloride to be added should be calculated prior to this operation, i.e., 1 percent of the weight of THF or DMAC contained in the tared flask. This must be carried out in a laboratory hood. Adjust the vinyl chloride flow from the cylinder so that the vinyl chloride dissolves essentially completely in the THF or DMAC and is not blown to the atmosphere. Take particular care not to volatize any of the solution. Stopper the flask and swirl the solution to effect complete mixing. Weigh the stoppered flask to nearest 0.1 mg to determine the exact amount of vinyl chloride added.

Pipet 10 ml of the approximately 1 percent solution into a 100-ml glass-stoppered volumetric flask, and add THF or DMAC to fill to the mark. Cap the flask and invert 10 to 20 times. This solution contains approximately 1,000 ppm by weight of vinyl chloride (note the exact concentration).

Pipet 50-, 10-, 5-, 1-, 0.5-, and 0.1-ml aliquots of the approximately 1,000 ppm solution into 10 ml glass stoppered volumetric flasks. Dilute to the mark with THF or DMAC. cap the flasks and invert each 10 to 20 times. These solutions contain approximately 500, 100, 50, 10, 5, and 1 ppm vinyl chloride. Note the exact concentration of each one. These standards are to be kept under refrigeration in stoppered bottles, and must be renewed every 3 months.

9.2 Preparation of Chromatograph Calibration Curve.

Obtain the GC for each of the six final solutions prepared in Section 9.1 by using the procedure in Section 8.3.2. Prepare a chart plotting peak height obtained from the chromatogram of each solution versus the known concentration. Draw a straight line through the points derived by the least squares methods.

10. *Calculations*

10.1 Response Factor. From the calibration curve described in Section 9.2, select the value of C_c that corresponds to H_c for each sample. Compute the response factor, R_f, for each sample as follows:

$$R_f = \frac{C_c}{H_c} \qquad \text{Eq. 107A-1}$$

10.2 Residual vinyl chloride monomer concentration (C_{rvc}) or vinyl chloride monomer concentration in resin:

$$C_{rvc} = 10 H_s R_f \qquad \text{Eq. 107A-2}$$

Where:

H_s = Peak height of sample, mm.

R_f = Chromatograph response factor.

10.3 Samples containing volatile material, i.e., resin solutions, wet resin, and latexes:

$$C_{rvc} = \frac{H_s R_f (1{,}000)}{TS} \qquad \text{Eq. 107A-3}$$

10.4 Samples of solvents and in process wastewater:

$$C_{vc} = \frac{H_s R_f}{0.888} \qquad \text{Eq. 107A-4}$$

Where:

0.888 = Specific gravity of THF.

11. *Bibliography*

1. Communication from R. N. Wheeler, Jr.; Union Carbide Corporation. Part 61 National Emissions Standards for Hazardous Air Pollutants Appendix B, Method 107—Alternate Method, September 19, 1977.

[FR Doc. 82-24530 Filed 9-7-82; 8:45 am]

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40 CFR Parts 60 and 61

[A-7-FRL 2217-1]

New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); Delegation of Authority to Lincoln/Lancaster County Health Department (Nebraska)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rulemaking.

SUMMARY: The EPA is today amending 40 CFR 60.4 and 61.04, Address, to reflect a delegation of authority to Nebraska's Lincoln/Lancaster County Health Department for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS).

EFFECTIVE DATE: September 29, 1982.

FOR FURTHER INFORMATION CONTACT: Steve A. Kovac, Air Branch, U.S. EPA, Region VII, 324 East 11th Street, Kansas City, Missouri 64106; 816/374-6525; FTS 758-6525.

SUPPLEMENTARY INFORMATION: The Nebraska Department of Environmental Control has subdelegated authority to implement and enforce the federal NSPS regulations for 32 stationary source categories and national emission standards for four hazardous air pollutants to the Lincoln/Lancaster County Health Department. The amended 40 CFR 60.4(b)(CC) and 61.04(b)(CC) adds the address of the county health department to which all reports, requests, applications, submittals, and communications to the Administrator, as required by 40 CFR Parts 60 and 61, must also be addressed.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

The Administrator finds good cause for foregoing prior public notice and for making this rulemaking effective immediately in that it is an administrative change and not one of substantive content. No additional burdens are imposed upon the parties affected.

The delegation which influenced this amendment was effective on August 5, 1982, and it serves no purpose to delay technical change of this address in the Code of Federal Regulations. This rulemaking is effective immediately, and is issued under the authority of Section 111 of the Clean Air Act, as amended, 42 U.S.C. 7412.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

Dated: September 14, 1982.

William W. Rice,

Acting Regional Administrator, Region VII.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Part 60 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

In § 60.4, paragraph (b)(CC) is amended by adding the following address after the existing address:

§ 60.4 Address.

* * * * *

(b) * * *

(CC) * * *

Lincoln-Lancaster County Health Department, Division of Environmental Health, 2200 St. Marys Avenue, Lincoln, Nebraska 68502.

* * * * *

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

In § 61.04, paragraph (b)(CC) is amended by adding the following address after the existing address:

§ 61.04 Address.

* * * * *

(b) * * *

(CC) * * *

Lincoln-Lancaster County Health Department, Division of Environmental Health, 2200 St. Marys Avenue, Lincoln, Nebraska 68502.

* * * * *

[FR Doc. 82-26838 Filed 9-28-82; 8:45 am]

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40 CFR Parts 60 and 61

[A-9-FRL 2217-2]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); States of Arizona, California, and Nevada and Territory of Guam

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) to various State and local air pollution control agencies in Region 9. This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of NSPS and NESHAPS categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift primary program responsibility for the affected NSPS and NESHAPS source categories from EPA to State and local governments.

DATES: The regulations are amended to reflect these delegations effective September 27, 1982.

The delegations are effective on the dates listed in the Supplementary Information.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The following state and local air pollution control agencies have requested authority for delegation or redelegation of certain NSPS and NESHAPS source categories. Delegation or redelegations of authority were granted to the following agencies and are effective as listed below:

Bay Area Air Quality Management District

Effective Date: July 19, 1982.

New Delegation

NESHAPS	40 CFR part 61 subpart
Vinyl Chloride	F.

Redelegation

NESHAPS	40 CFR part 61 subpart
Beryllium	C.
Beryllium Rocket Motor Firing	D.

Del Norte County Air Pollution Control District (APCD)

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Glass Manufacturing Plants	CC.
Stationary Gas Turbines	GG.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: West process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Grain Elevators	DD.
Lime Manufacturing Plants	HH.

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Fresno County APCD

Effective Date: June 21, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Kraft Pulp Mills	BB.
Grain Elevators	DD.
Lime Manufacturing plants	HH.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Vinyl Chloride	F.

Great Basin Unified APCD

Effective Date: August 16, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Iron and Steel Plants (Electric Arc Furnaces)	AA.

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

NESHAPS	40 CFR part 61 subpart
Asbestos	B
Beryllium	C.
Beryllium Rocket Motor Firing	D
Mercury	E
Vinyl Chloride	F.

Humboldt County APCD

Effective Date: September 6, 1982.

Redelegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Glass Manufacturing Plants	CC.
Stationary Gas Turbines	GG.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Grain Elevators	DD.
Lime Manufacturing Plants	HH.

Kern County APCD

Effective Date: July 19, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Electric Utility Steam Generators	Da.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Petroleum Storage Vessels	Ka.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Eelvators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile and Light-Duty Truck Surface Coating.	MM.
Ammonium Sulfate Manufacturing	PP.

Kings County APCD

Effective Date: August 16, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Kraft Pulp Mills	BB
Grain Elevators	DD.
Lime Manufacturing Plants	HH.

Lake County APCD

Effective Date: August 16, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X
Iron and Steel Plants (Electric Arc Furnaces)	AA.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.

Madera County APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Alumium Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Elecric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Grain Elevators	DD.
Lime Manufacturing Plants	HH.

NESHAPS	40 CFR part 61 subpart
Vinyl Chloride	F.

Redelegation

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.

Mendocino County APCD

Effective Date: September 6, 1982.

Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulphate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incenerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnances)	AA.

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Northern Sonoma Country APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Vinyl Chloride	F.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.

Monterey Bay Unified APCD

Effective Date: June 21, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Asphalt Concrete Plants	I.
Storage Vessels for Petroleum Liquids	K.
Sewage Treatment Plants	O.

NESHAPS	40 CFR part 61 subpart
Asbestos	B
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.

Sacramento County APCD

Effective Date: September 27, 1982.

New Delegation

NESHAPS	40 CFR part 61 subpart
Mercury	E.

San Bernardino County APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D
Incinerators	E
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I.
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N
Sewage Treatment Plants	O
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Iron and Steel Plants (Electric Arc Furnaces)	AA

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

San Joaquin County APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da
Petroleum Storage Vessels	Ka.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Automobile and Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 61 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Lime Manufacturing Plants	HH.

NESHAPS	40 CFR part 61 subpart
Asbestos	B
Beryllium	C
Beryllium Rocket Motor Firing	D
Mercury	E
Vinyl Chloride	F.

San Luis Obispo APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Electric Utility Steam Generators	Da
Incinerators	E.
Portland Cement Plants	F
Nitric Acid Plants	G
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	Ka
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N
Sewage Treatment Plants	O
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R
Primary Aluminum Reduction Plants	S
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z
Iron and Steel Plants (Electric Arc Furnaces)	AA
Kraft Pulp Mills	BB
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH
Automobile and Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Asbestos	B.
Beryllium	C
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Santa Barbara APCD

Effective Date: June 21, 1982.

New Delegation

NESHAPS	40 CFR part 61 subpart
Asbestos	B.

Shasta County APCD

Effective Date: August 16, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Kraft Pulp Mills	BB.
Grain Elevators	DD.
Lime Manufacturing Plants	HH.

NESHAPS	40 CFR part 61 subpart
Vinyl Chloride	F.

Trinity County APCD

Effective Date: September 6, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile and Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.

NESHAPS	40 CFR part 61 subpart
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F

Tulare County APCD

Effective Date:

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Glass Manufacturing Plants	CC.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Lead-Acid Battery Manufacturing Plants	KK.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Phosphate Rock Plants	NN.
Ammonium Sulfate	PP.

Redelegation

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel plants (Electric Arc Furnances)	AA.
Kraft Pulp Mills	BB.
Grain Elevators	DD.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Territory of Guam

Effective Date: June 21, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Portland Cement Plants	F.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.

State of Nevada

Effective Date: July 19, 1982.

New Delegation

NSPS	40 CFR part 60 subpart
Lead-Acid Battery Manufacturing Plants	KK.
Phosphate Rock Plants	NN.

Pursuant to NSPS and NESHAPS regulations, sources are required to submit all required reports to the state or local agency that has jurisdiction over the source, and to EPA.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

(Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*))

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: September 17, 1982.

Sonia F. Crow,

Regional Administrator.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Subparts A of Parts 60 and 61 of Chapter I, Title 40 of the Code of Federal Regulations are amended as follows:

Subpart A—General Provisions

1. Sections 60.4(b)(D) and 61.04(b)(D) are each amended by adding the address of the State of Arizona to read as follows:

§§ 60.4 Address and 61.04 Address.

* * * * *

(b) * * *

(D) Arizona: Arizona Department of Health Services, 1740 West Adams Street, Phoenix, Arizona 85007.

* * * * *

2. Sections 60.4(b)(F) and 61.04(b)(F) are each amended by revising the addresses of the following Air Pollution Control Districts to read as follows:

§§ 60.4 Address and 61.04 Address.

* * * * *

(b) * * *

(F) * * *

Fresno County Air Pollution Control District, 1221 Fulton Mall, Fresno, CA 93721.

Great Basin Unified Air Pollution Control District, 157 Short Street, Suite 6, Bishop, CA 93514.

Kern County Air Pollution Control District, 1601 H Street, Suite 250, Bakersfield, CA 93301.

Monterey Bay Unified Air Pollution Control, 1164 Monroe Street, Suite 10, Salinas, CA 93906.

Santa Barbara County Air Pollution Control District, 315 Camino del Rimedio, Santa Barbara, CA 93110.

* * * * *

3. Section 60.4(b) is amended by adding subparagraph (AAA) to read as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(AAA) Territory of Guam: Guam Environmental Protection Agency, Post Office Box 2999, Agana, Guam 96910.

* * * * *

[FR Doc. 82-26837 Filed 9-29-82; 8:45 am]

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40 CFR Parts 60 and 61

[A-9-FRL 2227-7]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of Nevada

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) authority to the Nevada Department of Conservation and Natural Resources (NDCNR). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of NSPS and NESHAPS categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift primary program responsibility for the affected NSPS and NESHAPS source categories from EPA to State and local governments.

EFFECTIVE DATE: April 1, 1982.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The NDCNR has requested authority for delegation of certain NSPS and NESHAPS source categories. A delegation of authority was granted by letter dated March 22, 1982 and is reproduced in its entirety as follows:

Mr. Richard Serdoz,

Division of Environmental Protection, Nevada Department of Conservation and Natural Resources, 201 South Fall Street, Carson City, NV

Dear Mr. Serdoz: I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 Subpart
Electric utility steam generators	Da.
Storage vessels for petroleum liquids	Ka.
Kraft pulp mills	BB.
Glass manufacturing plants	CC.
Grain elevators	DD.
Stationary gas turbines	GG.
Lime manufacturing plants	HH.
Automobile and light duty truck surface coating operations.	MM.
Ammonium sulfate	PP.

NESHAPS	40 CFR Part 61 Subpart
Asbestos	B.
Beryllium	C.
Beryllium rocket motor firing	D.
Mercury	E.
Vinyl chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61. The delegation is effective upon the date of this letter unless the USEPA receives written

notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Cordially yours,

Sonia F. Crow,

Regional Administrator.

With respect to areas under the jurisdiction of the NDCNR, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the NDCNR at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

(Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*))

Dated: October 1, 1982.

Sonia F. Crow,

Regional Administrator.

PART 61—[AMENDED]

Subpart A of Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

Subpart A—General Provisions

1. Section 61.04(b)(DD) is amended by adding the address of the Nevada Department of Conservation and Natural Resources, to read as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(DD) * * *

* * * * *

Nevada Department of Conservation and Natural Resources, Division of Environmental Protection, 201 South Fall Street, Carson City, NV 89710.

* * * * *

[FR Doc. 82-28420 Filed 10-14-82; 8:45 am]

BILLING CODE 0560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2227-5]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of Arizona

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) authority to the Arizona Department of Health Services (ADHS). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of NSPS and NESHAPS categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift primary program responsibility for the affected NSPS and NESHAPS source categories from EPA to State and local governments.

EFFECTIVE DATE: April 1, 1982.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The ADHS has requested authority for delegation of certain NSPS and NESHAPS source categories. A delegation of authority was granted by letter dated March 22, 1982 and is reproduced in its entirety as follows:

Dr. James E. Sarn,

Arizona Department of Health Services, 1740 West Adams Street, Phoenix, AZ

Dear Dr. Sarn: I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAPS). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 Subpart
Fossil-fuel fired steam generators	D.
Incinerators	E.
Portland cement plants	F.
Nitric acid plants	G.
Sulfuric acid plants	H.
Asphalt concrete plants	I.
Petroleum refineries	J
Storage vessels for petroleum liquids.	K.
Secondary lead smelters	L.
Secondary brass & bronze ingot production plants.	M.
Iron and steel plants (BOPF)	N.
Sewage treatment plants	O.
Primary copper smelters	P.
Primary zinc smelters	Q.
Primary lead smelters	R.
Primary aluminum reduction plants.	S.
Phosphate fertilizer industry: wet process phosphoric acid plants.	T.
Phosphate fertilizer industry: superphosphoric acid plants.	U.
Phosphate fertilizer industry: diammonium phosphate plants.	V.
Phosphate fertilizer industry: triple superphosphate plants.	W.
Phosphate fertilizer industry: granular triple superphosphate.	X.
Coal preparation plants	Y.
Ferroalloy production facilities	Z.
Iron and steel plants (electric arc furnaces).	AA.
Kraft pulp mills	BB.
Grain elevators	DD.
Stationary gas turbines	GG.
Lime manufacturing plants	HH.

NESHAPS	40 CFR Part 61 Subpart
Asbestos	B
Beryllium	C.
Beryllium rocket motor firing	D.
Mercury	E.
Vinyl chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Cordially yours,

Sonia F. Crow,

Regional Administrator.

With respect to areas under the jurisdiction of the ADHS, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the ADHS at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

(Secs. 111 and 112, Clean Air Act, as amended (42 U.S.C. 1857, *et seq*))

Dated: October 1, 1982.

Sonia F. Crow,

Regional Administrator.

PART 60—[AMENDED]

PART 61—[AMENDED]

Subpart A of Parts 60 and 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

Subpart A—General Provisions

§ 60.4 and 61.04 [Amended]

1. Sections 60.4(b)(D) and 61.04(b)(D) are each amended by adding the address of the Arizona Department of Health Services to read as follows:

* * * * *

(b) * * *

(D) * * *

Arizona Department of Health Services, 1740 West Adams Street, Phoenix, AZ 85007.

* * * * *

[FR Doc. 82-28430 Filed 10-14-82; 8:45 am]
BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-2-FRL 2229-2]

Standards of Performance for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants; Delegation of Authority to the State of New Jersey

AGENCY: Environmental Protection Agency.

ACTION: Notice of Delegation of Authority.

SUMMARY: This notice announces the delegation of authority by the Environmental Protection Agency to the State of New Jersey to implement and enforce additional source categories of the Standards of Performance for New Stationary Sources (NSPS) and portions of the National Emission Standards for Hazardous Air Pollutants (NESHAPS). This delegation was requested by the New Jersey Department of Environmental Protection.

NSPS and NESHAPS are air pollution control requirements set under the Clean Air Act. NSPS are applicable to certain categories of new air pollution sources. NESHAPS require the control of certain hazardous pollutants from both new and existing sources.

EFFECTIVE DATE: This action is effective October 18, 1982.

FOR FURTHER INFORMATION CONTACT: Francis W. Giaccone, Chief, Air Facilities Branch, Air & Waste Management Division, Environmental Protection Agency, Region II Office, 26 Federal Plaza, New York, New York 10278 (212) 264-9627

SUPPLEMENTARY INFORMATION: Section 111(c) of the Clean Air Act directs the Administrator of the Environmental Protection Agency (EPA) to delegate EPA's authority to implement and enforce Standards of Performance for New Stationary Sources (NSPS) to any state which has submitted adequate procedures. Section 112(d) of the Clean Air Act provides similar direction with respect to National Emission Standards for Hazardous Air Pollutants (NESHAPS). In both instances, the Administrator retains concurrent authority to enforce the standards following delegation of authority to a state.

On September 30, 1981 the Commissioner of the New Jersey Department of Environmental Protection (DEP) requested that the EPA delegate to that Department the authority to implement and enforce certain additional source categories of NSPS and NESHAPS. The following is a complete listing of NSPS and NESHAPS delegated to the DEP. The source categories now being delegated by today's action are identified with an asterisk(*).

NSPS (40 CFR Part 60)

D—Fossil-Fuel Fired Steam Generators for Which Construction Commenced After August 17, 1971
*Da—Electric Utility Steam Generating Units for Which Construction Commenced After September 18, 1978
E—Incinerators
F—Portland Cement Plants
G—Nitric Acid Plants
H—Sulfuric Acid Plants
I—Asphalt Concrete Plants
J—Petroleum Refineries—(All Categories)
K—Storage Vessels for Petroleum Liquids Constructed After June 11, 1973 and Prior to May 19, 1978
*Ka—Storage Vessels for Petroleum Liquids Constructed After May 18, 1978
L—Secondary Lead Smelters
M—Secondary Brass and Bronze Ingot Production Plants
N—Iron and Steel Plants
O—Sewage Treatment Plants
P—Primary Copper Smelters
Q—Primary Zinc Smelters
R—Primary Lead Smelters
S—Primary Aluminum Reduction Plants
T—Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants
U—Phosphate Fertilizer Industry: Superphosphoric Acid Plants
V—Phosphate Fertilizer Industry: Diammonium Phosphate Plants
W—Phosphate Fertilizer Industry: Triple Superphosphate Plants
X—Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities
Y—Coal Preparation Plants
Z—Ferroalloy Production Facilities
AA—Steel Plants: Electric Arc Furnaces
*BB—Kraft Pulp Mills
*CC—Glass Manufacturing Plants
*DD—Grain Elevators
*GG—Stationary Gas Turbines
*HH—Lime Plants
*MM—Automobile and Light Duty Truck Surface Coating Operations
*PP—Ammonium Sulfate Manufacture
*KK—Lead Acid Battery Manufacturing Plants
*NN—Phosphate Rock Plants

NESHAPS (40 CFR Part 61)

B—Asbestos (manufacturing, spraying, fabricating, insulating, waste disposal from above operations)
C—Beryllium (all categories)
D—Beryllium Rocket Motor Firing (all categories)
E—Mercury (all categories)
F—Vinyl Chloride (all categories)

NESHAPS (40 CFR 61 Subpart)

B—Asbestos
*—manufacturing
*—spraying
*—fabricating
*—insulating
*—waste disposal from above operations
C—Beryllium (all categories)
D—Beryllium Rocket Motor Firing (all categories)
E—Mercury (all categories)
*F—Vinyl Chloride (all categories)

EPA's Findings

The authority and procedures which the Department would use for program implementation and enforcement were outlined in correspondence with the Commissioner and the General Counsel of the DEP. Copies of this correspondence and EPA's delegation letter are available for public inspection in the Office of the Air Facilities Branch at the Environmental Protection Agency, Region II Office, 26 Federal Plaza, New York, New York 10278.

EPA's determination that the delegation request should be approved is based on the Agency's review of the New Jersey Air Pollution Control Act N.J.S.A. 26:2C; the State Public Records Act, N.J.S.A. 47:1A-1; and Title 7 Chapters 27 and 27B of the New Jersey Administrative Code. Specifically, N.J.S.A. 26:9C-9.2 provides that no one shall construct or operate a source capable of causing the emission of an air contaminant without obtaining a valid installation or alteration permit from the DEP. These permits must incorporate "advances in the art of air pollution control developed for the kind and amount of air contaminant emitted * * *." EPA determined that such delegation is, therefore, appropriate and so notified the Commissioner of the DEP, in a letter dated June 22, 1982. This letter identified the conditions under which delegation would be made. DEP, in a letter dated August 5, 1982, requested that the EPA approve minor revisions to some of the conditions for delegation. EPA approved these modifications in a September 8, 1982 letter to the Commissioner of the DEP.

Consequences of EPA's Action

Effective immediately, all correspondence, reports and notifications required by the delegated NSPS and NESHAPS should be submitted to the Offices of the New Jersey Department of Environmental Protection located at John Fitch Plaza, CN027, Trenton, New Jersey, 08625.

The Office of Management and Budget has exempted this action from the requirements of Section 3 of Executive Order 12991.

(Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 7411 and 7412))

Dated: October 1, 1982.

Jacqueline E. Schafer,

Regional Administrator.

[FR Doc. 82-28572 Filed 10-15-82; 8:45 am]

BILLING CODE 6560-50-M

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[A-6-FRL 2238-5]

40 CFR Part 61

Delegation of Authority to the State of New Mexico for National Emission Standards for Hazardous Air Pollutants (NESHAP)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA, Region 6, has delegated the authority for implementation of the administrative and technical review portions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) program to the New Mexico

Environmental Improvement Division (NMEID). Except as specifically limited, all of the authority and responsibilities of the Administrator or the Regional Administrator which are found in 40 CFR Part 61 are delegated to the NMEID. Any of such authority and responsibilities may be redelegated by the Department to its staff.

EFFECTIVE DATE: August 30, 1982.

ADDRESS: Copies of the State request and State-EPA agreement for delegation of authority are available for public inspection at the Air Branch, Environmental Protection Agency (EPA), Region 6, First International Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270.

FOR FURTHER INFORMATION CONTACT: William H.Taylor, Air Branch, EPA, address above, Telephone: (214) 767-9873.

SUPPLEMENTARY INFORMATION: On December 20, 1980, the State of New Mexico requested EPA, Region 6, to delegate authority to the NMEID for the implementation of the NESHAP program. After a thorough review of the request and information submitted, the Regional Administrator determined that the State's pertinent laws, rules, and regulations of the NMEID were found to provide an adequate and effective procedure for the implementation of the administrative and technical review portions of the NESHAP program. EPA, Region 6, retains enforcement authority, as requested by the State, over NESHAP subject sources constructed or modified in the State of New Mexico.

The Office of Management and Budget has exempted this information notice from the requirements of Section 3 of Executive Order 12291.

Effective immediately, sources locating in the State of New Mexico should submit all information pursuant to 40 CFR Part 61 directly to the State agency at the following address: New Mexico Environmental Improvement Division, Health and Environment Department, P.O. Box 968, Crown Building, Santa Fe, New Mexico 87504 and EPA Region 6.

This delegation is issued under the authority of Section 112 of the Clean Air Act, as amended (42 U.S.C. 7412).

Dated: October 19, 1982.

Frances E. Phillips,

Acting Regional Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

§ 61.4 paragraph (b) is amended by adding subparagraph (GG) to read as follows:

§ 61.4 Address.

* * * * *

(b) * * *

(GG) Director, New Mexico Environmental Improvement Division, Health and Environment Department, P.O. Box 968, Crown Building, Santa Fe, New Mexico 87504.

[FR Doc. 82-30223 Filed 11-3-82; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[A-6-FRL 2238-3]

Delegation of Authority to the State of Louisiana for National Emission Standards for Hazardous Air Pollutants (NESHAP)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA, Region 6, has delegated the authority for implementation of the administrative and technical review portions of the National Emission Standards for Hazardous Air Pollutants (NESHAP) program to the Louisiana Department of Natural Resources (LDNR). Except as specifically limited, all of the authority and responsibilities of the Administrator or the Regional Administrator which are found in 40 CFR Part 61 are delegated to the LDNR. Any of such authority and responsibilities may be redelegated by the Department to its Program Administrator or staff.

EFFECTIVE DATE: August 30, 1982.

ADDRESS: A copy of the State-EPA agreement for delegation of authority is available for public inspection at the Air Branch, Environmental Protection Agency (EPA), Region 6, First International Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270.

FOR FURTHER INFORMATION CONTACT: William H. Taylor, Air Branch, EPA, address above, Telephone: (214) 767-9873.

SUPPLEMENTARY INFORMATION:

On July 20, 1982, the State of Louisiana requested EPA, Region 6, to delegate authority to the LDNR for the implementation of the NESHAP program. After a thorough review of the request and information submitted, the Regional Administrator determined that the State's pertinent laws and the rules and regulations of the LDNR were found to provide an adequate and effective procedure for the implementation of the administrative and technical review portions of the NESHAP program. EPA, Region 6, retains enforcement authority, as requested by the State, over NESHAP subject sources constructed or modified in the State of Louisiana.

The Office of Management and Budget has exempted this information notice from the requirements of Section 3 of Executive Order 12291.

Effective immediately, sources locating in the State of Louisiana should submit all information pursuant to 40 CFR Part 61 directly to the State agency at the following address; Louisiana Department of Natural Resources, Air Quality Division, P.O. Box 44066, Baton Rouge, Louisiana 70804 and EPA Region 6.

This delegation is issued under the authority of Section 112 of the Clean Air Act, as amended (42 U.S.C. 7412).

Dated: October 19, 1982.

Frances E. Phillips,

Acting Regional Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

§ 61.4 paragraph (b) is amended by adding subparagraph (T) to read as follows:

§ 61.4 Address.

* * * * *

(b) * * *

(T) Secretary, Louisiana Department of Natural Resources, P.O. Box 44066, Baton Rouge, Louisiana 70804.

[FR Doc. 82-30224 Filed 11-3-82; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-4-FRL 2239-5]

Standards of Performance for New Stationary Sources, National Emission Standards for Hazardous Air Pollutants; Florida: Delegation of Authority

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: These amendments institute address changes for reports and applications required from operators of certain sources subject to Federal regulations. EPA has delegated to the State of Florida authority to administer and enforce 40 CFR Part 60 (Standards of Performance for New Stationary Sources) and 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). These amendments provide that all reports, requests, applications, submittals, and communications required by these Federal standards will now be sent to the State.

EFFECTIVE DATE: June 10, 1982.

ADDRESSES: Copies of the Florida request and EPA's delegation letter may be examined during normal business hours at the following locations:

Air Planning Section, EPA, Region IV, 345 Courtland Street NE., Atlanta, Georgia 30365

Bureau of Air Quality Management, Florida Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301

All requests, reports, applications, submittals, and other communications required by the Federal standards listed below should be sent to the Florida address rather than to EPA Region IV.

FOR FURTHER INFORMATION CONTACT: Mr. Barry Gilbert, Air Management Branch, Environmental Protection Agency, Region IV, 345 Courtland Street NE., Atlanta, Georgia 30365, phone 404/881-3286.

SUPPLEMENTARY INFORMATION: EPA reviewed the pertinent laws of the State of Florida and the rules and regulations thereof, and determined that they provide an adequate and effective procedure for implementation of the NSPS and NESHAPS by the State of Florida. Therefore, pursuant to Section 111 of Pub. L. 91-604 (1970) as amended by Pub. L. 95-95 (1977), the Clean Air Act (CAA) as amended, we delegated our primary authority for implementation and enforcement of NSPS and NESHAPS to the State of Florida as follows:

A. Responsibility for all sources located or to be located in the State of Florida subject to the Standards of Performance for New Stationary Sources promulgated in 40 CFR Part 60 and amendments thereto as published in the Federal Register as of the date of the State's request (May 19, 1982). The categories of new sources covered by this responsibility are: Fossil-Fuel Fired Steam Generators (D); Incinerators (E); Portland Cement Plants (F); Nitric Acid Plants (G); Sulfuric Acid Plants (H); Asphalt Concrete Plants (I); Petroleum Refineries (J); Storage Vessels for Petroleum Liquids (K); Secondary Lead Smelters (L); Secondary Brass & Bronze Plants (M); Iron & Steel Plants (N); Sewage Treatment Plants (O); Phosphate Fertilizer Industry—Wet Process Phosphoric Acid Plants (T), Superphosphoric Acid Plants (U), Diammonium Phosphate Plants (V), Triple Superphosphate Plants (W), and Granular Triple Superphosphate Storage Facilities (X); Ferroalloy Production Facilities (Z); Steel Plants: Electric Arc Furnaces (AA); Grain Elevators (DD); Gas Turbines (GG); Automobile & Light-Duty Truck Coating Operations (MM); and Ammonium Sulfate Manufacture (PP).

B. Responsibility for all sources located or to be located in the State of Florida subject to the National Emissions Standards for Hazardous Air Pollutants promulgated in 40 CFR Part 61 and amendments thereto as published in the Federal Register as of the date of the State's request (May 19, 1982). The categories of new sources covered by this responsibility are: Asbestos (B); Beryllium (C); Beryllium Rocket Motor Firing (D); Mercury (E); and Vinyl Chloride (F).

C. This delegation is based upon several conditions which are listed in our June 10, 1982, letter of delegation.

The Regional Administrator finds good cause for foregoing prior public notice and for making this rulemaking effective immediately in that it is an administrative change and not one of substantive content. No additional substantive burdens are imposed on the parties affected. The delegation which is reflected by this administrative amendment was effective on June 10, 1982, and it serves no purpose to delay the technical change of this addition of the state address to the Code of Federal Regulations.

The Office of Management and Budget has exempted this regulation from the OMB review requirements of Section 3 of Executive Order 12291.

List of Subjects in 40 CFR Parts 60 and 61

Air pollution control, Aluminum, Ammonium sulfate plants, Asbestos, Beryllium, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Hazardous materials, Intergovernmental relations, Iron, Lead, Mercury, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Vinyl chloride, Waste treatment and disposal, Zinc.

(Secs. 101, 110, 111, 112, 301, Clean Air Act, as amended. (42, U.S.C. 7401, 7411, 7412, 7601))

Dated October 26, 1982.

Charles R. Jeter,

Regional Administrator.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Part 60 of Chapter I, Title 40, Code of Federal Regulations, is amended as follows:

In § 60.4, paragraph (b)(K) is added as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(K) Bureau of Air Quality Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter I, Title 40, Code of Federal Regulations, is amended as follows:

In § 61.04, paragraph (b)(K) is added as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(K) Bureau of Air Quality Management, Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

[FR Doc. 82-30203 Filed 11-9-82; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[A-3-FRL 2267-3]

National Emission Standards for Hazardous Air Pollutants; Delegation of Authority to Allegheny County, Pennsylvania

AGENCY: Environmental Protection Agency.

ACTION: Final rulemaking.

SUMMARY: The Allegheny County Health Department has requested the delegation of authority to implement and enforce the National Emission Standards for Hazardous Air Pollutants (NESHAP) program for asbestos and mercury only. Section 112(d)(1) of the Clean Air Act requires the Administrator to delegate this authority to any agency which submits an adequate procedure. Therefore, on September 27, 1982, authority for the NESHAP program for asbestos and mercury in Allegheny County was delegated. This rulemaking provides notice of this action and amends 40 CFR 61.04, Address, to reflect this delegation. This Section is also being amended to reflect a new address for Philadelphia's Air Management Services, which has already been delegated NESHAP authority.

EFFECTIVE DATE: December 20, 1982.

FOR FURTHER INFORMATION CONTACT: Gregory Ham, (215) 597-2745, EPA Region III, Curtis Building, 6th and Walnut Streets, Philadelphia, PA 19106.

SUPPLEMENTARY INFORMATION: National Emission Standards for Hazardous Air Pollutants (NESHAP) have been promulgated by the Administrator under 40 CFR Part 61 for four pollutants: Beryllium, Asbestos, Mercury, and Vinyl Chloride. Section 112(d)(1) directs the Administrator to delegate authority to implement and enforce the standards to any agency which submits an adequate procedure. Nevertheless, the Administrator retains concurrent authority to implement and enforce the standards following delegation of authority to a State or local agency.

On September 24, 1982, the Director of the Allegheny County Health Department (ACHD), and the Allegheny County Commissions jointly requested the delegation of authority for the NESHAP program for asbestos and mercury only. ACHD has determined that standards for Beryllium and Vinyl Chloride would not currently apply to any sources in the County, and therefore did not request delegation at this time.

The Director of the Air and Waste Management Division has determined that the ACHD procedure for implementing and enforcing the standards is adequate. Pursuant to authority delegated to him by the Administrator, the Air and Waste Management Division Director notified the Director of the Health Department on September 27, 1982 that authority to implement and enforce the standards for asbestos and mercury was delegated to the Allegheny County Health Department. The letter approved the delegation and outlined the conditions of it. A ten day response period was provided during which the Director of the Health Department or any other representative could present objections to the conditions of the delegation. No responses were received during this period. Therefore, this delegation is final.

Copies of the request for delegation of authority are available for public inspection at the Environmental Protection Agency, Region III, Curtis Building, 6th & Walnut Streets, Philadelphia, Pennsylvania, 19106.

Effective immediately, all reports required pursuant to the emission standards for hazardous air pollutants (asbestos and mercury only) should be submitted to the Allegheny County Health Department, Bureau of Air Pollution Control, 301 Thirty-ninth Street, Pittsburgh, Pa., 15201, with copies to the Director, Air and Waste Management Division, at the EPA address above. The amended *§ 61.04, Address,* which adds the address of the Bureau (to which all reports, requests, applications, submittals, and communications to the Administrator pursuant to this part must be addressed), is set forth below.

In addition, § 61.04 is being amended to reflect a new address for Philadelphia's Air Management Services (AMS). AMS has moved to a new address since delegation of authority for NESHAP occurred.

The Administrator finds good cause for foregoing prior public notice and for making this rulemaking effective immediately because it is an administrative change and not one of substantive content. No additional burdens are imposed on the parties affected. The delegation which is reflected by the Administrative amendment was effective on September 27, 1982, and it serves no purpose to delay this change of address in the Code of Federal Regulations.

(Sec. 112 of the Clean Air Act, as amended, 42 U.S.C. 7412.)

The Office of Management and Budget has exempted this rulemaking from requirements of Executive Order 12291.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: November 23, 1982.

Stanley L. Laskowski,

Acting Regional Administrator.

PART 61—[AMENDED]

Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

1. In § 61.04 paragraph (b) (NN) is revised to read as follows:

§ 61.04 Address

* * * * *

(b) * * *

(NN) (i) City of Philadelphia: Philadelphia Department of Public Health, Air Management Services, 500 S. Broad Street, Philadelphia, Pennsylvania 19146.

(ii) Commonwealth of Pennsylvania: Department of Environmental Resources, Post Office Box 2063, Harrisburg, Pennsylvania, 17120.

(iii) Allegheny County: Allegheny County Health Department, Bureau of Air Pollution Control, 301 Thirty-ninth Street, Pittsburgh, Pennsylvania, 15201.

* * * * *

[FR Doc. 83-XXXX Filed 1-17-83; X:X3 am]

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40 CFR Parts 60 and 61

[AD-FRL-2244-3]

Standards of Performance for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants: Incorporation by Reference

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This is a technical amendment incorporating certain materials by reference into existing new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP) promulgated under Sections 111 and 112, respectively, of the Clean Air Act. These materials are already cited in those standards, but they have not until now been incorporated by reference under the applicable regulations of the Office of the Federal Register. The intent of this action is to comply with those regulations.

EFFECTIVE DATE: January 27, 1983. The incorporation by reference of certain publications listed in the regulation is approved by the Director of the Federal Register as of January 27, 1983.

FOR FURTHER INFORMATION CONTACT: Ms. Shirley Tabler, Standards Development Branch (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5624.

SUPPLEMENTARY INFORMATION: In the Freedom of Information Act, 5 U.S.C. 552, Congress authorized incorporation of materials into regulations by reference in an effort to reduce the volume of material published in the Federal Register and Code of Federal Regulations. Incorporation by reference allows federal agencies to comply with the requirement to publish regulations in the Federal Register simply by referring to material already published elsewhere, rather than reprinting such material in the published regulations. The legal effect of incorporation by reference is that the material is treated as if it were published in the Federal Register. This material, like any other properly issued regulation, has the force and effect of law.

In this action, EPA is incorporating by reference into several of its existing new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP) promulgated under Clean Air Act Sections 111 and 112 (at 40 CFR Parts 60 and 61), respectively, materials that are already cited in those standards. This is because these materials have not previously been incorporated by reference pursuant to the formal procedures established in 1 CFR Part 51. The amendment sets forth the sections affected by this action and the material being incorporated into each section. All of the materials are available for inspection at the Office of the Federal Register, Room 8401, 1100 L Street, N.W., Washington, D.C. as well as at the Library (MD-35), U.S. EPA, Research Triangle Park, North Carolina. These incorporations by reference were approved by the Director of the Federal Register on January 27, 1983.

This amendment incorporates by reference two sets of materials: (a) Materials identical in form (i.e., same edition and publication date) to the materials currently cited in NSPS and NESHAP; and (b) later editions of materials currently cited in these regulations. Regardless of the category particular materials fall within, however, all the materials that this amendment incorporates by reference are substantively the same as those currently cited in the regulations.

This amendment informs the public that the Director of the Federal Register has approved incorporation of these materials by reference. It imposes no requirements beyond those already cited in the affected NSPS and NESHAP. Therefore, additional notice and comment are "unnecessary," and the Agency has "good cause," under 42 U.S.C. 7607(d)(1) and 5 U.S.C. § 553(b), subparagraph (B), to promulgate these incorporations without further notice and comment.

For the same reason, the Agency finds that good cause exists for making these incorporations effective immediately, under 5 U.S.C. 553(d)(3).

Miscellaneous

Under Section 307(b)(1) of the Act, petitions for judicial review of this action must be filed in the United States Court of Appeals for the appropriate circuit by March 28, 1983. This action may not be challenged later in proceedings to enforce the NSPS and NESHAP into which the materials discussed above are incorporated by reference [see § 307(b)(2)].

This rulemaking is issued under the authority of Sections 111, 112, and 301(a) of the Clean Air Act as amended [42 U.S.C. 7411, 7412, and 7601(a)].

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities because it imposes no new requirements.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by reference.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl choloride, Incorporation by reference.

Dated: December 20, 1982.

Anne M. Gorsuch,

Administrator.

PART 60—[AMENDED]

* * * * *

PART 61—[AMENDED]

40 CFR Part 61 is amended as follows:

1. A new § 61.18 is added to read as follows:

§ 61.18 Incorporations by reference.

The materials listed below are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register on the date listed. These materials are incorporated as they exist on the date of the approval, and a notice of any change in these materials will be published in the Federal Register. The materials are available for purchase at the corresponding address noted below, and all are available for inspection at the Office of the Federal Register, Room 8401, 1100 L Street, N.W., Washington, D.C. and the Library (MD-35), U.S. EPA, Research Triangle Park, North Carolina.

(a) The following material is available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; or University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

(1) ASTM D737-75, Standard Test Method for Air Permeability of Textile Fabrics, incorporation by reference (IBR) approved January 27, 1983 for § 61.23(a).

(2) ASTM D1193-77, Standard Specification for Reagent Water, IBR approved January 27, 1983 for Appendix B of Part 61, Method 101, par. 6.1.1; Method 101A, par. 6.1.1.

2. In § 61.23, paragraph (a) is revised to read as follows:

§ 61.23 Air-cleaning.

* * * * *

(a) Fabric filter collection devices must be used, except as noted in paragraphs (b) and (c) of this section. Such devices must be operated at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric. The airflow permeability, as determined by ASTM Method D737-75 (incorporated by reference—see § 61.18), must not exceed 30 $ft^3/min/ft^2$ for woven fabrics or $35^3/min/ft^2$ for felted fabrics, except that 40 $ft^3/min/ft^2$ for woven and 45 $ft^3/min/ft^2$ for felted fabrics is allowed for filtering air from asbestos ore dryers. Each square yard of felted fabric must weigh at least 14 ounces and be at least $\frac{1}{16}$ inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.

3. In Appendix B of Part 61, Method 101, paragraph 6.1.1 is revised to read as follows:

Method 101—Determination of Particulate and Gaseous Mercury Emissions from Chlor-Alkali Plants—Air Streams

* * * * *

6.1.1 *Water.* Deionized distilled, meeting ASTM Specifications for Type I Reagent Water—ASTM Test Method D1193-77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter. Use this water in all dilutions and solution preparations.

* * * * *

4. In Appendix B to Part 61, Method 101A, paragraph 6.1.1 is revised to read as follows:

Method 101A—Determination of Particulate and Gaseous Mercury Emissions From Sewage Sludge Incinerators

* * * * *

6.1.1 *Water.* Deionized distilled, meeting ASTM Specifications for Type I Reagent Water—ASTM Test Method D1193-77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter. Use this water in all dilutions and solution preparations.

* * * * *

[FR Doc. 83-2016 Filed 1-26-83; 8:45 am]
BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-6-FRL 2299-5]

Delegation of Additional Authority to State of Texas for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Programs

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: EPA, Region 6, has delegated to the State of Texas, the additional authority to implement and enforce the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements adopted after the delegation dates of November 15, 1978, and February 5, 1981. Except as specifically limited, all of the authority and responsibilities of the Administrator or the Regional Administrator which are found in 40 CFR Parts 60 and 61 are delegated to the Texas Air Control Board (TACB). Any such authority and responsibilities may be redelegated by the Board to its staff.

EFFECTIVE DATE: December 28, 1982.

ADDRESS: Copies of the State request and State-EPA agreement for this delegation of authority are available for public inspection at the Air Branch, Environmental Protection Agency (EPA), Region 6, Interfirst Two Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270.

FOR FURTHER INFORMATION CONTACT: William H. Taylor, Air Branch, EPA, address above. Telephone 214-767-1594; FTS 8-729-1594.

SUPPLEMENTARY INFORMATION: On May 9, 1975, the State of Texas requested EPA, Region 6, to delegate the authority to the TACB to implement and enforce the NSPS and NESHAP programs specified under 40 CFR Parts 60 and 61.

On November 15, 1978 and February 5, 1981, EPA delegated the authority to the State of Texas to implement and enforce the existing NSPS and NESHAP programs in the State of Texas. Condition 4 of the delegation agreement did not allow the State to assume the responsibilities to implement and enforce the NSPS and NESHAP requirements adopted after the above delegation dates. Therefore, on December 15, 1982, the State of Texas requested a revision of the delegation of responsibility for the NSPS and NESHAP programs. After a thorough review of the request and information submitted, the Regional Administrator determined that the State's pertinent laws and the rules and regulations of the TACB were found to provide an adequate and effective procedure to implement and enforce all future NSPS and NESHAP requirements. Therefore, on December 28, 1982, EPA delegated the additional authority to the State of Texas to implement and enforce all previously adopted and all future NSPS and NESHAP requirements pursuant to Sections 111(c) and 112(d) of the Clean Air Act subject to the conditions and limitations as specified in the agreements. However, the State may decline delegation of any standard within thirty (30) days after final promulgation. This amendment supersedes the November 15, 1978, and February 5, 1981, delegation agreements.

This notice will have no effect on the National Ambient Air Quality Standards.

The Office of Management and Budget has exempted this from the requirements of Section 3 of Executive Order 12291.

Sources locating in the State of Texas should submit all information pursuant to 40 CFR Parts 60 and 61 directly to the State agency at the following address: Texas Air Control Board, 6330 Highway 290 East, Austin, Texas 78723.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

This delegation is issued under the authority of Sections 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 7411 and 7412).

Dated: January 25, 1983.

Frances E. Phillips,

Acting Regional Administrator.

PART 60—NEW SOURCE PERFORMANCE STANDARDS

The address for the State agency has been changed. Therefore, Part 60 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

In § 60.4, paragraph (b)(SS) is amended by revising the phrases "8520 Shoal Creek Boulevard" to read "6330 Highway 290 East" and "78758" to read "78723" as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(SS) * * * 6330 Highway 290 East, * * * 78723.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

The address for the State agency has been changed. Therefore, Part 61 of Chapter 1, Title 40 of the Code of the Federal Regulations is amended as follows:

In § 61.4, paragraph (b)(SS) is amended by revising the phrases "8520 Shoal Creek Boulevard" to read "6330 Highway 290 East" and "78758" to read "78723" as follows:

§ 61.4 Address.

* * * * *

(b) * * *

(SS) * * * 6330 Highway 290 East, * * * 78723.

[FR Doc. 83-12045 Filed 5-6-83; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2386-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board on behalf of the Fresno County Air Pollution Control District (FCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: April 18, 1983.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the FCAPCD. Delegation of authority was granted by a letter dated April 6, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA

Dear Mr. Boyd: In response to your request of February 3, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) on behalf of the Fresno County Air Pollution Control District (FCAPCD). We have reviewed your request for delegation and have found the FCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60, Subpart
Fossil-Fuel Fired Steam Generators	Da
Petroleum Storage Vessels	Ka
Glass Manufacturing Plants	CC
Surface Coating of Metal Furniture	EE
Stationary Gas Turbines	GG
Lead-Acid Battery Manufacturing Plants	KK
Automobile & Light-Duty Truck Surface Coating Operations.	MM
Phosphate Rock Plants	NN
Ammonium Sulfate	PP
Graphic Arts: Publication Rotogravure Printing.	QQ
Industrial Surface Coating—Large Appliances.	SS
Metal Coil Surface Coating Operations	TT
Asphalt Processing and Asphalt Roof Manufacturer.	UU

In addition, we are redelegating the following NSPS and National Emission Standards for Hazardous Air Pollutants (NESHAPS) categories since the FCAPCD's revised programs and procedures are acceptable:

NSPS	40 CFR Part 60, Subpart
General Provisions	A
Fossil-Fuel Fired Steam Generators	D
Incinerators	E
Portland Cement Plants	F
Nitric Acid Plants	G
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids	K
Secondary Lead Smelters	L
Secondary Brass & Bronze Ingot Production Plants.	M
Iron and Steel Plants (BOPF)	N
Sewage Treatment Plants	O
Primary Copper Smelters	P
Primary Zinc Smelters	Q
Primary Lead Smelters	R
Primary Aluminum Reduction Plants	S
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T
Phosphate Fertilizer Industry Superphosphoric Acid Plants.	U
Phosphate Fertilizer Industry. Diammonium Phosphate Plants.	V
Phosphate Fertilizer Industry Triple Superphosphate Plants.	W
Phosphate Fertilizer Industry. Granular Triple Superphosphate.	X
Coal Preparation Plants	Y
Ferroalloy Production Facilities	Z
Iron and Steel Plants (Electric Arc Furnaces).	AA
Kraft Pulp Mills	BB
Grain Elevators	DD
Lime Manufacturing Plants	HH

NESHAPS	40 CFR Part 61, Subpart
General Provisions	A
Asbestos	B
Beryllium	C
Beryllium Rocket Motor Firing	D
Mercury	E
Vinyl Chloride	F

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Cordially yours,

Sonia F. Crow,
Regional Administrator.

cc: Fresno County Air Pollution Control District.

With respect to Fresno County all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the FCAPCD at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: June 13, 1983.

John Wise,
Acting Regional Administrator.

[FR Doc. 83-16553 Filed 6-20-83; 8:45 am]
BILLING CODE 6560-50-M

40 CFR Parts 60 and 61

[A-9-FRL 2386-2]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) Maricopa County Health Department, Arizona

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the Maricopa County Health Department (MCHD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: April 18, 1983.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The MCHD has requested authority for delegation of certain NSPS and NESHAPS categories. Delegation of authority was granted by a letter dated April 6, 1983 and is reproduced in its entirety as follows:

Ref: NSS 3-4-1

Mr. Robert W. Evans,
Chief, Bureau of Air Pollution Control,
Maricopa County Health Department,
1825 East Roosevelt, Phoenix, AZ 85001.

Dear Mr. Evans: In response to your request of February 16, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 Subpart
General provisions	A.
Lead-acid battery manufacturing plants	KK.
Phosphate rock plants	NN.
NESHAPS	40 CFR Part 61 Subpart
General provisions	A.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Cordially yours,

Sonia F. Crow,
Regional Administrator.

cc: Arizona Department of Health Services.

With respect to Maricopa County all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the MCHD at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: June 13, 1983.

John Wise,
Acting Regional Administrator.

[FR Doc. 83-16554 Filed 6-20-83; 8:45 am]
BILLING CODE 6560-50-M

40 CFR Part 60 and 61

[A-6-FRL 2400-3]

Delegation of Additional Authority to Oklahoma State Department of Health and Subdelegation of Authority to the Tulsa City-County Health Department for the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Programs

AGENCY: Enviromental Protection Agency (EPA), Region 6.

ACTION: Final rule.

SUMMARY: On June 10, 1983 EPA delegated to the Oklahoma State Department of Health (OSDH) the additional authority to subdelegate the NSPS and NESHAP programs to qualified local air pollution control authorities in the State of Oklahoma. The OSDH has subdelegated the authority to implement and enforce the programs in Tulsa County to the Tulsa City-County Health Department (TCCH). Except as specifically limited, all of the authority and responsibilities delegated to the OSDH by EPA which are found in 40 CFR Parts 60 and 61 are subdelegated to the TCCHD. Any such authority and responsibilities may be redelegated by the TCCHD to its staff. The subdelegation will allow for the implementation and the enforcement of these programs at the local level.

EFFECTIVE DATE: June 10, 1983.

ADDRESS: Copies of the delegation of addition authority to the OSDH allowing for subdelegation, as well as copies of the TCCHD request and the TCCHD/OSDH agreement for this subdelegation of authority are available for public inspection at the Air Branch, Air and Waste Management Division, Environmental Protection Agency, Region 6, Inter-First Two Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270.

FOR FURTHER INFORMATION CONTACT: William H. Taylor, Jr., Air Branch, EPA, address above (214) 767-2746.

SUPPLEMENTARY INFORMATION: On January 21, 1983, the TCCHD requested the OSDH to delegate to them the authority to implement and enforce the NSPS and NESHAP programs as specified under 40 CFR Parts 60 and 61 for sources located in Tulsa County. On February 7, 1983, the OSDH approved subdelegating to the TCCHD this authority.

On June 10, 1983, EPA delegated the additional authority to the OSDH to subdelegate the authority for the NSPS and NESHAP programs to local air pollution control agencies in Oklahoma.

Effective on this date, the authority is granted to the TCCHD to administer the requirements for the NSPS and NESHAP programs specified in 40 CFR Parts 60 and 61, as delegated to the OSDH by EPA.

This notice will have no effect on the National Ambient Air Quality Standards.

The Office of Management and Budget has exempted this information notice from the requirements of Section 3 of Executive Order 12291.

Sources locating in Tulsa County should submit all information pursuant to 40 CFR Parts 60 and 61 directly to the Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa Oklahoma 74112.

I certify that this rule will not have a significant economic impact on a substantial number of small entities.

Dated: June 24, 1983.

Myson O. Knudson,

Acting Regional Administrator.

PART 60—NEW SOURCE PERFORMANCE STANDARDS

Part 60 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

1. Section 60.4 paragraph (a) is amended by removing "to the attention of the Director, Enforcement Division." and by changing the address for Region VI to read as follows:

§ 60.4 Address.

(a) * * *

Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), 1201 Elm Street, Dallas, 75270.

2. Section 60.4 paragraph (b)(LL) is amended by adding paragraphs (i) and (ii) to read as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(LL) * * *

(i) [Reserved]

(ii) Tulsa County: Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

1. Section 61.04 paragraph (a) is amended by removing the following words "to the attention of the Director, Enforcement Division." and by revising the address for Region VI to read as follows:

§ 61.04 Address.

(a) * * *

Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), 1201 Elm Street, Dallas, Texas 75270.

2. Section 61.04 paragraph (b)(LL) is amended by adding paragraphs (i) and (ii) to read as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(LL) * * *

(i) [Reserved]

(ii) Tulsa County: Tulsa City-County Health Department, 4616 East Fifteenth Street, Tulsa, Oklahoma 74112.

[FR Doc. 83-20134 Filed 7-25-83; 8:45 am]

BILLING CODE 6560-50-M

83

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-1-FRL 2413-7]

Air Programs; Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs); Connecticut, Maine, New Hampshire, Rhode Island, Vermont, and Massachusetts

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The EPA hereby notifies the public that it has delegated authority over certain New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) to the State Air Pollution Agencies in Region I. The NSPS and NESHAPs program delegations have now been brought up to date with recent EPA promulgations of standards and revisions to NSPS and NESHAPs categories. Several of the States' delegations provide that authority over future promulgated standards and revisions will automatically be delegated to the State agency. These delegations do not create any new regulatory requirements affecting the public. The effect of the delegations is to shift primary program responsibility for the affected NSPS and NESHAPs source categories from EPA to State governments. Some States do not have full authority over the programs; limitations are noted where appropriate.

DATES: The regulations are amended to reflect these address changes effective Maine, September 30, 1982, Connecticut, September 30, 1983, Massachusetts, June 24, 1982, New Hampshire, September 30, 1982, Rhode Island, September 29, 1982, and Vermont, September 28, 1982.

FOR FURTHER INFORMATION CONTACT: Linda Murphy, State Air Programs Branch, Air Management Division, EPA, Region I, Room 2111, John F. Kennedy Building, Boston, MA 02203, Telephone: (617) 223-5130, FTS 223-5130.

SUPPLEMENTARY INFORMATION: The air pollution control agencies of the following States have requested and received, by delegation, authority over certain NSPS and NESHAPs source categories. Delegations are effective as listed below:

State of Connecticut

Effective Date: September 30, 1982 (except as otherwise noted).

Limitations: None—Full authority was delegated.

Future standards and revisions: Full authority over all new or amended regulations under 40 CFR Part 60 or 61 will be delegated to the State of Connecticut upon EPA notice to the State of final promulgation of the new or amended regulation.

DELEGATIONS

NSPS	40 CFR Part 60 Subpart
General Provisions	A.
Fossil-Fuel-Fired Steam Generators.	D.
Electric Utility Steam Generation Units[1].	Da
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids constructed prior to May 19, 1978.	K.
Storage Vessels for Petroleum Liquids constructed after May 18, 1978[1].	Ka
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants	N.
Sewage Treatment Plants	O.

DELEGATIONS—Continued

NSPS	40 CFR Part 60 Subpart
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants.	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants.	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities.	X.
Steel Plants: Electric Arc Furnaces.	AA.
Glass Manufacturing Plants [1]	CC.
Metal Furniture Surface Coating [2]	EE.
Stationary Internal Combustion Engines [3].	FF.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants [1]	HH.
Organic Solvent Cleaners [3]	JJ.
Autombile & Light-Duty Truck Surface Coating [3].	MM.
Perchloroethylene Dry Cleaners [3]	OO.
Graphic Arts [3]	QQ.
Pressure Sensitive Tape & Label Surface Coating Operations [3].	RR.
Large Appliance Surfacr Coating [3]	SS.
Metal Coil Coating [3]	TT.
Asphalt Roofing	UU.
Beverage Can Surface Coating Industry [3].	WW.
Gasoline Tank Truck Loading Tracks [3].	XX.
Rubber Tire Manufacturing [3]	BBB.
Flexible Vinyl Coating [3]	FFF.
VOC Fugitive Emissions from Petroleum Refineries [3].	GGG.
Synthetic Fiber Production Facilities [3].	HHH.
Petroleum Dry Cleaners [3]	JJJ.

[1] Effective date March 16, 1983.
[2] Effective date February 10, 1983.
[3] Effective date April 29, 1983.

NESHAP's	40 CFR Part 61 Subpart
General Provisions	A.
Asbestos*	B*.
Beryllium	C.
Beryllium Rocket Motor Firing	D.

*§ 61-22(d), Demolition and Renovation, and any other portion of Subpart B pertaining to it, is not delegated.

NESHAP's	40 CFR Part 60 Subpart
Mercury	E.
Vinyl Chloride	F.
Benzene Maleic Anhydride[1]	H.
Benzene Emissions from Ethylene/Styrene Plants[1].	I.
VOC Fugitive Emission Sources in the Synthetic Organic Chemical Manufacturing Industry[1].	J.
Benzene Emissions from Benzene Storage Vessels[1].	K.

[1] Effective date April 29, 1983.

State of Maine

Effective Date: September 30, 1982 (except as otherwise noted).

Limitations: None—full authority was delegated.

Future standards and revisions: Full authority over all new or amended regulations under 40 CFR Part 60 or 61 will be delegated to the State of Maine upon EPA notice to the State of final promulgation of the new or amended regulation.

DELEGATIONS

NSPS	40 CFR Part 60 Subpart
General Provisions	A.
Fossil-Fuel-Fired Steam Generators.	D.
Electric Utility Steam Generating Units.	Da.
Incinerators*	E*.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids constructed prior to May 19, 1978.	K.
Storage Vessels for Petroleum Liquids constructed after May 18, 1978.	Ka.
Secondary Lead Smelters	L.
Secondary Bronze and Brass Ingot Production Plants.	M.
Iron & Steel Plants	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants.	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants.	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants.	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities.	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Steel Plants: Electric Arc Furnaces.	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Metal Furniture Surface Coating [1]	EE.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Lead Acid Battery Manufacturing	KK.
Automobile & Light Duty Truck Surface Coating Operations.	MM.
Phosphate Rock Plants	NN.
Ammonium Sulfate Manufacture	PP.
Graphic Arts[1]	QQ.
Large Appliance Surface Coating [1].	SS.
Metal Coil Coating [1]	TT.
Asphalt Roofing [1]	UU.

* Authority regarding cone burners serving populations of less than 25,000 was not delegated.
[1] Effective date February 25, 1983.

NESHAP's	40 CFR Part 61 Subpart
General provisions	A.
Asbestos*	B*.
Beryllium	C.
Mercury	E.

*§ 61-22(d), Demolition and renovation, and any other portion of Subpart B pertaining to it, is not delegated.

NESHAP's	40 CFR Part 60 Subpart
Vinyl Chloride	F.

Commonwealth of Massachusetts

Effective Date: June 24, 1982 for administrative and technical authority. February 9, 1983 for enforcement authority (except as otherwise noted).

Limitations: None—full authority was delegated.

Future standards and revisions: Full authority over all amended regulations in delegated categories under 40 CFR Part 60 or 61 will be delegated to the Commonwealth of Massachusetts upon EPA notice to the Commonwealth of final promulgation of the amended regulation.

NSPS	40 CFR Part 60 Subpart
General Provisions	A.
Fossil-Fuel-Fired Steam Generators.	D.
Electric Utility Steam Generating Units.	Da.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids constructed prior to May 19, 1978.	K.
Storage Vessels for Petroleum Liquids constructed after May 18, 1978.	Ka.
Secondary Lead Smelters	L.
Secondary Brass and Bronze Ingot Production Plants.	M.
Iron and Steel Plants	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants.	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants.	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants.	W
Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities.	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Steel Plants: Electric Arc Furnaces.	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Metal Furniture Surface Coating [1]	EE.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Lead-Acid Battery Manufacturing [1]	KK.
Automobile and Light Duty Truck Surface Coating [1].	MM.
Phosphate Rock Plants [1]	NN.
Ammonium Sulfate Manufacturing	PP.
Graphic Arts [1]	QQ.
Large Appliance Surface Coating [1]	SS
Metal Coil Coating [1]	TT.
Asphalt Roofing [1]	UU.

[1] Effective date: May 9, 1983.

NESHAPs	40 CFR Part 61 Subpart
General Provisions	A.
Asbestos	B
Beryllium	C.
Beryllium Rocket Motor Firing	D
Mercury	E.
Vinyl Chloride	F.

State of New Hampshire

Effective Date: September 30, 1982 (except as otherwise noted).

Limitations: None—full authority was delegated.

Future standards and revisions: Full authority over all new or amended regulations under 40 CFR Part 60 or 61 will be delegated to the State of New Hampshire upon EPA notice to the State of final promulgation of the new or amended regulation.

DELEGATION

NSPS	40 CFR Part 60 Subpart
General Provisions	A
Fossil-Fuel-Fired Steam Generators	D
Electric Utility Steam Generating Units	Da
Incinerators	E
Asphalt Concrete Plants	I
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids constructed prior to May 19, 1978	K
Storage Vessels for Petroleum Liquids constructed after May 18, 1978	Ka
Secondary Lead Smelters	L
Secondary Brass and Bronze Ingot Production Plants	M
Iron and Steel Plants	N
Sewage Treatment Plants	O
Steel Plants: Electric Arc Furnaces	AA
Kraft Pulp Mills	BB
Grain Elevators	DD
Metal Furniture Surface Coating [1]	EE
Stationary Gas Turbines	GG
Lead Acid Battery Manufacturing [1]	KK
Graphic Arts [1]	QQ

[1] Effective date February 14, 1983.

NESHAP's	40 CFR Part 61 Subpart
General Provisions	A
Asbestos	B
Beryllium	C
Mercury	E

State of Rhode Island

Effective Date: September 29, 1982 (except as otherwise noted).

Limitations: Only administrative portions of the standards have been delegated.

Future standards and revisions: Authority over administrative portions of all new or amended regulations under 40 CFR Part 60 or 61 will be delegated to the State of Rhode Island upon EPA notice to the State of final promulgation of the new or amended regulation.

DELEGATIONS

NSPS	40 CFR Part 60 Subpart
General Provisions	A
Fossil-Fuel-Fired Steam Generators	D
Electric Utility Steam Generating Units	Da
Incinerators	E
Portland Cement Plants	F
Nitric Acid Plants	G
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids constructed prior to May 19, 1978	K

DELEGATIONS—Continued

NSPS	40 CFR Part 60 Subpart
Storage Vessels for Petroleum Liquids constructed after May 18, 1978	Ka
Secondary Lead Smelters	L
Secondary Bronze and Brass Ingot Production Plants	M
Iron and Steel Plants	N
Sewage Treatment Plants	O
Primary Copper Smelters	P
Primary Zinc Smelters	Q
Primary Lead Smelters	R
Primary Aluminum Reduction Plants	S
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W
Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities	X
Coal Preparation Facilities	Y
Ferroalloy Production Plants	Z
Steel Plants: Electric Arc Furnaces	AA
Glass Manufacturing Plants	CC
Grain Elevators	DD
Metal Furniture Surface Coating [1]	EE
Stationary Gas Turbines	GG
Lime Manufacturing Plants	HH
Lead-Acid Battery Manufacturing	KK
Automobile and Light Duty Truck Surface Coating Operations	MM
Phosphate Rock Plants	NN
Ammonium Sulfate Manufacture	PP
Graphic Arts [1]	QQ
Large Appliance Surface Coating [1]	SS
Metal Coil Coating [1]	TT
Asphalt Roofing	UU

[1] Effective date February 3, 1983.

NESHAP's	40 CFR Part 61 Subpart
General Provisions	A
Asbestos *	B

*§§ 61.20, 61.21, 61.22 (c), (f), and (g), 61.23 and 61.24 only.

NESHAP's	40 CFR Part 60 Subpart
Beryllium	C
Beryllium Rocket Motor Firing	D
Mercury	E
Vinyl Chloride	F

State of Vermont

Effective Date: September 28, 1982.

Limitations: Only field surveillance has been delegated for NESHAPs; full authority was delegated for NSPS.

Future standards and revisions: The State of Vermont will specifically request any delegation of authority it desires with respect to any new or amended regulations under 40 CFR Part 60 or 61.

DELEGATIONS

NSPS	40 CFR Part 60 Subpart
General Provisions	A
Fossil-Fuel-Fired Steam Generators	D

DELEGATIONS—Continued

NSPS	40 CFR Part 60 Subpart
Electric Utility Steam Generating Units	Da
Incinerators	E
Asphalt Concrete Plants	I

NESHAP's	40 CFR Part 61 Subpart
Asbestos *	B

*§§ 61.22 (d), (a)(11), (f) and (g), and 61.23 only.

Pursuant to NSPS and NESHAP's regulations, sources are required to submit all required reports to the state or local agency that has jurisdiction over the source, and the EPA.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291. [Secs. 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq.)]

I certify that this rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air Pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

(Secs. 111(c), 112(d) and 301(a), Clean Air Act, as amended (42 U.S.C. 7411(c), 7412(d) and 7601(a)))

Dated: July 7, 1983.

Michael R. Deland,

Regional Administrator, Region I.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

- Subparts A of Parts 60 and 61 of Chapter I, Title 40 of the Code of Federal Regulations are amended as follows:

Subpart A—General Provisions

1. Section 60.4, Address and § 61.04, Address, are each amended by revising

the address of the Commonwealth of Massachusetts in paragraph (b)(W) to read as follows:

§§ 60.4 and 61.04 [Amended]

* * * * *

(b) * * *

(W) Commonwealth of Massachusetts: Massachusetts Department of Environmental Quality Engineering, Division of Air Quality Control, One Winter Street, Boston, MA 02108.

* * * * *

2. Sections 60.4(b)(EE) and 61.04(b)(EE) are each amended by revising the address of the State of New Hampshire to read as follows:

* * * * *

(b) * * *

(EE) State of New Hampshire: New Hampshire Air Resources Agency, Health and Welfare Building, Hazen Drive, Concord, NH 03301.

* * * * *

3. Sections 60.4(b)(OO) and 61.04(b)(OO) are each amended by revising the address of the State of Rhode Island to read as follows:

* * * * *

(b) * * *

(OO) State of Rhode Island: Rhode Island Department of Environmental Management, 204 Cannon Building, Davis Street, Providence, RI 02908.

* * * * *

4. Sections 60.4(b)(UU) and 61.04(b)(UU) are each amended by revising the address of the State of Vermont to read as follows:

(b) * * *

(UU) State of Vermont: Vermont Agency of Environmental Conservation, Air Pollution Control, State Office Building, Montpelier, VT 05602.

* * * * *

[FR Doc. 83-22040 Filed 8-11-83; 8:45 am]

BILLING CODE 0520-50-M

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84 40 CFR Parts 60 and 61

[A-9-FRL 2432-4]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); Hawaii Department of Health

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of authority for certain NSPS and NESHAPS categories to the Hawaii Department of Health (HDOH). This action gives the HDOH the authority to implement and enforce the federal NSPS and NESHAPS programs. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to the State government.

EFFECTIVE DATE: August 15, 1983.

ADDRESS: Hawaii Department of Health, Environmental Protection and Health Services Division, 1250 Punchbowl Street, Honolulu, HI 96813.

Mailing Address: Hawaii Department of Health, Environmental Protection and Health Services Division, Post Office Box 3378, Honolulu, HI 96801.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: On July 28, 1983, the Deputy Director for Environmental Health, Hawaii Department of Health requested delegation of authority for certain NSPS and NESHAPS categories. Delegation of authority was granted by a letter and agreement dated August 15, 1983. The following agreement represents the terms and conditions of the delegation:

U.S. EPA-HDOH Agreement for Delegation of Authority of the Regulations for Standards of Performance for New Stationary Sources (40 CFR Part 60) and National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61)

The undersigned, on behalf of the Hawaii Department of Health (HDOH) and the United States Environmental Protection Agency (U.S. EPA), hereby agrees to the delegation of authority for the implementation of 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS) and 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPS) from the U.S. EPA to the HDOH, subject to the terms and conditions below.

Permits.

1. After the effective date of this Agreement, Authority to Construct permits issued by HDOH shall include appropriate provisions to ensure compliance with applicable NSPS. The categories of new or modified sources covered by this Agreement are:

a. Fossil Fuel Fired Steam Generators, Subpart D.

b. Electric Utility Steam Generator, Subpart Da.

c. Incinerators, Subpart E.

d. Portland Cement Plants, Subpart F.

e. Asphalt Concrete Plants, Subpart I.

f. Petroleum Refineries, Subpart J.

g. Storage Vessels for Petroleum Liquids Constructed after May 18, 1978, Subpart Ka.

h. Sewage Treatment Plants, Subpart O.

i. Stationary Gas Turbines, Subpart GG.

2. After the effective date of this Agreement, Authority to Construct permits issued by HDOH shall include appropriate provisions to ensure compliance with applicable NESHAPS. The category of new or modified sources covered by this Agreement is limited to mercury, Subpart E.

4. If at any time there is a conflict between a HDOH regulation and a U.S. EPA regulation (40 CFR Parts 60 and 61), the U.S. EPA regulation must be applied if it is more stringent than that of the HDOH. Exemptions authorized under HDOH's permit regulations will not exempt sources from controls required by 40 CFR Parts 60 and 61.

5. Performance tests shall be scheduled and conducted in accordance with the procedures set forth in 40 CFR Parts 60 and 61 unless alternate methods or procedures are approved by the U.S. EPA. Although the U.S. EPA retains the exclusive right to approve equivalent and alternative test methods as specified in 40 CFR 60.8(b) (2) and (3), and 61.14, the HDOH may approve minor changes in methodology provided these changes are reported to U.S. EPA. The U.S. EPA also retains the right to change an opacity standard as specified in 40 CFR 60.11(e).

a. The HDOH shall observe whenever possible required performance tests and determine compliance with NSPS/NESHAPS and maintain the following documentations for each test: (i) Source test plan and review; (ii) Source test observation report; and (iii) Source test report evaluation.

b. The HDOH shall notify U.S. EPA of all source test violations of applicable NSPS/NESHAPS within five days of completion of the HDOH's evaluation.

c. By December 31, 1983, the HDOH shall require sources to report particulate emissions in two categories: (i) Front half (filter and probe) and (ii) Front and back half (probe, filter and impingers).

d. Each quarter, the HDOH shall notify U.S. EPA of upcoming performance tests for the upcoming quarter.

e. The U.S. EPA shall provide HDOH with source test observation training by December 31, 1983.

6. Additionally, the HDOH must require reporting of all excess emissions from any NSPS source in accordance with 40 CFR 60.7(c).

7. Alternatives to continuous monitoring procedures or reporting requirements, as outlined in 40 CFR 60.13(i), may be approved by the HDOH with the prior concurrence of the U.S. EPA.

8. If a source proposes to modify its operation or facility which may cause the source to be subject to NSPS/NESHAPS requirements, or if there are questions on interpretations of the same, the HDOH shall notify U.S. EPA and obtain a determination on the applicability of the NSPS/NESHAP regulations.

Enforcement

HDOH will have primary responsibility for enforcement of the delegated NSPS/NESHAPS categories in accordance with the State's procedures and regulations.

Technical Support and Monitoring

1. HDOH air laboratory *cannot* provide any technical and monitoring support for NSPS at this time.

2. NESHAPS sampling and analysis will be the responsibility of the generator; any additional or follow-up sampling and analysis for HDOH will be done by a private laboratory under contract to HDOH.

General Delegation Conditions

1. Acceptance of this delegation of presently promulgated NSPS and NESHAPS does not commit the State to request or accept responsibility of future standards and requirements. A new request for responsibility will be required for any standards not included in 1 and 2 under *Permits*.

2. This delegation covers regulation as in effect on the date of this Agreement and revisions promulgated after the date for NSPS and NESHAPS categories identified in 1 and 2 under *Permits*. U.S. EPA will be responsible to provide HDOH with six copies of the regulations and revision thereof delegated under this Agreement. HDOH shall not be responsible for aspects of any permit for which EPA failed to provide HDOH with appropriate regulations or revisions prior to HDOH's issuance of a permit.

3. If the U.S. EPA determines that the HDOH is not implementing the NSPS or NESHAPS programs in accordance with the terms and conditions of this delegation, this delegation, after consultation with HDOH, may be revoked in whole or part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the HDOH

4. The delegation may be amended or cancelled at any time by the formal written agreement of both the HDOH and the U.S. EPA including amendments to add, change or remove conditions or terms of this Agreement.

5. Information shall be made available to the public in accordance with 40 CFR 60.9 and 61.15(b). Any records, reports, or information provided to, or otherwise obtained by, the HDOH in accordance with the provisions of these regulations shall be made available to the designated representative of U.S. EPA upon request.

6. This delegation of authority is effective upon the date of this Agreement.

Dated: July 28, 1983.

Melvin K. Koizumi,

Hawaii Department of Health.

Dated: August 15, 1983.

John Wise,

Environmental Protection Agency.

A copy of the letter requesting delegation of authority is available for public inspection at the U.S. Environmental Protection Agency, Region 9 Office, Air Management Division, Air Operations Branch, 215 Fremont Street, San Francisco, California 94105.

With respect to the State of Hawaii, all reports, applications, submittals, and other communications pertaining to the NSPS and NESHAPS source categories listed in the agreement should be directed to the HDOH at the address in the **ADDRESS** section of this notice.

The Regional Administrator finds good cause for forgoing prior public notice and for making this rulemaking effective immediately in that it is an administrative change and not one of substantive content. No additional substantive burdens are imposed on the parties affected. This delegation became effective according to the date cited in **DATES**, therefore, it serves no purpose to delay the technical change of this addition of the State address to the Code of Federal Regulations.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the Authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: September 6, 1983.

John C. Wise,

Acting Regional Administrator.

PARTS 60 AND 61—[AMENDED]

Subpart A of Parts 60 and 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

Subpart A—General Provisions

Sections 60.4(b)(M) and 61.04(b)(M) are each amended by adding the address of the Hawaii Department of Health to read as follows:

§§ 60.4 and 61.04 Address.

* * * * *

(b) * * *

(M) * * *

Hawaii Department of Health, 1250 Punchbowl Street, Honolulu, HI 96813

Hawaii Department of Health (mailing address), Post Office Box 3378, Honolulu, HI 96801

* * * * *

[FR Doc 83-25348 Filed 9-14-83, 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2436-7]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Rule-related notice.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board (CARB) on behalf of the Madera County Air Pollution Control District (MCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: June 28, 1983.

ADDRESS: Madera County Air Pollution Control District, 135 W. Yosemite Avenue, Madera, CA 93637.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105. Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the MCAPCD. Delegation of authority was granted by a letter dated June 13, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA 95812.

Dear Mr. Boyd: In response to your request of May 4, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) on behalf of the Madera County Air Pollution Control District MCAPCD). We have reviewed your request for delegation and have found the MCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 Subpart
General Provisions	A
Electric Utility Steam Generators	Da
Petroleum Storage Vessels	Ka
Glass Manufacturing Plants	CC
Surface Coating of Metal Furniture	EE
Stationary Gas Turbines	GG
Lead-Acid Battery Manufacturing Plants	KK
Automobile & Light-Duty Truck Surface Coating Operations	MM
Phosphate Rock Plants	NN
Ammonium Sulfate	PP
Graphic Arts Industry: Publication Rotogravure Printing	QQ
Industrial Surface Coating: Large Appliances	SS
Metal Coil Surface Coating	TT
Asphalt Roofing and Asphalt Roofing Manufacture	UU

NESHAPS	40 CFR Part 61 Subpart
General Provisions	A

In addition, we are redelegating the following NSPS and NESHAPS categories since the MCAPCD's revised programs and procedures are acceptable:

NSPS	40 CFR Part 60 Subpart
Fossil-Fuel Fired Steam Generators	D
Incinerators	E
Portland Cement Plants	F
Nitric Acid Plants	G
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids	K
Secondary Lead Smelters	L
Secondary Brass & Bronze Ingot Production Plants	M
Iron and Steel Plants (BOPF)	N
Sewage Treatment Plants	O
Primary Copper Smelters	P
Primary Zinc Smelters	Q
Primary Lead Smelters	R
Primary Aluminum Reduction Plants	S
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X
Coal Preparation Plants	Y
Ferroalloy Production Facilities	Z
Iron and Steel Plants (Electric Arc Furnaces)	AA
Kraft Pulp Mills	BB
Grain Elevators	DD
Lime Manufacturing Plants	HH

NESHAPS	40 CFR Part 61 Subpart
Asbestos	B
Beryllium	C
Beryllium Rocket Motor Firing	D
Mercury	E
Vinyl Chloride	F

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

John Wise,
Acting Regional Administrator.

cc: Madera County Air Pollution Control District.

With respect to Madera County all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the MCAPCD at the address shown in the ADDRESS section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.).*

Dated: September 7, 1983.

John Wise,
Acting Regional Administrator.

[FR Doc. 83-25581 Filed 9-19-83; 8:45 am]
BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-5-FRL 2436-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Rule-related notice.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board (CARB) on behalf of the Merced County Air Pollution Control District (MCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: June 10, 1983.

ADDRESS: Merced County Air Pollution Control District, 210 East 15th Street, P.O. Box 471, Merced, CA 95340.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105. Tel.: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the MCAPCD. Delegation of authority was granted by a letter dated May 26, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA 95812.

Dear Mr. Boyd: In response to your request of May 4, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) on behalf of Merced County Air Pollution Control District (MCAPCD). We have reviewed your request for delegation and have found the MCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR part 60 subpart
General Provisions	A.
Electric Utility Steam Generators	Da.
Petroleum Storage Vessels	Ka.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Surface Coating of Metal Furniture	EE.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Lead-Acid Battery Manufacturing Plants	KK.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Phosphate Rock Plants	NN.
Ammonium Sulfate	PP.
Industrial Surface Coating: Large Appliances	SS.
Asphalt Roofing and Asphalt Roofing Manufacture.	UU.

NESHAPS	40 CFR part 61 subpart
Vinyl Chloride	F.

In addition, we are redelegating the following NSPS and NESHAPS categories since the MCAPCD's revised programs and procedures are acceptable:

NSPS	40 CFR part 60 subpart
Fossil-Fuel Fired Steam Generators	D.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X
Coal Preparation Plants	Y
Ferroalloy Production Facilities	Z
Iron and Steel Plants (Electric Arc Furnaces)	AA.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Cordially yours,

Sonia F. Crow,

Regional Administrator.

cc: Merced County Air Pollution Control District.

With respect to Merced County all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the MCAPCD at the address shown in the ADDRESS section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: September 7, 1983.

John Wise,

Acting Regional Administrator.

[FR Doc. 83-25580 Filed 9-22-83; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Parts 60 and 61

[A-5-FRL 2436-8]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Pollutants (NESHAPS) State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Rule-related notice.

SUMMARY: The EPA hereby places the public on notice of its delegation of New Source Performance Standards (NSPS) and National Emission Standards for

Hazardous Pollutants (NESHAPS) authority to the California Air Resources Board (CARB) on behalf of the Kern County Air Pollution Control District (KCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: July 12, 1983.

ADDRESS: Kern County Air Pollution Control District, 1601 "H" Street, Suite 250, Bakersfield, CA 93301.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the KCAPCD. Delegation of authority was granted by a letter dated June 27, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,

Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA 95812

Dear Mr. Boyd: In response to your request of June 6, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) on behalf of the Kern County Air Pollution Control District (KCAPCD). We have reviewed your request for delegation and have found the KCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR Part 60 subpart
Surface Coating of Metal Furniture	EE.
Lead-Acid Battery Manufacturing Plants	KK.
Phosphate Rock Plants	NN.
Graphic Arts Industry: Publication Rotogravure Printing	QQ.
Industrial Surface Coating: Large Appliances	SS.
Metal Coil Surface Coating	TT.
Asphalt Roofing and Asphalt Roofing Manufacture.	UU.

In addition, we are redelegating the following NSPS and NESHAPS categories since the KCAPACD's revised programs and procedures are acceptable:

NSPS	40 CFR part 60 subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Electric Utility Steam Generators	Da.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Petroleum Storage Vessels	Ka.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR part 61 subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely yours,

John Wise,

Acting Regional Administrator.

cc: Kern County Air Pollution Control District

With respect to Kern County all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the KCAPCD at the address shown in the ADDRESS section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: September 7, 1983.

John Wise.

Acting Regional Administrator.

[FR Doc. 83-25583 Filed 9-22-83; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[AD-FRL-2449-7]

Standards of Performance for New Stationary Sources and National Emission Standards For Hazardous Air Pollutants; Delegation of Authority to the State of New York

AGENCY: Environmental Protection Agency.

ACTION: Rule related notice.

SUMMARY: This notice announces the re-delegation of authority by the Environmental Protection Agency to the State of New York to implement and enforce certain portions of the Federal Standards of Performance for New Stationary Sources ("NSPS") and the National Emission Standards for Hazardous Air Pollutants ("NESHAPs"), pursuant to Section 111(c)(1) and 112(d)(1) of the Clean Air Act. It also announces the delegation of additional NSPS source categories.

NSPS and NESHAPs are air pollution control regulations promulgated under the Clean Air Act (42 U.S.C. 7401 et. seq.). NSPS are applicable to certain categories of new air pollution sources. NESHAPs are applicable to certain categories of sources which emit certain pollutants considered hazardous.

EFFECTIVE DATE: This action is effective October 13, 1983.

FOR FURTHER INFORMATION CONTACT: Francis W. Giaccone, Chief, Air Compliance Branch, Air and Waste Management Division, Region 11 Office, 26 Federal Plaza, New York, New York 10278, (212) 264-9627.

SUPPLEMENTARY INFORMATION: On August 10, 1983, Commissioner Henry G. Williams of the New York State Department of Environmental Conservation (DEC) accepted authority from the Environmental Protection Agency (EPA) to implement and enforce certain portions of the federally established Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs) as follows:

NSPS, 40 CFR Part 60, Subparts:

- E Incinerators
- F Portland Cement Plants
- G Nitric Acid Plants
- H Sulfuric Acid Plants
- I Asphalt Concrete Plants
- J Petroleum Refineries
- K Storage Vessels for Petroleum Liquids
- Ka Storage Vessels for Petroleum Liquids Constructed after 5/18/78
- L Secondary Lead Smelters
- M Secondary Brass & Bronze Ingot Production
- N Iron & Steel Plants
- O Sewage Treatment Plants
- P Primary Copper Smelters
- Q Primary Zinc Smelters
- R Primary Lead Smelters
- S Primary Aluminum Reduction Plants
- T Wet Process Phosphoric Acid Plants
- U Superphosphoric Acid Plants
- V Di-Ammonium Phosphate Plants
- W Triple Superphosphate Plants
- X Granular Triple Superphosphate Plants
- Y Coal Preparation Plants
- Z Ferroalloy Production Facilities
- AA Electric Arc Furnaces in the Steel Industry
- BB Kraft Pulp Mills
- CC Glass Manufacturing Plants
- DD Grain Elevators
- EE* Metal Furniture Surface Coating
- HH Lime Manufacturing Plants
- KK* Lead-Acid Battery Manufacturing Plants
- MM Automobile & Light-Duty Truck Surface Coating Operations
- NN* Phosphate Rock Plants
- PP Ammonium Sulfate Manufacture
- QQ* Graphic Arts Industry: Production Rotogravure Printing
- SS* Industrial Surface Coating: Large Appliances
- TT* Metal Coil Surface Coating
- UU* Asphalt Processing and Asphalt Roofing Manufacture

*Newly Delegated

NESHAPS, 40 CFR Part 61, Subparts:

- B Asbestos (excepting only §§ 61.22(b) (Surfacing of Roadways with Asbestos-Containing Materials); 61.22(d) (Demolitions and Renovations); 61.22(i) (Insulating); and 61.22(j)(2), 61.22(k)(2), and 61.25 (all three of which relate to waste disposal)).
- C Beryllium
- D Beryllium Rocket Motor Firing
- E Mercury
- F Vinyl Chloride

EPA's determination that the delegation request should be approved is based upon the Agency's review of the New York State Environmental Conservation Law Article 19 (Air Pollution Control) and Article 71, Title 21 (Enforcement of Title 19); and relevant portions of Title 6 Official Compilation of Codes, Rules and Regulations of the State of New York ("NYCRR"), in particular, Parts 200, 201, 202 and 212.

EPA determined that such delegation is, therefore, appropriate and so notified the Commissioner of DEC in a letter dated July 14, 1983. This letter identified the conditions under which delegation would be approved. DEC subsequently accepted delegation in a letter dated August 10, 1983. Copies of all correspondence and EPA's delegation letter are available for public inspection in the Office of the Air Compliance Branch, at the Environmental Protection Agency, Region 11 Office, 26 Federal Plaza, New York, New York 10278.

Effective immediately, all correspondence, reports and notifications required by the delegated NSPS and NESHAPs should be submitted to the appropriate regional office of the New York State Department of Environmental Conservation or the central office located at 50 Wolf Road, Albany, N.Y. 12233, Attention: Division of Air, Bureau of Source Control.

The Office of Management and Budget has exempted this action from the requirements of Section 3 of Executive Order 12291.

This Notice is issued under the authority of Sections 111 and 112 of the Clean Air Act, as amended (42 U.S.C. Sections 7411 and 7412).

Dated: September 21, 1983.

Jacqueline E. Schafer,

Regional Administrator.

[FR Doc. 83-27651 Filed 10-12-83 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-7-FRL 2483-5]

Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); Delegation of Authority to the State of Missouri

AGENCY: Environmental Protection Agency (EPA).

ACTION: Rule related notice.

SUMMARY: This notice announces an extension of a delegation of authority that was initially issued to the State of Missouri by the Environmental Protection Agency on December 16, 1980, regarding the requirements of the Federal Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60, and the National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61. The extension was requested by the State of Missouri. The extension action added two (2) NSPS source categories to the delegation. The delegation of authority now includes all delegable requirements of the federal NSPS and NESHAPS regulations as promulgated by the agency through July 1, 1982.

EFFECTIVE DATE: December 8, 1983.

ADDRESSES: All requests, reports, applications, submittals and such other communications that are required to be submitted under 40 CFR Part 60 or 40 CFR Part 61 (including the notifications required under Subpart A of the regulations) for facilities in Missouri affected by the revised delegation should be sent to the Missouri Department of Natural Resources, P.O. Box 176, Jefferson City, Missouri 65102. A copy of all Subpart A related notifications must also be sent to the attention of the Director, Air and Waste Management Division, U.S. EPA, Region VII, 324 East 11th Street, Kansas City, Missouri 64106.

FOR FURTHER INFORMATION CONTACT: Charles W. Whitmore, Chief, Technical Analysis Section, Air Branch, U.S. EPA, Region VII, at the above address (816-374-6525 or FTS-758-6525).

SUPPLEMENTARY INFORMATION: Sections 111(c) and 112(d) of the Clean Air Act, respectively, allow the Administrator of the Environmental Protection Agency (i.e., EPA or the agency) to delegate to any state government the authority to implement and enforce the requirements of the federal NSPS and NESHAPS regulations. When a delegation is issued, the agency retains concurrent authority to implement and enforce the requirements of said regulations. The effect of a delegation is to shift the primary responsibility for implementing and enforcing the standards for the affected categories (and the affected activities) from the agency to the state government.

On December 16, 1980, the agency delegated to the State of Missouri the authority to implement and enforce the standards as promulgated by the agency through December 1, 1979 (see 46 FR 27392, May 19, 1981). On November 6, 1981, and June 17, 1982, the agency extended the initial delegation to include all requirements of said regulations as amended by the agency through July 1, 1980, and July 1, 1981, respectively (see 47 FR 36422, August 20, 1982).

On September 20, 1983, the State of Missouri requested an extension of the delegation to reflect an updating of its NSPS and NESHAPS rules. The State of Missouri has revised 10 CSR 10-6.070 (NSPS-related) and 10 CSR 10-6.080 (NESHAPS-related) to incorporate by reference the standards of 40 CFR Parts 60 and 61 as amended by the agency through July 1, 1982.

In consideration of the information contained in the above-mentioned letter, the agency granted the extension request on October 7, 1983.

The latest action by the agency extended the delegation to include the following additional provisions:

NSPS

Subpart KK—Lead Acid Battery Manufacturing Plants;

Subpart NN—Phosphate Rock Plants;

Reference Method 12—Determination of Inorganic Lead Emissions from Stationary Sources; and,

Revisions made to Subpart GG (Stationary Gas Turbines).

NESHAPS

Reference Method 101A—Determination of Particulate and Gaseous Mercury Emissions from Sewage Sludge Incinerators; and,

Revisions made to Subpart A (General Provisions), Subpart E (National Emission Standard for Mercury), and Reference Methods 101 and 102 of Appendix B.

Effective immediately, all reports, correspondence, and such other submittals required under the NSPS or NESHAPS regulations for sources affected by the revised delegation should be sent to the Missouri Department of Natural Resources at the above address rather than the EPA Region VII office, except as noted below.

A copy of each notification required under 40 CFR Part 60, Subpart A, or under 40 CFR Part 61, Subpart A, must *also* be sent to the attention of the Director, Air and Waste Management Division, EPA, Region VII, 324 East 11th Street, Kansas City, Missouri 64106.

Each document and letter mentioned in this notice is available for public inspection at the EPA regional office.

This notice is issued under the authority of Sections 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 7411 and 7412).

Dated: November 8, 1983.

Morris Kay,

Regional Administrator.

[FR Doc. 83-32572 Filed 12-7-83; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL 2453-7]

National Emission Standards for Hazardous Air Pollutants; Revisions and Additions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Revisions to Methods 103 and 104 of Appendix B of 40 CFR Part 61 are being made to incorporate metric units in data collection and calculations, and to provide consistency with other methods in Part 61. Additions to § 61.18 are being made to incorporate by reference the quality specifications for the reagent water required by Method 104, and for the filter media required by Methods 103 and 104. This action promulgates the revisions and additions.

DATES: Effective December 9, 1983. Under Section 307(b)(1) of the Clean Air Act, judicial review of the revisions and amendment is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under Section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

Incorporation by Reference. The incorporation by reference of certain publications in these standards is approved by the Director of the Federal Register as of December 9, 1983.

FOR FURTHER INFORMATION CONTACT: Roger Shigehara, Emission Measurement Branch, Emission Standards and Engineering Division (MD-19), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-2237.

SUPPLEMENTARY INFORMATION:

Revisions and Additions

This rulemaking does not impose any additional emission measurement requirements on any facilities. Rather, the rulemaking simply provides for the use of the metric system and simplified instructions in test methods associated with emission measurement requirements that would apply irrespective of this rulemaking. Therefore, additional notice and comment are "unnecessary," and the Agency has "good cause," under 42 U.S.C. 7607(d)(1) and 5 U.S.C. 553(b), subparagraph (B), to promulgate these revisions and additions without further notice and comment.

Public Participation

Public comments were not sought because of the noncontroversial nature of the revisions and additions.

Miscellaneous

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirement of a regulatory impact analysis. The regulation is not major because it will not have an annual effect on the economy of $100 million or more; it will not result in a major increase in costs or prices; and there will be no significant adverse effects on completion, employment, investment, productivity, innovation, or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291.

This rule does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act of 1980 U.S.C. 3501 *et seq.*

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that the attached rule will not have any economic impact on a substantial number of small entities, because the revisions do not impose any additional test cost.

This rulemaking is issued under the authority of sections 112, 114, and 301(a) of the Clean Air Act, amended (42 U.S.C. 7412, 7414, and 7601(a)).

List of Subjects in 40 CFR Part 60:

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by Reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil-Fuel-Fired Steam generators.

Dated: December 5, 1983.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

40 CFR Part 61 is amended as follows:

1. In § 61.18, paragraph (a) is amended by revising paragraph (a)(2) and by adding a new paragraph (a)(3) as follows:

§ 61.18 Incorporations by reference.

* * * * *

(a) * * *

(2) ASTM D 1193-77, Standard Specification for Reagent Water, IBR approved for Method 101, par. 6.1.1; Method 101A, par. 6.1.1; Method 104, par. 3.1.2.

(3) ASTM D 2986-71 (Reapproved 1978), Standard Method for Evaluation of Air, Assay Media by the Monodisperse DOP (Dioctyl Phthalate) Smoke Test, IBR approved for Method 103, par. 2.1.3; Method 104, par. 3.1.1.

* * * * *

2. By revising Test Methods 103 and 104 of Appendix B to read as follows:

Appendix B—Test Methods

* * * * *

Method 103—Beryllium Screening Method

1. *Applicability and Principle.*

1.1 Applicability. This procedure details guidelines and requirements for methods acceptable for use in determining beryllium (Be) emissions in ducts or stacks at stationary sources as specified under the provisions of § 61.14 of the regulations.

1.2 Principle. Be emissions are isokinetically sampled from three points in a duct or stack. The collected sample is analyzed for Be using an appropriate technique.

2. *Apparatus.*

2.1 Sampling Train. A schematic of the required sampling train configuration is shown in Figure 103-1. The essential components of the train are the following:

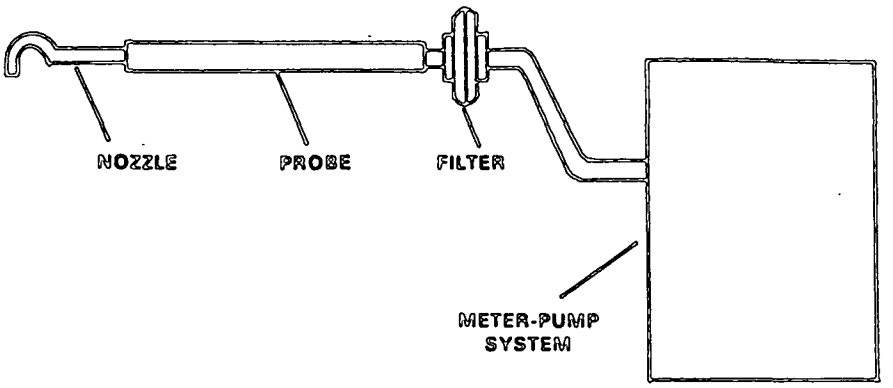

Figure 103-1. Beryllium screening method; sample train schematic.

2.1.1 Nozzle. Stainless steel, or equivalent, with sharp, tapered leading edge.

2.1.2 Probe. Sheathed borosilicate or quartz glass tubing.

2.1.3 Filter. Millipore AA (*Note:* Mention of trade names or specific products does not constitute endorsement by the Environmental Protection Agency), or equivalent, with appropriate filter holder that provides a positive seal against leakage from outside or around the filter. It is suggested that a Whatman 41, or equivalent, be placed immediately against the back side of the Millipore filter as a guard against breakage of the Millipore. Include the backup filter in the analysis. To be equivalent, other filters shall exhibit at least 99.95 percent efficiency (0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles, and be amenable to the Be analysis procedure. The filter efficiency tests shall be conducted in accordance with American Society for Testing and Materials (ASTM) Standard Method D 2986-71 (reapproved 1978) (incorporated by reference—see § 61.18). Test data from the supplier's quality control program are sufficient for this purpose.

2.1.4 Meter-Pump System. Any system that will maintain isokinetic sampling rate, determine sample volume, and is capable of a sampling rate of greater than 14 1 pm (0.5 cfm).

2.2 Measurement of Stack Conditions. The following equipment is used to measure stack conditions:

2.2.1 Pitot Tube. Type S, or equivalent, with a coefficient within 5 percent over the working range.

2.2.2 Inclined Manometer, or Equivalent. To measure velocity head to within 10 percent of the minimum value.

2.2.3 Temperature Measuring Device. To measure stack temperature to within 1.5 percent of the minimum absolute stack temperature.

2.2.4 Pressure Measuring Device. To measure stack pressure to within 2.5 mm Hg (0.1 in. Hg).

2.2.5 Barometer. To measure atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg).

2.2.6 Wet and Dry Bulb Thermometers, Drying Tubes, Condensers, or Equivalent. To determine stack gas moisture content to within 1 percent.

2.3 Sample Recovery.

2.3.1 Probe Cleaning Equipment. Probe brush or cleaning rod at least as long as probe, or equivalent. Clean cotton balls, or equivalent, should be used with the rod.

2.3.2 Leakless Glass Sample Bottles. To contain sample.

2.4 Analysis. Use equipment necessary to perform an atomic absorption, spectrographic, fluorometric, chromatographic, or equivalent analysis.

3. *Reagents.*

3.1 Sample Recovery.

3.1.1 Water. Distilled water.

3.1.2 Acetone. Reagent grade.

3.1.3 Wash Acid, 50 Percent (V/V) Hydrochloric Acid (HCl).

Mix equal volumes of concentrated HCl and water, being careful to add the acid slowly to the water.

3.2 Analysis. Reagents as necessary for the selected analytical procedure.

4. *Procedure.* Guidelines for source testing are detailed in the following sections. These guidelines are generally applicable; however, most sample sites differ to some degree and temporary alterations such as stack extensions or expansions often are required to insure the best possible sample site. Further, since Be is hazardous, care should be taken to minimize exposure. Finally, since the total quantity of Be to be collected is quite small, the test must be carefully conducted to prevent contamination or loss of sample.

4.1 Selection of a Sampling Site and Number of Sample Runs. Select a suitable sample site that is as close as practicable to the point of atmospheric emission. If possible, stacks smaller than 1 foot in diameter should not be sampled.

4.1.1 Ideal Sampling Site. The ideal sampling site is at least eight stack or duct diameters downstream and two diameters upstream from any flow disturbance such as a bend, expansion or contraction. For rectangular cross sections, use Equation 103-1 to determine an equivalent diameter, D_o.

Eq. 103-1

$$D_o = \frac{2LW}{L+W}$$

Where:
L = length
W = width

4.1.2 Alternate Sampling Site. Some sampling situations may render the above sampling site criteria impractical. In such cases, select an alternate site no less than two diameters downstream and one-half diameter upstream from any point of flow disturbance. Additional sample runs are recommended at any sample site not meeting the criteria of Section 4.1.1.

4.1.3 Number of Sample Runs Per Test. Three sample runs constitute a test. Conduct each run at one of three different points. Select three points that proportionately divide the diameter, or are located at 25, 50, and 75 percent of the diameter from the inside wall. For horizontal ducts, sample on a vertical line through the centroid. For rectangular ducts, sample on a line through the centroid and parallel to a side. If additional sample runs are performed per Section 4.1.2, proportionately divide the duct to accommodate the total number of runs.

4.2 Measurement of Stack Conditions. Using the equipment described in Section 2.2, measure the stack gas pressure, moisture, and temperature to determine the molecular weight of the stack gas. Sound engineering estimates may be made in lieu of direct measurements. Describe the basis for such estimates in the test report.

4.3 Preparation of Sampling Train. Assemble the sampling train as shown in Figure 103-1. It is recommended that all glassware be precleaned by soaking in wash acid for 2 hours.

Leak check the sampling train at the sampling site. The leakage rate should not be in excess of 1 percent of the desired sample rate.

4.4 Beryllium Train Operation. For each run, measure the velocity at the selected sampling point. Determine the isokinetic sampling rate. Record the velocity head and the required sampling rate. Place the nozzle at the sampling point with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. At the conclusion of the test, record the sampling rate. Again measure the velocity head at the sampling point. The required isokinetic rate at the end of the period should not have deviated more than 20 percent from that originally calculated. Describe the reason for any deviation beyond 20 percent in the test report.

Sample at a minimum rate of 14 1pm (0.5 cfm). Obtain samples over such a period or periods of time as are necessary to determine the maximum emissions which would occur in a 24-hour period. In the case of cyclic operations, perform sufficient sample runs so as to allow determination or calculation of the emissions that occur over the duration of the cycle. A minimum sampling time of 2 hours per run is recommended.

4.5 Sample Recovery. It is recommended that all glassware be precleaned as in Section 4.3. Sample recovery should also be performed in an area free of possible Be contamination. When the sampling train is moved, exercise care to prevent breakage and contamination. Set aside a portion of the acetone used in the sample recovery as a blank for analysis. The total amount of

acetone used should be measured for accurate blank correction. Blanks can be eliminated if prior analysis shows negligible amounts.

Remove the filter (and backup filter, if used) and any loose particulate matter from filter holder, and place in a container.

Clean the probe with acetone and a brush or long rod and cotton balls. Wash into the container with the filter. Wash out the filter holder with acetone, and add to the same container.

4.6 Analysis. Make the necessary preparation of samples and analyze for Be. Any currently acceptable method such as atomic absorption, spectrographic, fluorometric, chromatographic, or equivalent may be used.

5. *Calibration and Standards.*

5.1 Sampling Train. As a procedural check, compare the sampling rate regulation with a dry gas meter, spirometer, rotameter (calibrated for prevailing atmospheric conditions), or equivalent, attached to the nozzle inlet of the complete sampling train.

5.2 Analysis. Perform the analysis standardization as suggested by the manufacturer of the instrument, or the procedures for the analytical method in use.

6. *Calculations.*

Calculate the Be emission rate R in g/day for each stack using Equation 103-2. For cyclic operations, use only the time per day each stack is in operation. The total Be emission rate from a source is the summation of results from all stacks.

Eq. 103-2

$$R = \frac{W_t v_s(avg)\ A_s\ (86{,}400 \times 10^{-9})}{V_{total}}$$

Where:

W_t = Total weight of Be collected, μg.

$v_s(avg)$ = Average stack gas velocity, m/sec (ft/sec).

$A_s(avg)$ = Stack area, m^2 (ft^2).

86,400 = Conversion factor, sec/day.

10^{-9} = Conversion factor, g/μg.

V_{total} = Total volume of gas sampled, m^3 (ft^3).

7. *Test Report.*

Prepare a test report that includes as a minimum: A detailed description of the sampling train used, results of the procedural check described in Section 5.1 with all data and calculations made, all pertinent data taken during the test, the basis for any estimates made, isokinetic sampling calculations, and emission results. Include a description of the test site, with a block diagram and brief description of the process, location of the sample points in the stack cross section, and stack dimensions and distances from any point of disturbance.

Method 104—Reference Method for Determination of Beryllium Emissions From Stationary Sources

1. *Applicability and Principle.*

1.1 Applicability. This method is applicable for the determination of beryllium (Be) emissions in ducts or stacks at stationary sources. Unless otherwise specified, this method is not intended to apply to gas streams other than those emitted directly to the atmosphere without further processing.

1.2 Principle. Be emissions are isokinetically sampled from the source, and the collected sample is digested in an acid solution and analyzed by atomic absorption spectrophotometry.

2. *Apparatus.*

2.1 Sampling Train. The sampling train is identical to the Method 5 train as shown in Figure 5-1 (mention of Method 5 refers to 40 CFR Part 60). The sampling train consists of the following components:

2.1.1 Probe Nozzle, Pitot Tube, Differential Pressure Gauge, Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.1, 2.1.3, 2.1.4, 2.1.8, 2.1.9, and 2.1.10, respectively.

2.1.2 Probe Liner. Borosilicate or quartz glass tubing. The tester may use a heating system capable of maintaining a gas temperature of 120±14°C (248±25°F) at the probe exit during sampling to prevent water condensation. *Note:* Do not use metal probe liners.

2.1.3 Filter Holder. Borosilicate glass, with a glass frit filter support and a silicone rubber gasket. Other materials of construction (e.g., stainless steel, Teflon, Viton) may be used, subject to the approval of the Administrator. (*Note*: Mention of trade names of specific products does not constitute endorsement by the Environmental Protection Agency.) The holder design shall provide a positive seal against leakage from the outside or around the filter. The holder shall be attached immediately at the outlet of the probe. A heating system capable of maintaining the filter at a minimum temperature in the range of the stack temperature may be used to prevent condensation from occurring.

2.1.4 Impingers. Four Greenburg-Smith impingers connnected in series with leak-free ground glass fittings or any similar leak-free noncontaminating fittings. For the first, third, and fourth impingers, the tester may use impingers that are modified by replacing the tip with a 13-mm-ID (0.5-in.) glass tube extending to 13 mm (0.5 in.) from the bottom of the flask.

2.2 Sample Recovery. The following items are needed:

2.2.1 Probe Cleaning Rod. At least as long as probe.

2.2.2 Glass Sample Bottles. Leakless, with Teflon-lined caps, 500-ml.

2.2.3 Graduated Cylinder. 250-ml.

2.2.4 Funnel and Rubber Policeman. To aid in transfer of silica gel to container; not necessary if silica gel is weighed in the field.

2.2.5 Funnel. Glass, to aid in sample recovery.

2.2.6 Plastic Jar. Approximately 300-ml.

2.3 Analysis. The following equipment is needed:

2.3.1 Atomic Absorption Spectrophotometer. Perkin-Elmer 303, or equivalent, with nitrous oxide/acetylene burner.

2.3.2 Hot Plate.

2.3.3 Perchloric Acid Fume Hood.

3. *Reagents.*

Use ACS reagent-grade chemicals or equivalent, unless otherwise specified.

3.1 Sampling and Recovery. The reagents used in sampling and recovery are as follows:

3.1.1 Filter. Millipore AA, or equivalent. It is suggested that a Whatman 41 filter or equivalent be placed immediately against the back side of the Millipore filter as a guard against breaking the Millipore filter. To be equivalent, other filters shall exhibit at least 99.95 percent efficiency (0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles. The filter efficiency tests shall be conducted in accordance with ASTM Standard Method D 2986-71 (reapproved 1978) (incorporated by reference—see § 61.18). Test data from the supplier's quality control program are sufficient for this purpose.

3.1.2 Water. Deionized distilled, meeting ASTM Specifications for Type 3 Reagent Water—ASTM Test Method D 1193-77 (incorporated by reference—see § 61.18). If high concentrations of organic matter are not expected to be present, the analyst may eliminate the $KMnO_4$ test for oxidizable organic matter.

3.1.3 Silica Gel. Indicating type, 6- to 16-mesh. If previously used, dry at 175° C (350° F) for 2 hours. The tester may use new silica gel as received.

3.1.4 Acetone.

3.1.5 Wash Acid, 50 Percent (V/V) Hydrochloric Acid (HCl).

Mix equal volumes of concentrated HCl and water, being careful to add the acid slowly to the water.

3.2 Sample Preparation and Analysis. The reagents needed are listed below:

3.2.1 Water. Same as Section 3.1.2.

3.2.2. Perchloric Acid ($HClO_4$). Concentrated (70 percent).

3.2.3 Nitric Acid (HNO_3). Concentrated.

3.2.4 Beryllium Powder. Minimum purity 98 percent.

3.2.5 Sulfuric Acid (H_2SO_4) Solution, 12 N. Dilute 33 ml of concentrated H_2SO_4 to 1 liter with water.

3.2.6 Hydrochloric Acid Solution, 25 percent HCl (V/V).

3.2.7 Standard Beryllium Solution, 1 μg Be/ml. Dissolve 10 mg of Be in 80 ml of $12N H_2SO_4$ solution, and dilute to 1000 ml with water. Dilute a 10-ml aliquot to 100 ml with 25 percent HCl solution to give a concentration of 1 μg/ml. Prepare this dilute stock solution fresh daily. Equivalent strength Be stock solutions may be prepared from Be salts such as $BeCl_2$ and $Be(NO_3)_2$ (98 percent minimum purity).

4. *Procedure.*

4.1 Sampling. Because of the complexity of this method testers should be trained and experienced with the test procedures to assure reliable results. As Be is hazardous, testers should take precautions to minimize exposure. The amount of Be that is collected is generally small, therefore, it is necessary to exercise particular care to prevent contamination or loss of sample.

4.1.1 Pretest Preparation. Follow the general procedure given in Method 5, Section 4.1.1. Omit the directions of filters, except check them visually against light for irregularities and flaws such as pinholes.

4.1.2 Preliminary Determinations. Follow the general procedure given in Method 5, Section 4.1.2, except as follows: Select a nozzle size based on the range of velocity

heads to assure that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates below 28 liters/min (1.0 cfm).

Obtain samples over a period or periods of time that accurately determine the maximum emissions that occur in a 24-hour period. In the case of cyclic operations, perform sufficient sample runs for the accurate determination of the emissions that occur over the duration of the cycle. A minimum sample time of 2 hours per run is recommended.

4.1.3 Prior to assembly, clean all glassware (probe, impingers, and connectors) by first soaking in wash acid for 2 hours, followed by rinsing with water. Place 100 ml of water in each of the first two impingers, and leave the third impinger empty. Save a portion of the water for a blank analysis. Place approximately 200 g of preweighted silica gel in the fourth impinger. The tester may use more silica gel, but should be careful to ensure that it is not entrained and carried out from the impinger during sampling. Place the silica gel container in a clean place for later use in the sample recovery. As an alternative, determine and record the weight of the silica gel plus impinger to the nearest 0.5 g.

Install the selected nozzel using a Viton A O-ring when stack temperatures are less the 260°C (500°F). Use a fiberglass string gasket if temperatures are higher. See APTD-0576 (Citation 9 in Section 10 of Method 101) for details. Other connecting systems using either 316 stainless steel or Teflon ferrules may be used.

If condensation in the probe or filter is a problem, probe and filter heaters will be required. Adjust the heaters to provide a temperature at or above the stack temperature. However, membrane filters such as the Millipore AA are limited to about 225°F. If the stack gas is in excess of about 200°F, consideration should be given to an alternate procedure such as moving the filter holder downstream of the first impinger to insure that the filter does not exceed its temperature limit. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point. Assemble the train as shown in Figure 5-1 of Method 5, using (if necessary) a very light coat of silicone grease on all ground glass joints. Grease only the outer portion (see APTD-0576) to avoid possibility of contamination by the silicon grease. *Note:* An empty impinger may be inserted between the third impinger and the silica gel to remove excess moisture from the sample stream.

After the sampling train has been assembled, turn on and set the probe, if applicable, at the desired operating temperature. Allow time for the temperatures to stabilize. Place crushed ice around the impingers.

4.1.4. Leak-Check Procedures. Follow the leak-check procedures outlined in Method 5, Sections 4.1.4.1 (Pretest Leak Check), 4.1.4.2 (Leak Checks During Sample Run), and 4.1.4.3 (Post-Test Leak Check).

4.1.5 Beryllium Train Operation. Follow the general procedure given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

4.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

4.2 Sample Recovery. Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period.

Allow the probe to cool. When it can be safely handled, wipe off any external particulate matter near the tip of the probe nozzle, and place a cap over it. Do not cap off the probe tip tightly while the sampling train is cooling. Capping would create a vacuum and draw liquid out from the impingers.

Before moving the sampling train to the cleanup site, remove the probe from the train, wipe off the silicone grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the impinger. Use either ground-glass stoppers, plastic caps, or serum caps to close these openings.

Transfer the probe and impinger assembly to a cleanup area that is clean, protected from the wind, and free of Be contamination.

Inspect the train before and during this assembly, and note any abnormal conditions. Treat the sample as follows:

Disconnect the probe from the impinger train. Remove the filter and any loose particulate matter from the filter holder, and place in a sample bottle. Place the contents (measured to ±1 ml) of the first three impingers into another sample bottle. Rinse the probe and all glassware between it and the back half of the third impinger with water and acetone, and add this to the latter sample bottle. Clean the probe with a brush or a long slender rod and cotton balls. Use acetone while cleaning. Add these to the sample bottle. Retain a sample of the water and acetone as a blank. The total amount of water and acetone used should be measured for accurate blank correction. Place the silica gel in the plastic jar. Seal and secure all sample containers for shipment. If an additional test is desired, the glassware can be carefully double rinsed with water and reassembled. However, if the glassware is out of use more than 2 days, repeat the initial acid wash procedure.

4.3 Analysis.

4.3.1 Apparatus Preparation. Before use, clean all glassware according to the procedure of Section 4.1.3. Adjust the instrument settings according to the instrument manual, using an absorption wavelength of 234.8 nm.

4.3.2 Sample Preparation. The digestion of Be samples is accomplished in part in concentrated $HClO_4$. *Caution:* The analyst must insure that the sample is heated to light brown fumes after the initial HNO_3 addition; otherwise, dangerous perchlorates may result from the subsequent $HClO_4$ digestion. $HClO_4$ should be used only under a hood.

4.3.2.1 Filter Preparation. Transfer the filter and any loose particulate matter from the sample container to a 150-ml beaker. Add 35 ml concentrated HNO_3. Heat on a hotplate until light brown fumes are evident to destroy all organic matter. Cool to room temperature, and add 5 ml concentrated H_2SO_4 and 5 ml concentrated $HClO_4$. Then proceed with step 4.3.2.4.

4.3.2.2 Water Preparation. Place a portion of the water and acetone sample into a 150-ml beaker, and put on a hotplate. Add portions of the remainder as evaporation proceeds and evaporate to dryness. Cool the residue, and add 35 ml concentrated HNO_3. Heat on a hotplate until light brown fumes are evident to destroy any organic matter. Cool to room temperature, and add 5 ml concentrated H_2SO_4 and 5 ml concentrated $HClO_4$. Then proceed with step 4.3.2.4.

4.3.2.3 Silica Gel Preparation Analyses. Weigh the spent silica gel, and report to the nearest gram.

4.3.2.4 Final Sample Preparation. Samples from 4.3.2.1 and 4.3.2.2 may be combined here for ease of analysis. Replace on a hotplate, and evaporate to dryness in a $HClO_4$ hood. Cool and dissolve the residue in 10.0 ml of 25 percent V/V HCl. Samples are now ready for the atomic absorption unit. It is necessary for the Be concentration of the sample to be within the calibration range of the unit. If necessary, perform further dilution of sample with 25 percent V/V HCl to bring the sample within the calibration range.

4.3.3 Beryllium Determination. Analyze the samples prepared in 4.3.2 at 234.8 nm using a nitrous oxide/acetylene flame. Aluminum, silicon and other elements can interfere with this method if present in large quantities. Standard methods are available, however, that may be used to effectively eliminate these interferences (see Citation 2 in Section 8).

5. *Calibration.*

5.1 Sampling Train. Calibrate the sampling train components according to the procedures outlined in the following sections of Method 5: Section 5.1 (Probe Nozzle), Section 5.2 (Pitot Tube), Section 5.3 (Metering System), Section 5.4 (Probe Heater), Section 5.5 (Temperature Gauges), Section 5.7 (Barometer). Note that the leak check described in Section 5.6 of Method 5 applies to this method.

6. *Calculations.*

6.1 Dry Gas Volume. Using the data from each sample run, calculate the dry gas sample volume at standard conditions $V_{m(std)}$, (corrected for leakage, if necessary) as outlined in Section 6.3 of Method 5.

6.2 Volume of Water Vapor in Sample and Moisture Content of Stack Gas. Using the data obtained from each sample run, calculate the volume of water vapor $V_{w(std)}$ in the sample, and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

6.3 Stack Gas Velocity. Using the data from each sample run and Equation 2-9 of Method 2, calculate the average stack gas velocity $V_{s(avg)}$.

6.4 Beryllium Emission Rate. Calculate the Be emission rate R in g/day for each stack using Equation 104-1. For cyclic operations, use only the time per day each stack is in operation. The total Be emission rate from a source will be the summation of results from all stacks.

Eq. 104–1

$$R = K \frac{W_t V_{s(std)} \; A_s (86.400 \times 10^{-9})}{(V_{m(std)} + V_{w(std)})(T_s/P_s)}$$

Where:

W_t = Total weight of Be collected, μg.

A_s = Stack cross-sectional area, M^2 (ft^2).

86,400 = Conversion factor, sec/day.

10^{-6} = Conversion factor, g/μg.

T_s = Absolute average stack gas temperature, °K (°P).

P_s = Absolute stack gas pressure, mm Hg (in. Hg).

K = 0.3858 °K/mm Hg for metric units.
= 17.64 °P/in. Hg for English units.

6.5 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

7. *Determination of Compliance.* Each performance test consists of three sample runs of the applicable test method. For the purpose of determining compliance with an applicable national emission standard, use the average of the results of all sample runs.

8. *Bibliography.*

In addition to Citations 1–3 and 5–15 of Section 10 of Method 101, the following citations may be helpful:

1. Amos, M.D., and J. B. Willis. Use of High-Temperature Pre-Mixed Flames in Atomic Absorption Spectroscopy. Spectrochim. Acta. *22*:1325. 1966.

2. Fleet, B., K. V. Liberty, and T. S. West. A Study of Some Matrix Effects in the Determination of Beryllium by Atomic Absorption Spectroscopy in the Nitrous Oxide-Acetylene Flame. Talanta *17*:203. 1970.

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[A-6-FRL 2521-1]

Delegation of Authority to the State of Louisiana for National Emission Standard for Hazardous Air Pollutants (NESHAP)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Authority delegations.

SUMMARY: EPA, Region 6, has delegated the authority for implementation and enforcement of the NESHAP program to the Louisiana Department of Natural Resources (LDNR). Except as specifically limited, all of the authority and responsibilities of the Administrator or the Regional Administrator which are found in 40 CFR Part 61 are delegated to the LDNR. Any of such authority and responsibilities may be redelegated by the Department to its Program Administrator or staff.

EFFECTIVE DATE: October 14, 1983.

FOR FURTHER INFORMATION CONTACT: Donna M. Ascenzi, Air Branch, Environmental Protection Agency, Region 6, InterFirst Two Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270; (214) 767-1594 or (FTS) 729-1594.

SUPPLEMENTARY INFORMATION: The LDNR has requested delegation of authority to implement and enforce NESHAP. After review of the Louisiana Emission Standards for Hazardous Air Pollutants (LESHAP), delegation of authority was granted October 14, 1983. The following represents the terms and conditions of the delegation:

1. Implementation and enforcement of the National Emission Standards for Hazardous Air Pollutants in the State of Louisiana will be the primary responsibility of the LDNR. If the State of Louisiana or the LDNR determines that such implementation or enforcement is not possible or feasible, either with respect to an individual source, a class of sources, or generally, the LDNR shall within 30 days notify EPA Region 6, of such impossibility or infeasibility so that EPA may timely exercise its concurrent authority with respect to sources within the State of Louisiana.

2. The LDNR is authorized to assume NESHAP partial delegation responsibility for future standards and requirements without making a written request to EPA, subject to the delegation conditions and terms as set forth in this agreement. Partial delegation responsibilities include the technical and administrative review. Technical and administrative duties shall include, but not be limited to, determination of applicability, review and evaluation of NESHAP applications, review and evaluation of request for waivers of compliance under 40 CFR 61.11 and/or waivers of emission tests under 40 CFR 61.13, performance and evaluation of inspections, and observance and evaluation of stack tests and continuous emission monitoring tests.

3. Acceptance of this delegation constitutes agreement by the LDNR to follow all interpretations, past and future, made by EPA of 40 CFR Part 61 including determinations of applicability. The LDNR agrees to consult with the EPA Region 6 on questions of interpretations of the NESHAP. A copy of each interpretation (including compliance determinations) made by the LDNR shall be sent to EPA Region 6.

4. The State of Louisiana and the LDNR are not authorized to grant any exemption, variance, or waiver from compliance with any provision of 40 CFR Part 61 except for the waiver of emission tests authorized in 40 CFR 61.13 and the waiver of compliance authorized in 40 CFR 61.11. A copy of any waiver of emission tests under 40 CFR 61.13, or of any waiver of compliance under 40 CFR 61.11 shall be sent to EPA Region 6. Should the State of Louisiana or the LDNR grant any other exemption, variance or waiver to any source or category of sources pursuant to any state law, regulations, or practice which is contrary to the provisions of 40 CFR 61, then LDNR shall immediately notify EPA Region 6, of the granting of such an exemption, variance or waiver from the compliance with Federal requirements. EPA may consider any source receiving such relief to be violating or threatening to violate the applicable federal regulation and may initiate enforcement action against the source pursuant to Section 113 of the Clean Air Act. The granting of any exemption, variance, or waiver by the State of Louisiana or the LDNR shall also constitute grounds for revocation of delegation by EPA, in whole or in part at the discretion of the Regional Administrator of EPA Region 6.

5. The LDNR shall utilize methods and means of determining compliance at least as stringent as those specified in 40 CFR Part 61. All performance tests are to be conducted at normal maximum production. All requests from sources for equivalent or alternate methods shall be forwarded to EPA Region 6, with or without a recommendation. Authority is delegated to approve minor modifications to the reference test methods during either a pre-test meeting or the actual sampling period. These minor modifications would have to produce results essentially identical to the reference method results. Approval of these minor modifications should be based on sound engineering judgement. Under no circumstances are modifications to be used which might result in the non-uniform application of the standards.

6. If at any time there is a conflict between any State regulation and any provision of 40 CFR Part 61, the federal regulation must be applied to the extent that it is more stringent than that of the State. If the State of Louisiana or the LDNR does not have the authority to enforce the more stringent federal regulation, the LDNR shall immediately notify EPA, Region 6 pursuant to Provision 1 above. The delegation may be revoked by EPA, Region 6, in whole or in part, in the event any such conflict makes implementation or enforcement of the National Emission Standards for Hazardous Air Pollutants administratively impractical.

7. If a claim of confidentiality or any other reason should ever legally prevent the State of Louisiana and the LDNR from providing to EPA any and all information required by or pertaining to the implementation of NESHAP, the LDNR shall, upon request, assist EPA Region 6 in obtaining that information directly from the source. As a minimum, such assistance shall consist of providing to EPA an identification of the nature of the information withheld, adequate to allow EPA to identify to the source the information.

8. All matters in process at the time of delegation of authority may be processed through to completion by EPA Region 6, or may, at the request of the LDNR and at the discretion of EPA Region 6, be transferred to the LDNR for completion. Appropriate reproduction of pertinent file material in the EPA Region 6 files in relation to source regulation under NESHAP shall be provided through mutual cooperation of the staffs of the respective offices.

The Office of Management and Budget has exempted this information notice from the requirements of Section 3 of Executive Order 12291.

Effective immediately, all information pursuant to 40 CFR Part 61 by the sources locating in the State of Louisiana should be submitted directly to the State agency at the following address: Louisiana Department of Natural Resources, Air Quality Division, P.O. Box 44066, Baton Rouge, Louisiana 70804.

Partial delegation was granted to the LDNR on August 30, 1982. **Federal Register** Notice of the partial delegation was published November 4, 1982, which changed Part 61 of the Code of Federal Regulations to include the Louisiana State address. The address in the Code of Federal Regulations remains the same for full delegation.

List of Subjects in 40 CFR Part 61

Air pollution, Asbestos, Beryllium, Hazardous waste, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

This delegation is issued under the authority of Section 112 of the Clean Air Act, as amended (42 U.S.C. 7412).

Dated: January 27, 1984.

Frances E. Phillips,

Acting Regional Administrator.

[FR Doc. 84-3236 Filed 2-6-84; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL 2515-8]

National Emission Standards for Hazardous Air Pollutants; Amendments to Asbestos Standard

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Amendments to the national emission standard for asbestos were proposed in the **Federal Register** on July 13, 1983 (48 FR 32126). This action promulgates the amendments under Section 112 of the Clean Air Act as amended in 1977. The intended effect of the amendments is to reinstate work practice and equipment provisions of the standard that were held not to be emission standards by the U.S. Supreme Court in 1978. They also reword and rearrange the standard for clarity.

EFFECTIVE DATE: April 5, 1984. Under Section 307(b)(1) of the Clean Air Act, judicial review of these amendments is available only by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia Circuit within 60 days of today's publication of this rule. Under Section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

ADDRESSES: *Docket.* A docket, number A-83-02, containing information considered by EPA in development of the promulgated amendments, is available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (LE-131), West Tower Lobby, Gallery 1, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Robert L. Ajax, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone (919) 541-5578.

SUPPLEMENTARY INFORMATION:

The Amendments

The amendments reinstate portions of the asbestos NESHAP that were equipment or work practice requirements. The Supreme Court held in *Adamo Wrecking Company* v. *United States*, 434 U.S. 275 (1978) that work practice requirements of the NESHAP were not authorized by the 1970 Amendments to the Clean Air Act under which they were originally promulgated. The 1977 Amendments to the Act specifically authorize such requirements. On June 19, 1978 (43 FR 26372), EPA repromulgated many of the requirements under authority of the 1977 Amendments, and today's action repromulgates the following remaining requirements in a new Subpart M of 40 CFR Part 61.

1. Section 61.143 reinstates a prohibition of surfacing roadways with asbestos tailings or asbestos containing waste.

2. Sections 61.145(c) and 61.147(g) reinstate a partial exemption for demolition operations for structurally unsound buildings.

3. Section 61.147(e) reinstates the requirement that asbestos removed during demolition or renovation be kept wet until it is collected for disposal. It also requires that the asbestos not be dropped or thrown to the ground or a lower floor and that asbestos removed more than 50 feet above ground level be transported to the ground in dust-tight chutes or containers (unless it is removed in units or sections).

4. Section 61.147(f) reinstates alternative work practices that may be used for removal of asbestos prior to demolition when there are freezing temperature conditions at the point where the asbestos is being wetted.

5. Section 61.150 reinstates the prohibition of installation of certain molded or wet-applied insulating materials that contain commercial asbestos.

6. Sections 61.151(a) and 61.152(a) simply refer to the requirements of Section 61.156.

7. Sections 61.151 (b) and (c); 61.152(b) (1), (2), and (3); 61.153(a) (2), (3), and (4); 61.154; and 61.156 (c) and (d) reinstate alternative work practices or equipment that may be used in lieu of complying with a no visible emission limit.

8. Sections 61.153(b) and 61.156(b) reinstate the requirement for warning signs and fencing around asbestos waste disposal sites if (1) the owner or operator chooses to comply with a no visible emission limit rather than follow specified work practices, and (2) there is no natural barrier to deter access by the general public.

In addition to these requirements, today's action clarifies the asbestos NESHAP by rewording and rearranging it into a new Subpart M of 40 CFR Part 61.

Public Participation

The amendments were proposed in the **Federal Register** on July 13, 1983 (48 FR 32126). To provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed amendments, a public hearing was held on August 9, 1983, at Research Triangle Park, North Carolina. The hearing was open to the public and each attendee was given an opportunity to comment on the proposed amendments. The public comment period was from July 13, 1983, to September 9, 1983.

Fifteen comment letters were received and two interested parties testified at the public hearing concerning issues relative to the proposed amendments. The comments have been carefully considered and, where determined to be appropriate by the Administrator, changes have been made to the proposed amendments.

Summary of Comments and Changes to the Proposed Amendments

Comments on the proposed amendments were received from industry, Federal agencies, State and local air pollution control agencies, and private citizens. The following summary of comments and responses serves as the basis for the revisions that have been made to the proposed amendments. Most of the letters contained multiple comments, some of which were outside the scope of this rulemaking. Those comments have been summarized in Item No. IV-B-1 of Docket No. A-83-02. They are being evaluated in conjunction with the comprehensive review of the asbestos NESHAP that is currently underway.

Most of the remaining comments pertain to the effect that rewording and rearranging the proposed amendments had on the original meaning and intent of the asbestos NESHAP. Some of them also pertain to the reasonableness of those requirements being repromulgated (see list in the section entitled "The Amendments"). The comments are discussed below and are organized according to the sections of the proposed amendments to which they pertain.

Section 61.141

One commenter noted that the proposed definition of "demolition" deletes the previous reference to "any related removing or stripping of friable asbestos materials" and recommended restoring the definition to the old wording. The commenter believes that the new wording may be interpreted to not include removing and stripping.

EPA intended that the proposed definition of "demolition" describe the activities that occur when a facility is demolished as distinguished from "renovation," as the terms are used in the regulation. The primary distinguishing activity is that load-supporting structural members are wrecked or taken out in a demolition operation but not in a renovation. Asbestos stripping or removal may occur in either but should not be used to define the primary activity of demolition or renovation. Section 61.145 clearly states that when demolition or renovation operations meet certain specified criteria regarding asbestos materials in the facility, they are subject to the regulation. Also, § 61.147 clearly specifies that stripping or removal of asbestos materials during demolition or renovation must be carried out in accordance with the standard. It is not necessary to repeat these provisions in the definition of "demolition."

One commenter noted that the proposed definition of renovation would apply only to removal of asbestos and not to stripping and recommended that the new definition be as comprehensive as the old one.

EPA did not intend to omit the word "stripping" from the definition of "renovation" at the time of proposal. However, EPA has reevaluated the definition to determine the wording that would be the most useful and informative for the regulation. As discussed in the response to the previous comment about the definition of "demolition," the terms should be defined to describe the type of activity that is being carried out at a facility, regardless of the presence or absence of asbestos material, and the definition of "renovation" has been revised accordingly.

One commenter recommended restoring the phrase "based on operating experience" to the definition of "planned renovation" to clarify the basis for predicting future renovations involving asbestos removal. The phrase was in the old definition. The commenter's recommendation has been incorporated into the amendments.

One commenter requested clarification of the definition of "emergency renovation operation." He asked whether it would include malfunctions, such as leaking valves, that require the removal of asbestos-containing insulation. Although these malfunctions are expected to occur, they are not planned or scheduled.

EPA considers the type of occurrence described by the commenter to be part of a planned renovation operation and not an emergency renovation operation. The commenter indicated that although the situations are not planned or scheduled, they are expected to occur. They would, therefore, fit the definition of "planned renovation operation" in § 61.141 that says, "Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time."

Section 61.145

One commenter noted that the word "or" between "operators" and "demolition" in § 61.145(e) should be changed to "of." He indicated that the proper wording would show what he believed to be the Agency's intent to limit applicability of the regulations to only "wreckers and renovators" and not to include facility owners and operators.

The commenter is correct that the word "or" should be changed to "of," and this correction has been made. However, the commenter's interpretation that the regulations apply to only "wreckers and renovators" and not to facility owners and operators is incorrect. The general provisions of 40 CFR Part 61 define "owner or operator" as any person who owns, leases, operates, controls, or supervises a stationary source [40 CFR 61.02(1)]. The stationary source in this case is the demolition or renovation operation. The demolition or renovation contractor would clearly be considered an owner or operator by "operating" the stationary source. The facility owner or operator, by purchasing the services of the demolition or renovation contractor, acquires ownership and control of the operation and would, therefore, be the "owner" for purposes of this standard. Therefore, the standard applies to both the contractor and the facility owner or operator.

Sections 61.146 and 61.147

One commenter believes that the wording in §§ 61.146 and 61.147 is vague with respect to identifying who is subject to the requirements, unlike the wording in §§ 61.142, 61.143, 61.144, 61.148, and 61.149, which is restrictive in describing the regulated party.

EPA believes that the applicability of §§ 61.146 and 61.147 as described in § 61.145 adequately identifies those subject to the requirements of the demolition and renovation standard.

One commenter questioned the intent of § 61.147(e)(1). The regulation requires that asbestos materials be adequately wetted to ensure that they remain wet during all remaining stages of demolition or renovation and related handling operations. The commenter asked whether this requirement should be interpreted to mean that the asbestos has to stay wet even after it is properly bagged and sealed.

The intent of the requirement to keep friable asbestos materials wet during all remaining stages of demolition was to ensure that the asbestos materials that have been removed or stripped but not yet disposed of are not allowed to dry out so that asbestos fibers become airborne. If they are properly sealed in leak-tight containers or bags while wet, they should not dry out before they can be transferred to an acceptable disposal site. In any case, after they are bagged, the waste disposal requirements in § 61.152 (and not § 61.147) would apply to the handling of the asbestos materials. To clarify the meaning of this portion of the standard, the wording of § 61.147(e)(1) has been revised to indicate that the asbestos materials must be kept wet until they are collected for disposal in accordance with § 61.152. They would be considered "collected" when they are properly bagged.

Section 61.150

One commenter asked for clarification of the intent of § 61.150, which prohibits the installation of certain asbestos-containing insulating materials. It was not clear to him whether the prohibition affects manufacturing operations that use parts containing asbestos such as grommets, gaskets, string, etc. in their products.

The preamble of the Federal Register notice that contained the original standard for insulating materials [39 FR 38064; October 25, 1974) discusses the intended applicability of the prohibition. It is clear fom that discussion that the prohibition was intended to apply to field installation of such insulating products as molded, asbestos-reinforced blocks, sheets, and semicircular sections for pipe insulation; and powdered asbestos cement products mixed into a slurry and used to insulate irregular shapes. These installations would have been associated with construction activities on buildings and other facilities. Therefore, the prohibition would not affect manufacturing operations that use asbestos-containing parts in their products. The regulation has been reworded to reflect EPA's intended effect of the prohibition.

Section 61.154

One commenter pointed out that the units in § 61.154(a)(1)(iii) do not properly relate square meters to square yards, resulting in a lowering of the weight of the filter by about 20 percent from the old requirement; i.e., 14 oz./sq. yd. is not equal to 14 oz./sq. meter. In addition, he

pointed out that the use of 1/16 inch is not in keeping with EPA's metric program. The errors noted by the commenter have been corrected in the final rule.

Section 61.155

One commenter requested clarification of the Agency's intent in § 61.155, which requires that existing sources covered by the asbestos NESHAP provide to the Agency within 90 days information regarding their asbestos emission control methods. The commenter asked if renotification and resubmission would be required if they had already complied with these same requirements in the old designation § 61.24.

EPA does not intend that existing sources of asbestos emissions resubmit notifications that were originally required by the standard promulgated in 1973. The wording of § 61.155 has been revised to accurately reflect EPA's intent.

Miscellaneous

One commenter expressed the opinion that the proposed amendments do not sufficiently correct the weakness of the NESHAP regulations and that they represent a "crude slap in the face to asbestos victims and will create health hazards of such proportions that new generations of asbestos victims will be guaranteed." He supported his opinion with the following arguments:

1. The no visible emission limit is not adequate for regulating airborne asbestos because it does not take into account the substantial asbestos disease risk when emissions that are not visible are present.

2. The proposed reinstatement of the exemption from certain wetting requirements during demolition operations in freezing temperatures should not be allowed. Weather conditions that do not allow wetting should also not allow asbestos to be removed. Wetting requirements are important because they can reduce dust levels by a power of 10.

3. Allowing exceptions when local entities pronounce buildings structurally unsound is tantamount to opening a way for widespread violation of health practices.

4. Under no circumstances should visible emissions be allowed.

5. All references to the economic impact should be dropped. EPA should concern itself with the economic impact on society, which ends up paying for disease victims produced by inadequate work regulations.

The first four of the commenter's statements concern issues that are currently being investigated in the review of the asbestos NESHAP: the no visible emission limit, the exemption from wetting requirements during freezing weather, and the exemption for structurally unsound buildings. EPA will evaluate the effect of these provisions and determine whether they need to be revised. That evaluation is beyond the scope of today's rulemaking, however. The amendments are intended to reinstate the provisions of the original NESHAP and not to include new provisions or delete any of the original ones. Therefore, no changes are being made to these portions of the proposed amendments.

In response to the commenter's suggestion to drop all references to the economic impact of the proposed amendments, the Agency believes that economic impact on the regulated entities is one of many factors that should be considered when setting standards under Section 112 of the Clean Air Act. Any adverse economic impact on society resulting from inadequate regulations for a hazardous air pollutant would be of concern to EPA as it would be a consequence of adverse public health effects. The current review of the NESHAP will include an evaluation of this aspect of regulating asbestos to determine if more stringent requirements are needed.

One commenter said that the requirement in § 61.146(c)(3) to explain the techniques of estimation of the amount of asbestos for certain demolition jobs seems to be a new requirement because he could not locate it in the old regulation. The requirement was in § 61.22(d)(1)(ii) of the old regulation.

One commenter said that States that are enforcing the asbestos NESHAP sometimes have a different interpretation of regulations than EPA and suggested that EPA provide clarification of intent for the States.

Under the Clean Air Act, States are free to require more stringent asbestos emission control measures than those in the asbestos NESHAP. EPA does, however, provide EPA enforcement determinations to States that have been delegated authority to enforce the NESHAP. These determinations include EPA's interpretations of portions of the regulation as questions arise concerning them, and they are very useful in ensuring consistency of enforcement among the States and EPA Regional Offices.

One commenter said that there is a statement in the proposal preamble that is not true. It says, "Demolition and renovation contractors typically transport the asbestos they remove from a facility to a waste disposal site on a daily basis." The commenter stated that the economics of doing this would be astronomical. For example, the cost of hauling a small number of bags to a disposal site 40 miles away would be very high, and the contractor would wait until a full load had accumulated.

The Agency has carefully considered this comment and concluded that no changes to the regulation are needed since it refers to a discussion in the preamble to the proposed amendments. There are no requirements in the NESHAP that asbestos waste be transported to a disposal site daily.

Three commenters said that the amendments improve the clarity and readability of the asbestos NESHAP and two indicated that the required work practices are currently being used by their companies. Two commenters noted typographical errors, which have been corrected in the final rule. Other minor changes were made in the final rule to ensure that the new wording accurately reflects the intent of the original regulation and to further clarify the requirements.

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by EPA in the development of this rulemaking. The principal purposes of the docket are: (1) To allow interested parties to identify readily and locate documents so that they can effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review, except for interagency review materials [§ 307(d)(7)(A)].

Miscellaneous

A review of this regulation has begun. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology and health data, and reporting requirements.

Under E.O. 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it does not meet any of the criteria specified in the Executive Order regarding the annual effect on the economy; increase in cost or prices; or adverse effects on competition, employment, investment, productivity, innovation, or the ability of U.S. enterprises to compete with foreign enterprises.

Information collection requirements associated with this rule (40 CFR 61.07,

61.10, 61.10, 61.103, 61.148, and 61.155) have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* and have been assigned OMB control number 2060-0264.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by E.O. 12291.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule, if promulgated, will not have a significant economic impact on any small entities.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: March 30, 1984.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

40 CFR Part 61 is amended by redesignating Subpart B (§§ 61.20–61.25) as Subpart M and revising the new Subpart M to read as follows:

Subpart M—National Emission Standard for Asbestos

Sec.

61.140 Applicability.
61.141 Definitions.
61.142 Standard for asbestos mills.
61.143 Standard for roadways.
61.144 Standard for manufacturing.
61.145 Standard for demolition and renovation: Applicability.
61.146 Standard for demolition and renovation: Notification requirements.
61.147 Standard for demolition and renovation: Procedures for asbestos emission control.
61.148 Standard for spraying.
61.149 Standard for fabricating.
61.150 Standard for insulating materials.
61.151 Standard for waste disposal for asbestos mills.
61.152 Standard for waste disposal for manufacturing, demolition, renovation, spraying, and fabricating operations.
61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.
61.154 Air-cleaning.
61.155 Reporting.
61.156 Active waste disposal sites.

Authority: Secs. 112 and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412, 7601(a)), and additional authority as noted below.

Subpart M—National Emission Standard for Asbestos

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in §§ 61.142 through 61.153.

§ 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in Subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

Adequately wetted means sufficiently mixed or coated with water or an aqueous solution to prevent dust emissions.

Asbestos means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

Asbestos-containing waste materials means any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes asbestos mill tailings, asbestos waste from control devices, friable asbestos waste material, and bags or containers that previously contained commercial asbestos. However, as applied to demolition and renovation operations, this term includes only friable asbestos waste and asbestos waste from control devices.

Asbestos material means asbestos or any material containing asbestos.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected in a pollution control device.

Commercial asbestos means any asbestos that is extracted from asbestos ore.

Demolition means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations.

Emergency renovation operations means a renovation operation that was not planned but results from a sudden, unexpected event. This term includes operations necessitated by nonroutine failures of equipment.

Fabricating means any processing of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites for the construction or restoration of facilities.

Facility means any institutional, commercial, or industrial structure, installation, or building (excluding apartment buildings having no more than four dwelling units).

Facility component means any pipe, duct, boiler, tank, reactor, turbine, or furnace at or in a facility; or any structural member of a facility.

Friable asbestos material means any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize, or reduce to powder when dry.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

Manufacturing means the combining of commercial asbestos—or, in the case of woven friction products, the combining of textiles containing commercial asbestos—with any other material(s), including commercial asbestos, and the processing of this combination into a product.

Outside air means the air outside buildings and structures.

Particulate asbestos material means finely divided particles of asbestos material.

Planned renovation operations means a renovation operation, or a number of such operations, in which the amount of friable asbestos material that will be removed or stripped within a given period of time can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience.

Remove means to take out friable asbestos materials from any facility.

Renovation means altering in any way one or more facility components. Operations in which load-supporting structural members are wrecked or taken out are excluded.

Roadways means surfaces on which motor vehicles travel. This term includes highways, roads, streets, parking areas, and driveways.

Strip means to take off friable asbestos materials from any part of facility.

Structural member means any load-supporting member of a facility, such as beams and loan supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

Visible emissions means any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed uncombined water vapor.

§ 61.142 Standard for asbestos mills.

Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.143 Standard for roadways.

No owner or operator of a roadway may deposit asbestos tailings or asbestos-containing waste material on that roadway, unless it is a temporary roadway on an area of asbestos ore deposits.

§ 61.144 Standard for manufacturing.

(a) *Applicability:* This section applies to the following manufacturing operations using commercial asbestos.

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine.

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) *Standard:* Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.145 Standard for demolition and renovation: Applicability.

The requirements of §§ 61.146 and 61.147 apply to each owner or operator of a demolition or renovation operation as follows:

(a) If the amount of friable asbestos materials in a facility being demolished is at least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, all the requirements of §§ 61.146 and 61.147 apply, except as provided in paragraph (c) of this section.

(b) If the amount of friable asbestos materials in a facility being demolished is less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, only the notification requirements of paragraphs (a), (b), and (c) (1), (2), (3), (4), and (5) of § 61.146 apply.

(c) If the facility is being demolished under an order of a State or local governmental agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements in § 61.146 and in paragraphs (d), (e), (f), and (g) of § 61.147 apply.

(d) If at least 80 linear meters (260 linear feet) of friable asbestos materials on pipes or at least 15 square meters (160 square feet) of friable asbestos materials on other facility components are stripped or removed at a facility being renovated, all the requirements of §§ 61.146 and 61.147 apply.

(1) To determine whether paragraph (d) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the additive amount of friable asbestos materials to be removed or stripped over the maximum period of time a prediction can be made, not to exceed 1 year.

(2) To determine whether paragraph (d) of this section applies to emergency renovation operations, estimate the amount of friable asbestos materials to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(e) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

§ 61.146 Standard for demolition and renovation: Notification requirements.

Each owner or operator to which this section applies shall:

(a) Provide the Administrator with written notice of intention to demolish or renovate.

(b) Postmark or deliver the notice as follows:

(1) At least 10 days before demolition begins if the operation is described in § 61.145(a);

(2) At least 20 days before demolition begins if the operation is described in § 61.145(b);

(3) As early as possible before demolition begins if the operation is described in § 61.145(c);

(4) As early as possible before renovation begins.

(c) Include the following information in the notice:

(1) Name and address of owner or operator.

(2) Description of the facility being demolished or renovated, including the size, age, and prior use of the facility.

(3) Estimate of the approximate amount of friable asbestos material present in the facility. For facilities described in § 61.145(b), explain techniques of estimation.

(4) Location of the facility being demolished or renovated.

(5) Scheduled starting and completion dates of demolition or renovation.

(6) Nature of planned demolition or renovation and method(s) to be used.

(7) Procedures to be used to comply with the requirements of this Subpart.

(8) Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

(9) For facilities described in § 61.145(c), the name, title, and authority of the State or local governmental representative who has ordered the demolition.

(Approved by the Office of Management and Budget under control number 2060-0264)

§ 61.147 Standard for demolition and renovation: Procedures for asbestos emission control.

Each owner or operator to whom this section applies shall comply with the following procedures to prevent emissions of particulate asbestos material to the outside air:

(a) Remove friable asbestos materials from a facility being demolished or renovated before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. However, friable asbestos materials need not be removed before demolition if:

(1) They are on a facility component that is encased in concrete or other similar material; and

(2) These materials are adequately wetted whenever exposed during demolition.

(b) When a facility component covered or coated with friable asbestos materials is being taken out of the facility as units or in sections:

(1) Adequately wet any friable asbestos materials exposed during cutting or disjointing operations; and

(2) Carefully lower the units or sections to ground level, not dropping them or throwing them.

(c) Adequately wet friable asbestos materials when they are being stripped from facility components before the members are removed from the facility.

In renovation operations, wetting that would unavoidably damage equipment is not required if the owner or operator:

(1) Asks the Administrator to determine whether wetting to comply with this paragraph would unavoidably damage equipment, and, before beginning to strip, supplies the Administrator with adequate information to make this determination; and

(2) When the Administrator does determine that equipment damage would be unavoidable, uses a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the friable asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(d) After a facility component has been taken out of the facility as units or in sections, either:

(1) Adequately wet friable asbestos materials during stripping; or

(2) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.154.

(e) For friable asbestos materials that have been removed or stripped:

(1) Adequately wet the materials to ensure that they remain wet until they are collected for disposal in accordance with § 61.152; and

(2) Carefully lower the materials to the ground or a lower floor, not dropping or throwing them; and

(3) Transport the materials to the ground via dust-tight chutes or containers if they have been removed or stripped more than 50 feet above ground level and were not removed as units or in sections.

(f) When the temperature at the point of wetting is below 0°C (32°F):

(1) Comply with the requirements of paragraphs (d) and (e) of this section. The owner or operator need not comply with the other wetting requirements in this section; and

(2) Remove facility components coated or covered with friable asbestos materials as units or in sections to the maximum extent possible.

(g) For facilities described in § 61.145(c), adequately wet the portion of the facility that contains friable asbestos materials during the wrecking operation.

§ 61.149 Standard for spraying.

The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:

(a) Use materials that contain 1 percent asbestos or less on a dry weight basis for spray-on application on buildings, structures, pipes, and conduits, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos on a dry weight basis on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

(2) Discharge no visible emissions to the outside air from the spray-on application of the asbestos-containing material or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

(d) Owners and operators of sources subject to this section are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(Approved by the Office of Management and Budget under control number 2060-0264)

§ 61.149 Standard for fabricating.

(a) *Applicability.* This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) *Standard.* Each owner or operator of any of the fabricating operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted; or

(2) Use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

§ 61.150 Standard for insulating materials.

After the effective date of this regulation, no owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this paragraph do not apply to spray-applied insulating materials regulated under § 61.148.

§ 61.151 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of § 61.142 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air from the transfer of asbestos waste from control devices to the tailings conveyor, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.152(b) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, transporting, or deposition of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material

before they escape to, or are vented to, the outside air.

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5°C (15°F). Determine the ambient air temperature by an appropriate measurement method with an accuracy of ±1°C(±2°F), and record it at least hourly while the wetting operation is suspended. Keep the records for at least 2 years in a form suitable for inspection.

(2) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.152 Standard for waste disposal for manufacturing, demolition, renovation, spraying, and fabricating operations.

Each owner or operator of any source covered under the provisions of §§ 61.144–61.149 shall:

(a) Deposit all asbestos-containing waste material at waste disposal sites operated in accordance with the provisions of § 61.156; and

(b) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, transporting, or deposition of any asbestos-containing waste material generated by the source, or use one of the disposal methods specified in paragraphs (b)(1), (2), or (3) of this section, as follows:

(1) Treat asbestos-containing waste material with water:

(i) Mix asbestos waste from control devices with water to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, and wetting operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; and

(iv) Label the containers specified in paragraph (b)(1)(iii) as follows:

CAUTION
Contains Asbestos
Avoid Opening or
Breaking Container
Breathing Asbestos is hazardous
to Your Health

Alternatively, use warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(g)(2)(ii).

(2) Process asbestos-containing waste material into nonfriable forms:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes; and

(ii) Discharge no visible emissions to the outside air from collection and processing operations, or use the methods specified by § 61.154 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Use an alternative disposal method that has received prior approval by the Administrator.

§ 61.153 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under §§ 61.142, 61.144, or 61.149 and received deposits of asbestos-containing waste material generated by the sources, shall

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, apply a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Use the agent as recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent. Obtain prior approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (330 feet) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

§ 61.154 Air-cleaning.

(a) The owner or operator who elects to use air-cleaning, as permitted by §§ 61.142, 61.144, 61.147(c)(2), 61.147(d)(2), 61.148(b)(2), 61.149(b), 61.152(b)(1)(ii), and 61.152(b)(2) shall:

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Operating the fabric filter collection devices at a pressure drop of no more than 4 inches water gage, as measured across the filter fabric; and

(ii) Ensuring that the airflow permeability, as determined by ASTM Method D737–75, does not exceed 9 $m^3/min/m^2$ (30 $ft^3/min/ft^2$) for woven fabrics or 11 $m^3/min/m^2$(35 $ft^3/min/ft^2$) for felted fabrics, except that 12 $m^3/min/m^2$ (40 ft^3min/ft^2) for woven and 14 $m^3/min/m^2$ (45 ft $^3min/ft^2$) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(iii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and

(iv) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(b) There are the following exceptions to paragraph (a)(1):

(1) If the use of fabric creates a fire or explosion hazard, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

(2) The Administrator may authorize the use of filtering equipment other than that described in paragraphs (a)(1) and (b)(1) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

§ 61.155 Reporting.

(a) Within 90 days after the effective date of this subpart, each owner or operator of any existing source to which this subpart applies shall provide the following information to the Administrator, except that any owner or operator who provided this information prior to April 5, 1984 in order to comply with § 61.24 (which this section replaces) is not required to resubmit it.

(1) A description of the emission control equipment used for each process; and

(2) If a fabric filter device is used to control emissions, the pressure drop across the fabric filter in inches water gage; and

(i) If the fabric device uses a woven fabric, the airflow permeability in $m^3/min/m^2$ and; if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2, the minimum thickness in inches, and the airflow permeability in $m^3/min/m^2$.

(3) For sources subject to §§ 61.151 and 61.152:

(i) A brief description of each process that generates asbestos-containing waste material; and

(ii) The average weight of asbestos-containing waste material disposed of, measured in kg/day; and

(iii) The emission control methods used in all stages of water disposal; and

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(4) For sources subject to § 61.153:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. The information described in this section must be reported using the format of Appendix A of this part.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414)).

(Approved by this Office of Management and Budget under control number 2000-0264)

§ 61.156 Active waste disposal sites.

To be an acceptable site for disposal of asbestos-containing waste material under §§ 61.151 and 61.152, an active waste disposal site must meet the requirements of this section.

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements of 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site.	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust	1.9 cm (¾ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health.	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period is covered with either.

(1) At least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) A resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. This agent must be used as recommended for the particular dust by the manufacturer of the dust suppression agent. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, waste crankcase oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, an active waste disposal site would be an acceptable site if an alternative control method for emissions that has received prior approval by the Administrator is used.

(Secs. 112 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7412, 7601(a))

[FR Doc. 84-9080 Filed 4-4-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2562-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of Arizona

AGENCY: Environmental Protection Agency (EPA).

ACTION: Delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the Pima County Health Department (PCHD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: March 29, 1984.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The PCHD has requested authority for delegation of certain NSPS and NESHAPS categories. Delegation of authority was granted by a letter dated March 16, 1984 and is reproduced in its entirety as follows:

Patricia A. Nolan, M.D.,
Director, Pima County Health Department, 151 West Congress Street, Tucson, AZ

Dear Dr. Nolan: In response to your request of February 24, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) promulgated as of June 8, 1983 listed below. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following new source categories:

NSPS	40 CFR part 60, subpart
General Provisions	A.
Glass Manufacturing Plants	CC.
Surface Coating of Metal Furniture	EE.
Lead-Acid Battery Manufacturing Plants	KK.
Automobile & Light-Duty Truck Surface Coating Operations	MM.
Phosphate Rock Plants	NN.
Ammonium Sulfate	PP.
Graphic Arts Industry: Publication Rotogravure Printing	QQ.
Industrial Surface Coating: Large Appliances	SS.
Metal Coil Surface Coating	TT.
Asphalt Processing and Asphalt Roofing Manufacture	UU.

NESHAPS	40 CFR part 61, subpart
General Provisions	A.
Beryllium Rocket Motor Firing	D.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA 's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,
Judith E. Ayres,
Regional Administrator.

With respect to the areas under the jurisdiction of the PCHD, all reports, applications, submittals, and other communications pertaining to the above listed NSPS source categories should be directed to the PCHD at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.).*

Dated: March 29, 1984.

Judith E. Ayres,
Regional Administrator.

[FR Doc. 84-9359 Filed 4-6-84; 8:45 am]
BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2561-5]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board (CARB) on behalf of the San Joaquin County Air Pollution Control District (SJCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: January 23, 1984.

ADDRESS: San Joaquin County Air Pollution Control District, 1601 E. Hazelton Avenue, Stockton, CA 95210.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the SJCAPCD. Delegation of authority was granted by a letter dated December 22, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA

Dear Mr. Boyd: In response to your request of December 5, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) on behalf of the San Joaquin County Air Pollution Control District (SJCAPCD). We have reviewed your request for delegation and have found the SJCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following sources categories:

NSPS	40 CFR, part 60, subpart
Surface Coating of Metal Furniture	EE.
Lead-Acid Battery Manufacturing Plants	KK.
Phosphate Rock Plants	NN.
Graphic Arts Industry: Publication Rotogravure Printing.	QQ.
Pressure Sensitive Tape and Label Surface Coating.	RR.
Industrial Surface Coating: Large Appliances	SS.
Metal Coil Surface Coating	TT.
Asphalt Roofing and Asphalt Roofing Manufacture	UU.

In addition, we are redelegating the following NSPS and National Emission Standards for Hazardous Air Pollutants (NESHAPS) categories since the SJCAPCD's revised programs and procedures are acceptable:

NSPS	40 CFR, part 60, subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Electric Utility Steam Generators	Da.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Petroleum Storage Vessels	Ka.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants.	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants.	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate.	X.

NSPS	40 CFR, part 60, subpart
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Automobile & Light-Duty Truck Surface Coating Operations.	MM.
Ammonium Sulfate	PP.

NESHAPS	40 CFR, part 61, subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

cc: San Joaquin County Air Polution Control District

With respect to the areas under the jurisdiction of the SJCAPCD, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the SJCAPCD at the address shown in the **ADDRESS** section of the notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: March 29, 1984.

Judith E. Ayres,

Regional Administrator.

[FR Doc. 84-9382 Filed 4-6-84; 8:45 am]

BILLING CODE 6560-50-M

40 CFR Parts 60 and 61

[A-9-FRL 2561-4]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board (CARB) on behalf or the North Coast Unified Air Quality Management District. This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: January 23, 1984.

ADDRESS: North Coast Unified Air Quality Management District, 5630 South Broadway, Eureka, CA 95501.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9. 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: On November 1, 1982, the Del Norte County and the Trinity County Air Pollution Control Districts merged with the Humboldt County Air Pollution Control District to be known as the North Coast Unified Air Quality Management District (NCUAQMD). These address changes are corrected in 40 CFR 60.4 and 61.4.

The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the NCUAQMD. Delegation of authority was granted by a letter dated December 22, 1983 and is reproduced in its entirety as follows:

Mr. James D. Boyd,

Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA

Dear Mr. Boyd: In response to your request of December 5, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) on behalf of the North Coast Unified Air Quality Management District (NCUAQMD). We have reviewed your request for delegation and have found the NCUAQMD's programs and procedures to be acceptable. This delegation includes authority for the following source categories:

NSPS	40 CFR, Part 60, Subpart
General Provisions	A
Fossil-Fuel Fired Steam Generators	D
Electric Utility Steam Generators	Da
Incinerators	E
Portland Cement Plants	F.
Nitric Acid Plants	G
Sulfuric Acid Plants	H
Asphalt Concrete Plants	I
Petroleum Refineries	J
Storage Vessels for Petroleum Liquids	K.
Petroleum Storage Vessels	Ka
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants.	M
Iron and Steel Plants (BOPF)	N
Sewage Treatment Plants	O
Primary Copper Smelters	P
Primary Zinc Smelters	Q
Primary Lead Smelters	R
Primary Aluminum Reduction Plants	S
Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants.	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants.	U
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants.	W
Phosphate Fertilizer Industry: Granular Triple Superphosphate.	X
Coal Preparation Plants	Y
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA
Kraft Pulp Mills	BB
Glass Manufacturing Plants	CC
Grain Elevators	DD
Surface Coating of Metal Furniture	EE.
Stationary Gas Turbines	GG
Lime Manufacturing Plants	HH.
Lead-Acid Battery Manufacturing Plants	KK.
Automobile & Light-Duty Truck Surface Coating Operations	MM
Phosphate Rock Plants	NN
Ammonium Sulfate	PP.
Graphic Arts Industry: Publication Rotogravure Printing.	QQ
Industrial Surface Coating: Large Appliances	SS
Metal Coil Surface Coating Operations	TT
Asphalt Processing and Asphalt Roofing Manufacture.	UU
Beverage Can Surface Coating	WW
Bulk Gasoline Terminals	XX.

NESHAPS	40 CFR, Part 61, Subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D
Mercury	E.
Vinyl Chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,
Judith E. Ayers,
Regional Administrator.

cc: North Coast Unified Air Quality Management District

With respect to the areas under the jurisdiction of the NCUAQMD, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAPS source categories should be directed to the NCUAQMD at the address shown in the **ADDRESS** section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: March 29, 1984.

Judith E. Ayres,
Regional Administrator.

PARTS 60 AND 61—[AMENDED]

Subpart A of Parts 60 and 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

Subpart A—General Provisions

§§ 60.4 and 61.04 [Amended]

Sections 60.4(b)(F) and 61.04(b)(F) are both amended by removing the addresses of the Del Norte County Air Pollution Control District, Humboldt County Air Pollution Control District, and the Trinity County Air Pollution Control District and adding the address for the North Coast Unified Air Quality Management District to read as follows:

* * * * *

(b) * * *

(F) * * *

North Coast Unified Air Quality Management District, 5630 South Broadway, Eureka, CA 95501

* * * * *

[FR Doc. 84-9383 Filed 4-6-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL 2561-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the California Air Resources Board (CARB) on behalf of the Kern County Air Pollution Control District (KCAPCD). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: February 22, 1984.

ADDRESS: Kern County Air Pollution Control District, 1601 H Street, Suite 250, Bakersfield, CA 93301.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NSPS and NESHAPS categories on behalf of the KCAPCD. Delegation of authority was granted by a letter dated February 9, 1984 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA

Dear Mr. Boyd: In response to your request of January 24, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) on behalf of the Kern County Air Pollution Control District (KCAPCD). We have reviewed your request for delegation and have found the KCAPCD's programs and procedures to be acceptable. This delegation includes authority for the following source categories.

NSPS	40 CFR, part 60, subpart
Beverage Can Surface Coating Industry	WW.
Bulk Gasoline Terminals	XX.

In addition, we are redelegating the following NSPS and National Emission Standards for Hazardous Air Pollutants (NESHAPS) categories since the KCAPCD's revised programs and procedures are acceptable:

NSPS	40 CFR, part 60, subpart
General Provisions	A.
Fossil-Fuel Fired Steam Generators	D.
Electric Utility Steam Generators	Da.
Incinerators	E.
Portland Cement Plants	F.
Nitric Acid Plants	G.
Sulfuric Acid Plants	H.
Asphalt Concrete Plants	I.
Petroleum Refineries	J.
Storage Vessels for Petroleum Liquids	K.
Petroleum Storage Vessels	Ka.
Secondary Lead Smelters	L.
Secondary Brass & Bronze Ingot Production Plants	M.
Iron and Steel Plants (BOPF)	N.
Sewage Treatment Plants	O.
Primary Copper Smelters	P.
Primary Zinc Smelters	Q.
Primary Lead Smelters	R.
Primary Aluminum Reduction Plants	S.
Phosphate Fertilizer Industry, Wet Process Phosphoric Acid Plants	T.
Phosphate Fertilizer Industry: Superphosphoric Acid Plants	U.
Phosphate Fertilizer Industry: Diammonium Phosphate Plants	V.
Phosphate Fertilizer Industry: Triple Superphosphate Plants	W.
Phosphate Fertilizer Industry: Granular Triple Superphosphate	X.
Coal Preparation Plants	Y.
Ferroalloy Production Facilities	Z.
Iron and Steel Plants (Electric Arc Furnaces)	AA.
Kraft Pulp Mills	BB.
Glass Manufacturing Plants	CC.
Grain Elevators	DD.
Surface Coating of Metal Furniture	EE.
Stationary Gas Turbines	GG.
Lime Manufacturing Plants	HH.
Lead-Acid Battery Manufacturing Plants	KK.
Automobile & Light-Duty Truck Surface Coating Operations	MM.
Phosphate Rock Plants	NN.
Ammonium Sulfate	PP.
Graphic Arts Industry: Publication Rotogravue Printing	QQ.
Industrial Surface Coating: Large Appliances	SS.
Metal Coil Surface Coating	TT.
Asphalt Processing and Asphalt Roofing Manufacture	UU.

NESHAPS	40 CFR part 61, subpart
General Provisions	A.
Asbestos	B.
Beryllium	C.
Beryllium Rocket Motor Firing	D.
Mercury	E.
Vinyl Chloride	F.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,
Judith E. Ayres,
Regional Administrator.

cc: Kern County Air Pollution Control District

With respect to the areas under the jurisdiction of the KCAPCD, all reports, applications, submittals, and other communications pertaining to the above

listed NSPS and NESHAPS source categories should be directed to the KCAPCD at the address shown in the address section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of Section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of Section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: March 29, 1984.

Judith E. Ayres,

Regional Administrator.

[FR Doc. 84-9364 Filed 4-6-84; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-7-FRL-2585-6]

Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) Delegation of Authority to the State of Iowa

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation of authority.

SUMMARY: This notice announces an extension of delegations of authority that were initially issued to the State of Iowa by the Environmental Protection Agency on June 6, 1975 and January 19, 1982, regarding the requirements of the federal Standards of Performance for New Stationary Sources (NSPS), 40 CFR Part 60, and the National Emission Standards for Hazardous Air Pollutants (NESHAPS), 40 CFR Part 61, respectively. The extension was requested by the State of Iowa. The extension action added seven (7) NSPS source categories to the NSPS delegation. The delegations of authority now include all delegable requirements of the federal NSPS and NESHAPS regulations as adopted by the State of Iowa and as amended by the agency through June 30, 1983.

EFFECTIVE DATE: May 10, 1984.

ADDRESSES: All requests, reports, applications, submittals and such other communications that are required to be submitted under 40 CFR Part 60 or 40 CFR Part 61 (including the notifications required under Subpart A of the regulations) for facilities or activities in Iowa affected by the revised delegations of authority should be sent to the Iowa Department of Water, Air and Waste Management, Henry A. Wallace Building, 900 East Grand, Des Moines, Iowa 50319. A copy of all Subpart A related notifications must also be sent to the attention of the Director, Air and Waste Management Division, U.S. EPA, Region VII, 324 East 11th Street, Kansas City, Missouri 64106.

FOR FURTHER INFORMATION CONTACT: Charles W. Whitmore, Chief, Technical Analysis Section, Air Branch, U.S. EPA, Region VII, at the above address (816-374-6525 or FTS-758-6525.

SUPPLMENTARY INFORMATION: Sections 111(c) and 112(d) of the Clean Air Act, respectively, allow the Administrator of the Environmental Protection Agency (i.e., EPA or the agency) to delegate to any state government authority to implement and enforce the requirements of the federal NSPS and NESHAPS regulations. When a delegation is issued, the agency retains concurrent authority to implement and enforce the requirements of the delegated regulation(s). The effect of a delegation is to shift the primary responsibility for implementing and enforcing the standards for the affected categories (and/or for the affected activities) from the agency to the state government.

On June 6, 1975, the agency delegated to the State of Iowa authority to implement and enforce the standards for eleven (11) NSPS source categories as promulgated by the agency through April 1, 1974 (see 41 FR 56889, December 30, 1976). The delegation was subsequently extended to include the standards of performance for 21 additional source categories on August 25, 1980 (see 45 FR 75758, November 17, 1980), March 31, 1983 and May 10, 1983 (see 48 FR 29691, June 28, 1983). Authority to implement and enforce the NESHAPS for asbestos (except for 40 CFR 61.22(d)), beryllium, beryllium rocket motor firing, mercury, and vinyl

chloride, as promulgated and/or amended by the agency through December 31, 1980, was delegated to the State of Iowa on January 19, 1982 (see 47 FR 11662, March 18, 1982). The NSPS and NESHAPS delegations gave the State of Iowa authority to implement and enforce the standards against affected facilities and activities which exist (or occur) in Iowa.

On February 9, 1984, the State of Iowa requested an extension of the delegations to reflect a recent updating of its rules. The state government has revised Rule 23.1(2) [NSPS-related] and Rule 23.1(3) [NESHAPS-related] of the Iowa Department of Water, Air and Waste Management's rules and regulations to incorporate, by reference, the standards of 40 CFR Parts 60 and 61 (as promulgated and as amended by the agency through June 30, 1983) which have been specifically adopted by the State.

In consideration of the information contained in the above-mentioned letter, the agency granted the extension request on March 16, 1984. The action extended the delegations to include the following additional provisions:

NSPS

—Subpart EE (Surface Coating of Metal Furniture);
—Subpart KK (Lead Acid Battery Manufacturing Plants);
—Subpart NN (Phosphate Rock Plants);
—Subpart QQ (Graphic Arts Industry: Publication Rotogravure Printing);
—Subpart SS (Industrial Surface Coating: Large Appliances);
—Subpart TT (Metal Coil Surface Coating);
—Subpart UU (Asphalt Processing and Asphalt Roofing Manufacturing);
—Reference Methods 5A, 6A, 6B, 12, 22, and 24A; and,
—The revisions, clarifications, etc., made to Subparts A, D, Da, T, U, V, W, QQ, TT, to Reference Method 20 of Appendix A, and to the Performance Specifications of Appendix B of the regulation.

NESHAPS

—Test Methods 101A and 107A;
—Appendix C, Procedures 1 and 2; and,
—The revisions clarifications, etc., made to Subparts A, E, and F, and to Test Methods 101, 102, 106, and 107 of Appendix B of the regulation.

Effective immediately, all reports, correspondence, and such other communications required to be submitted under the NSPS or NESHAPS regulations for facilities or activities in Iowa affected by the revised delegations of authority should be sent to the Iowa Department of Water, Air and Waste Management at the above address rather than to the EPA Region VII office, *except* as noted below.

A copy of each notification required to be submitted under 40 CFR Part 60, Subpart A, or under 40 CFR Part 61, Subpart A, must *also* be sent to the attention of the Director, Air and Waste Management Division, U.S. EPA, Region VII, 324 East 11th Street, Kansas City, Missouri 64106.

Each document and letter mentioned in this notice is available for public inspection at the EPA regional office.

This notice is issued under the authority of section 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 7411 and 7412).

Dated: April 27, 1984.

Morris Kay,

Regional Administrator.

[FR Doc. 84-12618 Filed 5-9-84; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[AD-FRL 2594-8]

Standards of Performance for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule amendments.

SUMMARY: Relocation of offices and internal reorganization within the Agency over the past several years have caused the published addresses to become outdated for EPA offices responsible for air pollution control and enforcement activities at EPA Regional Offices. These amendments make the addresses current for correspondence related to the provisions of new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP). These addresses are contained in 40 CFR Subpart A § 60.4(a) and Subpart A § 61.04(a).

EFFECTIVE DATE: May 29, 1984.

FOR FURTHER INFORMATION CONTACT: Robert L. Ajax, (919) 541-5578.

SUPPLEMENTARY INFORMATION: Since the promulgation of 40 CFR 60.4(a) and 61.04(a), mailing addresses have changed for five of the EPA Regional Offices. Organizational changes have eliminated "Enforcement Divisions," and matters pertaining to air pollution control are now the responsibility of either an "Air Management Division" or an "Air and Waste Management Division" at EPA Regional Offices. Correcting these addresses in the CFR's will facilitate efficient handling of correspondence directed to air pollution program offices in the 10 EPA Regional Offices.

Because these amendments are purely administrative and impose no new regulatory requirements or any policy implications, they are not subject to review under Executive Order 12291 by the Office of Management and Budget.

Pursuant to the provisions of 5 U.S.C. 6905(b), I hereby certify that these amendments will not have a significant economic impact on a substantial number of small business entities because small business entities are not affected by the amendments.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt,

Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil fuel-fired steam generators, Fiberglass insulation, Synthetic fibers.

40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and record keeping requirement, Vinyl chloride.

(Sec. 111 Clean Air Act, as amended (42 U.S.C. 7411))

Dated: May 21, 1984.

Joseph A. Cannon,

Assistant Adminstrator for Air and Radiation.

PART 60—[AMENDED]

1. 40 CFR § 60.4(a) is revised to read as follows:

§ 60.4 Address.

(a) All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted in duplicate to the appropriate Regional Office of the U.S. Environmental Protection Agency to the attention of the Director of the Division indicated in the following list of EPA Regional Offices.

Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Director, Air Management Division, U.S. Environmental Protection Agency, John F. Kennedy Federal Building, Boston, Massachusetts 02203

Region II (New Jersey, New York, Puerto Rico, Virgin Islands), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Federal Office Building, 26 Federal Plaza, New York, New York 10278

Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106

Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 345 Courtland Street, NE., Atlanta, Georgia 30365

Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air Management Division, U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago Illinois 60604

Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1210 Elm Street, Dallas, Texas 75270

Region VII (Iowa, Kansas, Missouri, Nebraska), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 324 East 11th Street, Kansas City, Missouri 64106

Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado 80295

Region IX (American Samoa, Arizona, California, Guam, Hawaii, Nevada), Director, Air Management Division, U.S. Environmental Protection Agency, 215 Fremont Street, San Francisco, California 94105

Region X (Alaska, Idaho, Oregon, Washington), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, Washington 98101

* * * * *

PART 61—[AMENDED]

2. Section 61.04(a) is revised to read as follows:

§ 61.04 Address.

(a) All requests, reports, applications, submittals, and other communications to the Administrator pursuant to this part shall be submitted in duplicate to the appropriate Regional Office of the U.S. Environmental Protection Agency to the attention of the Director of the Division indicated in the following list of EPA Regional Offices.

Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), Director, Air Management Division, U.S. Environmental Protection Agency, John F. Kennedy Federal Building, Boston, Massachusetts 02203

Region II (New Jersey, New York, Puerto Rico, Virgin Islands), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Federal Office Building, 26 Federal Plaza, New York, New York 10278

Region III (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, Curtis Building, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106

Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 345 Courtland Street, NE., Atlanta, Georgia 30365

Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin), Director, Air Management Division, U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago Illinois 60604

Region VI (Arkansas, Louisiana, New Mexico, Oklahoma, Texas), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1210 Elm Street, Dallas, Texas 75270

Region VII (Iowa, Kansas, Missouri, Nebraska), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 324 East 11th Street, Kansas City, Missouri 64106

Region VIII (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado 80295

Region IX (American Samoa, Arizona, California, Guam, Hawaii, Nevada), Director, Air Management Division, U.S. Environmental Protection Agency, 215 Fremont Street, San Francisco, California 94105

Region X (Alaska, Idaho, Oregon, Washington), Director, Air and Waste Management Division, U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, Washington 98101

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[FR Doc. 84-14091 Filed 5-25-84; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2523-7]

National Emission Standards for Hazardous Air Pollutants; Regulation of Benzene

AGENCY: Environmental Protection Agency (EPA).

ACTION: Response to public comments.

SUMMARY: The Environmental Protection Agency (EPA) listed benzene as a hazardous air pollutant under Section 112 of the Clean Air Act on June 8, 1977 (42 FR 29332). Standards were subsequently proposed for maleic anhydride process vents (45 FR 26660, April 18, 1980); ethylbenzene/styrene (EB/S) process vents (45 FR 83448, December 18, 1980); benzene fugitive emission sources (46 FR 1165, January 5, 1981); and benzene storage vessels (45 FR 83952, December 19, 1980). This Federal Register notice responds to public comments on the listing, health effects, and regulation of benzene as a hazardous air pollutant.

ADDRESSES: *Background Information Document.* The background information document (BID) may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Response to Public Comments on EPA's Listing of Benzene Under Section 112," EPA-450/5-82-003, which contains a summary of all public comments on the health effects, listing, and regulatory approach for benzene.

Docket. Docket No. OAQPS 79-3 (Part I) contains information considered on the health effects, listing, and regulation of benzene. Other dockets containing public comments on the listing, health effects, and regulation of benzene are contained in Docket No. OAQPS 79-3 (Part II), for maleic anhydride plants; Docket No. A-79-27, for benzene fugitive emissions; Docket No. A-79-49, for EB/S plants; and Docket No. A-80-14, for benzene storage vessels. These dockets are available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (LE-131), West Tower Lobby, Gallery 1, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For further information on the listing and health effects of benzene, contact Mr. Robert Kellam, Pollutant Assessment Branch, Strategies and Air Standards Division (MD-12), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5645. For further information on the regulation of benzene, contact Mr. Gilbert H. Wood, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

SUPPLEMENTARY INFORMATION:

Overview of Benzene Regulation

This section provides background information and summarizes EPA's responses to the major public comments on the listing, health effects, and regulation of benzene. This section is intended to be an overview only. Subsequent sections and the BID contain more detailed responses to public comments.

Background

Based on studies linking occupational exposure to benzene with leukemia, EPA's general presumption that carcinogenic thresholds do not exist, the absence of a demonstrated threshold for benzene, and widespread exposure to large quantities of benzene emitted by stationary sources, EPA concluded that benzene could reasonably be anticipated to cause an increase in contracting leukemia for individuals exposed to benzene emissions from stationary sources. EPA therefore listed benzene as a hazardous air pollutant on June 8, 1977 (42 FR 29332).

Stationary sources of benzene are now estimated to emit at least 55,000 Megagrams (Mg) (about 120 million pounds) of benzene per year. The benzene sources have been divided into 12 source categories, based on technological considerations (such as control technology applicability) important in standards development. EPA decided to address the stationary source benzene problem by selecting for initial regulation five of these source categories: maleic anhydride process vents, ethylbenzene/styrene (EB/S) process vents, benzene fugitive emissions sources, benzene storage vessels, and coke oven by-product recovery plants.

EPA is collecting additional data on the remaining seven source categories to use in deciding whether or not standards development is warranted for them.

Benzene standards for four of the five source categories selected for initial regulation were proposed: maleic anhydride process vents (45 FR 26660, April 18, 1980); EB/S process vents (45 FR 83448, December 18, 1980); benzene storage vessels (45 FR 83952, December 19, 1980); and benzene fugitive emissions sources (46 FR 1165, January 5, 1981). The Agency intends to promulgate standards for benzene fugitive emission sources and propose standards for the fifth source category, coke by-product plants, in separate notices. In a third notice the Agency is withdrawing the proposed standards for maleic anhydride process vents, EB/S process vents, and benzene storage vessels, based on the conclusion that both the benzene health risks to the public from these source categories and potential reductions in health risks achievable with available control techniques are too small to warrant Federal regulatory action under section 112.

Summary of Responses to Major Comments

The primary comment received on the proposed standards was that benzene should not have been listed as a hazardous air pollutant. Commenters argued that benzene did not meet the criteria for listing under section 112 because they believe the health hazard posed by ambient levels of benzene is negligible, if not zero. Specifically, commenters, while generally agreeing with EPA that epidemiological studies have shown that a causal relationship exists between occupational benzene exposure and leukemia, maintained that the relationship had not been demonstrated at the much lower levels of benzene characteristic of the ambient air. In contending that EPA's nonthreshold presumption has been applied inappropriately in the case of benzene, commenters cited the lack of direct evidence that ambient levels pose leukemogenic risks as well as benzene research data and theoretical considerations compatible with the presence of a carcinogenic threshold for benzene.

Commenters asserted that the absence of data demonstrating that benzene reacts chemically with DNA supports the theory that benzene is likely to cause cancer by other than a direct genetic mechanism (the production of a transformed cell by direct interaction of a benzene molecule and the cellular genetic material). The nongenetic, or epigenetic, theory holds that such carcinogens must be present in sufficient quantities to induce toxic injury to the target tissue before cancer can occur. At levels below that required to cause "injury," body defense mechanisms are capable of protecting the tissues from a carcinogenic insult.

In support of a threshold for benzene, commenters maintained that benzene-induced leukemia was in most, if not all, cases preceded by evidence of injury to the blood-forming system (anemia, cytopenia, etc.). Commenters argued that because thresholds (10 to 35 ppm) exist for such effects, benzene exposure below these thresholds should not pose carcinogenic risks. Similarly, commenters cited epidemiological studies that did not show a positive correlation between benzene exposure and leukemia, as support for a risk threshold.

The EPA recognized at the time of listing that benzene at ambient levels, as with most other carcinogens, had not been demonstrated by epidemiologic studies to cause leukemia. The epidemiological methods that have successfully revealed associations between occupational exposure and cancer for substances such as benzene, asbestos, vinyl chloride, and ionizing radiation are not readily applied to the ambient environment with its increased number of confounding variables, a more diverse and mobile exposed population, a lack of consolidated medical records, and an almost total absence of historical exposure data. Given such uncertainties, EPA considers it improbable that any ambient association, short of a relationship of epidemic proportions or large increases in an extremely rate form of cancer, can be detected epidemiologically with any reasonable certainty.

Further, EPA agrees with the observations of the National Academy of Sciences (NAS) *(1)*:

> In considering the possibility of thresholds for carcinogenesis, it is important to understand that there is no agent, chemical or physical, that induces a form of cancer in man that does not occur in the absence of that agent. In other words, when there is exposure to a material, we are not starting at an origin of zero cancers. Nor are we starting at an origin of zero carcinogenic agents in our environment. Thus, it is likely that any carcinogenic agent added to the environment will act by a particular mechanism on a particular cell population that is already being acted on by the same mechanism to induce cancers. This reasoning implies that only if it acted by a mechanism entirely different from that already operating on the tissue could a newly added carcinogen show a threshold in its dose response curve.

This view is consistent with evidence that any exposure may produce a change in the genetic material that can lead to cell transformation and that cancers may arise from a single transformed cell.

In addition to the support for a nonthreshold hypothesis, EPA notes the problems inherent in attempting to identify and to quantify real or practical carcinogenic thresholds. In this regard, EPA concurs with the NAS that theoretical evidence for the existence of carcinogenic thresholds must be tempered by the knowledge that the exposed human population is a "large, diverse, and genetically heterogeneous group exposed to a large variety of toxic agents. Genetic variability to carcinogenesis is well documented, and it is also known that individuals who are deficient in immunological competence (for genetic or environmental reasons) are particularly susceptible to some forms of cancer." *(1)*

For these reasons, EPA has taken the position, shared by other Federal regulatory agencies, that in the absence of sound scientific evidence to the contrary, carcinogens should be considered to pose finite health risks at any nonzero exposure levels. This nonthreshold presumption is based on the view that as little as one molecule of a carcinogenic substance may be sufficient to transform a normal cell into a cancer cell. Evidence is available from both the human and animal health literature that cancers may arise from a single transformed cell. Mutation research with ionizing radiation in cell cultures indicates that such a transformation can occur as the result of interaction with as little as a single cluster of ion pairs.

In the decision to list benzene under section 112 EPA found no reason to believe that the nonthreshold presumption did not apply to benzene. After reviewing the public comments, EPA believes that although they provide a comprehensive discussion of the scientific and theoretical support for a carcinogenic threshold for benzene, the evidence is inadequate to support a conclusion that ambient levels of benzene are without carcinogenic risk.

The EPA did not at listing and does not now believe that information such as the benzene exposure levels estimated from "negative" epidemiological studies can be regarded as the equivalent of no-effect levels. Because of the problems and uncertainties inherent in the design and conduct of such studies, they do not support the conclusion that the absence of a statistical correlation demonstrates the absence of a hazard.

While the epigenetic mechanism offers a possible explanation for the way in which cancers could arise in the absence of direct interaction with genetic material, this theory has not been substantiated by experimental evidence nor has applicability to the specific case of benzene been established beyond largely theoretical grounds.

The EPA does not agree with industry's conclusion that the absence or nondetection of covalent bonding with DNA indicates that benzene cannot directly interact with the genetic material. Evidence exists that benzene at levels as low as 1 to 2.5 ppm significantly increases chromosomal aberrations. *(2)* *(3)* Similarly, EPA does not regard as conclusive the evidence provided by commenters that leukemia or other adverse health effects do not occur in the absence of overt signs of blood toxicity. Again, studies are available demonstrating benzene-induced chromosomal aberrations following exposure to benzene at levels below those advanced as thresholds for blood toxicity.

Finally, commenters have argued that below the benzene levels required to "injure" the blood-forming tissues, the body's defense mechanisms protect the tissues from low-level carcinogenic insults. EPA is not persuaded that such mechanisms are 100 percent effective. In addition, although the commenters do not regard chromosomal aberrations as evidence of blood toxicity, the presence of these effects indicates that benzene or an active metabolite has been able to overwhelm the protective mechanisms and enter the cellular nucleus.

In summary, EPA continues to believe that the nonthreshold presumption should apply in the case of benzene and that exposure to benzene via the ambient air should be regarded as posing carcinogenic risks. Although EPA recognizes that this finding is not without uncertainty, the Agency believes that it is consistent with the mandate of Section 112 requiring the protection of public health against air pollutants that "may reasonably be anticipated" to cause or contribute to the health effects of concern.

After reviewing the public comments, EPA also continues to believe that benzene emissions from some stationary sources represent a significant risk of leukemia to exposed populations. This judgment is based on the documented evidence that benzene is a leukemogen, on the magnitude of benzene emissions from stationary sources to the ambient air, on the observed and estimated ambient concentrations, on the proximity of large populations to emitting sources, on the estimates of the health risks to the exposed populations, and consideration of the uncertainties associated with quantitative risk estimates (including the effects of concurrent exposures to other

substances and to other benzene emissions).

Section 112 provides for the delisting of benzene only if it is found that benzene is clearly not a hazardous air pollutant. EPA judges the evidence, including that submitted by commenters, to be insufficient to support a conclusion that ambient levels of benzene do not pose carcinogenic risks or that the risks posed by ambient benzene emitted by stationary sources are insignificant. In conclusion, EPA continues to regard the listing of benzene on June 8, 1977, as appropriate and considers delisting at this time inappropriate.

A second major comment on the proposed standards contends that the individual source categories covered do not pose a significant health risk and, further, are already controlled adequately. In fact, several plants have installed controls or shut down since the basic information for standards development was obtained and, indeed, since standards were proposed. EPA has revised its emissions and health risk estimates based on the latest emissions information provided by the industry and has included in these estimates consideration of current controls. EPA has also adjusted its unit risk factor in response to public comments and is using a more detailed human exposure model. EPA has reassessed this new information for maleic anhydride process vents, EB/S process vents, benzene storage vessels, and benzene fugitive emission sources and concludes that in light of the health risks and potential reductions of these four source categories, only benzene fugitive emissions warrant Federal regulations under Section 112. Details regarding the new information and conclusions are included in the separate notices for these source categories.

Public Participation

The Science Advisory Board reviewed draft documents in December of 1977 on EPA's assessment of the health effects at low-level exposure, the extent of human exposure, and the estimation of population risks. Public comments were solicited at proposal of the maleic anhydride standard (April 18, 1980; 45 FR 26660) on the health effects, listing, and regulation of benzene. A public hearing was held on August 21, 1980, in Washington, D.C., to provide interested parties an opportunity for oral presentation of data, views, or arguments on the health effects, listing, and regulation of benzene. The hearing was open to the public, and each attendee was given an opportunity to comment. The public comment period was from April 18, 1980, to November 6, 1980.

Comments have been considered and changes made to the analysis and conclusions, where appropriate. Major comments received on the health effects, listing and regulation of benzene, and EPA's responses are summarized in this preamble. More detailed responses to the major comments and responses to the other comments not addressed in this preamble are contained in "Response to Public Comments on EPA's Listing of Benzene Under Section 112," EPA-450/5-82-003. Comments are identified by the docket item number in parentheses.

Listing of Benzene Under Section 112

The EPA listed benzene as a hazardous air pollutant based on "[s]cientific reports [which] strongly suggest an increased incidence of leukemia in workers exposed to benzene" (42 FR 29332, June 8, 1977). These reports included a review of benzene by NAS, (*4*) updated criteria published by the National Institute for Occupational Safety and Health (NIOSH), (*5*) and a proposal by the Occupational Safety and Health Administration (OSHA) for a revision downward of the existing workplace standard for benzene (42 FR 22516, May 3, 1977, and 42 FR 27452, May 27, 1977). While acknowledging that ambient exposure to benzene normally occurs at levels "substantially lower than those to which affected workers were exposed," EPA maintained that "there is reason to believe that ambient exposures may constitute a cancer risk and should be reduced" (42 FR 29332, June 8, 1977).

At the time of listing, EPA announced that it would review the scientific data to determine the health risks from exposure to ambient levels of benzene and invited public participation. The resulting EPA reports—"Assessment of Health Effects of Benzene Germane to Low Level Exposures," (*6*) "Assessment of Human Exposures to Atmospheric Benzene," (*7*) and "Carcinogen Assessment Group's Report on Population Risk to Ambient Benzene" (*8*)—form the basis for the majority of the public comments directed at the listing decision.

Commenters, largely from potentially affected industries and trade associations, argued that the listing of benzene was ill-timed, unnecessary, and unjustified. The main thrusts of these arguments are that EPA failed to develop an adequate record in advance of listing and that the record subsequently prepared does not demonstrate that benzene at the levels encountered in the ambient air warrants designation as a hazardous air pollutant.

Timing of Benzene Listing Decision

Many commenters though benzene was listed improperly, or at least prematurely, citing what they believed to be an inadequate record (OAQPS-79-3 [Part I] IV-D-13 [Part II] IV-F-1, IV-F-9; A-79-49 IV-D-9, IV-D-11; A-79-27 IV-D-19) and EPA's reliance on a proposed policy regarding airborne carcinogens (44 FR 58642; October 10, 1979) (A-79-27 IV-D-8, IV-D-25, IV-D-26; OAQPS-79-3 [Part I] IV-D-1, IV-D-11; A-79-49 IV-D-7).

The Clean Air Act requires EPA to list under section 112 substances judged to cause or contribute to air pollution "which may reasonably be anticipated to result in an increase in mortality or an increase in serious, irreversible or incapacitating, reversible illness" [section 112(a)(1)]. EPA based the decision to list benzene on a growing consensus in the scientific and regulatory community, evidenced by reports by NAS (*4*) *and NIOSH* (*5*) and proposed regulations issued by OSHA (42 FR 27452; May 27, 1977) that benzene was causally linked to the occurrence of leukemia in occupationally exposed populations. In EPA's view, leukemia clearly meets the criterion described in section 112 as resulting in an increase in mortality or "serious, irreversible or incapacitating, reversible illness."

The EPA's judgment that benzene present in the ambient air may "reasonably be anticipated" to pose a significant health hazard to the general population relied on two arguments advanced in the listing notice: first, that benzene was released to the air in 100 million pound quantities annually to which "large numbers of people are routinely exposed" and, second, that EPA had "adopted a regulatory policy which recognizes that some risk exists at any level of exposure to carcinogenic chemicals" (42 FR 29332; June 8, 1977). The latter referred to the "Interim Procedures and Guidelines for Health Risk and Economic Impact Assessments of Suspected Carcinogens" published by EPA May 25, 1976 (41 FR 21402).

Based on the above, EPA believes that the decision to list benzene was fully informed, timely, and therefore appropriate. The subsequent assessments of low-level exposure and carcinogenic risk were intended, as indicated in the listing notice, for use in "determining which sources of benzene emissions must be controlled, and the extent of control needed" (42 FR 29333, June 8, 1977). To the extent that these assessment documents addressed the

criteria for listing benzene under section 112, they have affirmed EPA's decision.

The EPA rejects the contention that the delay between listing and the proposal of emission standards for benzene sources suggests that EPA lacked the scientific evidence to justify the June 1977 listing. EPA's assessments of the health effects of low-level exposure,(6) the extent of human exposure,(7) and the estimation of population risks (8) were submitted for external review by EPA's Science Advisory Board in December 1977 and publicly released in September 1978, June 1978, and January 1979, respectively. The first emissions standard for benzene sources was not proposed until April 18, 1980 (45 FR 26660). Proposal was not delayd by "the evidence" for listing but rather the complex task of developing specific national emission standards for each source category.

Several commenters (A-79-27-IV-D-8, IV-D-25, IV-D-26; A-80-14-IV-D-4, IV-D-11; OAQPS-79-3 [Part I] IV-D-1, IV-D-11; A-79-49-IV-D-7; OAQPS-79-3 (Part II-IV-D-5) maintained that the listing and rulemaking proceedings for benzene were premature, arguing that they were based on a proposed policy regarding airborne carcinogens (44 FR 58642; October 10, 1979).

Neither the listing of benzene nor the proposed or promulgated standards are based on the proposed airborne carcinogen policy. They are based on section 112. As described above, EPA is persuaded that the decision to list benzene under section 112 was neither premature nor in excess of the Agency's legal authority.

Health Effects of Benzene

Public comments on the EPA report "Assessment of Health Effects of Benzene Germane to Low-Level Exposure" focused on areas of the benzene health literature relevant to evaluation of human health risks from ambient exposure. These include effects on reproduction and development (embryotoxicity and teratogenicity), effects on the cellular genetic material (mutagenicity and chromosome breakage), and carcinogenicity. The basis for listing benzene as a hazardous air pollutant is carcinogenicity. However, since comments were received on the report's discussions on the other effects, they are included for completeness.

Reproductive and Teratogenic Effects. EPA concluded in the benzene health assessment report that the health literature was inconclusive regarding potential effects of benzene on human reproduction and the fetus. Some commenters took a stronger position, asserting that no evidence was available linking benzene with reproductive or teratogenic effects (OAQPS-79-3 [Part I]-IV-D-9, IV-D-13; [Part II]-IV-D-22, IV-F-1, IV-F-8).

The EPA agrees with the commenters that the available data do not implicate benzene as a potential teratogen or embryotoxin in test species. The risks of adverse fetal developmental or reproductive effects, however, have not been studied adequately. No state-of-the-art multiple generation reproduction studies involving benzene have been done, without which it will not be possible to determine the levels at which benzene would have no observed effect.

From the available data concerning adverse reproductive effects of benzene in humans, it is *not* possible to conclude that *no* adverse human reproductive consequence results from ambient levels of benzene, since no well-designed and executed epidemiological studies have been conducted. It is not known if ambient levels of benzene have effects on the many areas of human reproduction, such as the processes of spermatogenesis and changes in menstrual cycle. Until such possibilities are explored, EPA believes that the evidence for benzene-induced reproductive effects in humans must be regarded as inconclusive.

Chromosomal Effects. Although commenters did not disagree with EPA's conclusion that benzene can cause chromosome breakage in humans, (6) they were divided on the exposure levels at which such damage occurs and on the implications of the observed changes (OAQPS-79-3 [Part I] IV-D-8, IV-D-13, [Part II] IV-F-1, IV-F-8; A-79-27, IV-D-27; A-79-49, IV-D-9). Several commenters asserted that these effects result only from high exposures, in excess of 10 ppm (A-79-27, IV-D-27, A-79-49, IV-D-9, OAQPS-79-3 [Part I] IV-D-13), and that "no reliable evidence" exists to link subclinical benzene exposure to chromosome aberrations or to relate the observation of chromosome breakage with human leukemia (OAQPS-79-3 [Part I] IV-D-13, [Part II] IV-F-1, F-8; A-79-49 IV-D-9).

Conversely, one commenter challenged EPA's conclusion that a dose-dependent relationship between benzene exposure and chromosome damage had not been demonstrated, citing a study by Picciano (2) in benzene-exposed workers, and maintained that this study documented chromosomal effects at benzene exposure levels at and below 2.5 ppm (OAQPS-79-3 [Part I] IV-D-8).

The EPA does not agree that the data on human cytogenetic effects support a conclusion that benzene-induced chromosome damage occurs only after "excessive exposure." As described in the health assessment document, studies are available that relate increased chromosome breakage to benzene exposure well below the OSHA standard of 10 ppm time-weighted average (TWA). (3) (9)

With respect to a dose-response relationship, EPA agrees that the Picciano study indicates a dose-dependent relationship between exposure to benzene and the amount of chromosome damage. As noted in the EPA health assessment document, however, "[t]here is no correlation, * * *, between the degree or length of exposure, *the clinical symptons*, and persistence or extent of chromosomal aberrations" [emphasis added]. (6) EPA believes that this study and the study by Kilian and Daniel (3) are appropriately considered evidence of an assocation between benzene exposure and chromosome breakage and that the lowest benzene levels (1.0 to 2.5 ppm) where significant increases in breakage were found are considered properly to reflect exposures below those associated with clinical symptons of toxicity.

EPA also agrees that no direct evidence of a casual linkage between chromosomal aberrations and leukemia exists. EPA remains concerned, however, by the frequency of reports correlating chromosome abnormalities with cancer incidence. In addition to benzene workers and leukemia, this association has been pointed out in atomic bomb survivors with leukemia, (10) in uranium miners with lung cancer, in vinyl chloride workers with liver cancer, in liminous dial painters with bone cancer, and in individuals developing visceral cancers after methotrexate treatment for psoriasis. (11)

Carcinogenicity. Commenters did not challege EPA's conclusion that "there is substantial epidemiological evidence that benzene is a human leukemogen." (8) A number of commenters, however, disagreed with EPA's conclusion that benzene posed increased leukemia risk at the levels present in the ambient air. EPA addresses these comments below in "Health Issues Relevant to Benzene Listing Decision."

One commenter took issue with EPA's conclusion that "there is no convincing evidence that benzene causes neoplasias, including leukemia, in animals." (6) The commenter cited two studies, one by Maltoni and Scarnato

(*12*) and one by Snyder et al. (*13*) demonstrating benzene-induced tumors in rodents (OAQPS–79–3 [Part I] IV–D–8).

The carcinogenicity studies on benzene in animals reported by Maltoni and Scarnato (1979) (*12*) and Snyder et al. (1980) (*13*) support the comment that a positive tumorigenic effect of benzene is evident from these studies. The results of these studies are addressed in the following section.

Health Basis for Listing

As previously discussed, the Agency based the decision to list benzene on a growing consensus in the scientific and regulatory community, supported by reports by NAS, (*4*) NIOSH, (*5*) and emergency temporary standards issued by OSHA (42 FR 22516, May 3, 1977) that benzene was causally related to the occurrence of leukemia in occupationally exposed populations.

Although the association between human leukemia and benzene exposure is only one of several adverse health effects attributed to benzene, the serious consequences of this disease and the uncertainties regarding the existence of any no-effect levels of exposure combined to make it the basis for the decision to list. EPA's health basis for listing rested primarily on retrospective studies in occupationally exposed human populations. Of these, three reports documenting an association received greatest emphasis: Infante et al.,(*14*) Aksoy et al., (*15*) and Ott et al. (*16*) In the interval since listing, animal data have become available that further support a causal relationship. (*12*) (*13*)

Commenters critical of EPA's decision to list benzene argued that these studies suffered from design and methodological flaws, the correction of which would tend to greatly reduce if not eliminate the observed association. Several commenters also thought EPA had misinterpreted the study results and ignored other well-conducted studies that reached significantly different conclusions.

Epidemiological Studies. The work by Infante et al., a retrospective cohort mortality study undertaken by NIOSH, was reported initially in 1977 with a completed follow up published in 1981. (*17*) The study found a greater than fivefold excess risk of leukemia among workers exposed to benzene during the period of 1940 to 1949 in the "Pliofilm" (rubber hydrochloride) production industry.

One commenter stated that the Infante work was "seriously flawed and largely discredited," citing testimony from the public hearings on the OSHA benzene standard (*18*) and the Supreme Court's plurality decision on the OSHA standard (*19*) (OAQPS–79–3 [Part II] IV–D–5; A–79–27 IV–D–8). More specifically, commenters asserted that the study was flawed in two respects: the exposed cohort was improperly defined; and the exposure levels assumed were erroneous (OAQPS–79–3 [Part I] IV–D–13, [Part II] IV–D–5, IV–F–1, IV–F–9; A–79–27 IV–D–8; A–79–49 IV–D–9; A–80–14 IV–D–4, IV–D–16).

Though EPA recognizes that the Infante et al., study has weaknesses, EPA believes that the characterization of the study as "seriously flawed and largely discredited" is inaccurate. Although the commenter does not provide explanation of his criticism beyond references to the OSHA benzene rulemaking, his remarks imply that the study is invalid due to erroneous reporting of the exposure concentrations. EPA acknowledges, as did the authors of the study, that the historical exposure levels cannot be determined with certainty. This fact, however, is irrelevant to the study's conclusion that exposed workers experienced a fivefold excess risk of leukemia over the general population.

Commenters thought the cohort selected for the study inappropriately excluded certain mechanical and "dry side" workers as well as an unknown number of workers who left the plant's employment before 1944.

The issue of cohort definition in Infante et al. was discussed in subsequent publications by the authors (*20*) (*21*) as well as the OSHA benzene rulemaking (43 FR 5918, February 10, 1978). The authors argue that "dry side" workers "were never intended for inclusion in the cohort following discussion with company personnel indicating there was no benzene exposure on the dry side" (43 FR 5927). Subsequent reports of benzene levels (three sample points) on the "dry side" by the University of North Carolina (*22*) were regarded as inadequately detailed "to permit a valid interpretation." (*20*) The authors also contend that maintenance personnel (pipefitters, mechanics, etc.) were appropriately excluded from the cohort "because company records did not show which men had responsibilities in pliofilm production." (*20*) Workers who left employment prior to 1944 "could not be included because their personnel records were not in a retrievable form." (*20*)

The EPA considers the rationale for the selection of the Infante et al. cohort appropriate. EPA notes further that, as described in the completed follow up by Rinsky et al. as well as expert testimony offered by Dr. Marvin Sakol at the OSHA benzene hearings, (*18*) the strict cohort definition excludes several additional cases of leukemia that "support further the notion that there existed a causal link between benzene exposure in those facilities and the occurrence of leukemia." (*17*)

Commenters also contended that the benzene concentrations to which the workers were exposed were much higher than assumed by EPA, supplying information from studies indicating that the workers could have been exposed to levels of 100 to 1,000 ppm in the 1940's and as high as 355 ppm in the 1970's with a mean of 30 ppm.

Rinsky et al. (*17*) provide a thorough discussion of the available information on the benzene levels to which workers may have been exposed in the subject facilities during the periods studied. The authors concluded that "for the most part, employees' 8-hour time-weighted averaged exposures were within the recommended [occupational] standard in effect at the time. However, as is characteristic of industrial processes, there were occasional excursions above these limits." EPA concludes that, while intermittent levels may have approached the values suggested by the commenters, the range of occupational standards for the periods studied (100 to 10 ppm) appears reasonable as an estimate of the chronic exposure pattern. In this regard, EPA agrees with the recent conclusion of the Benzene Work Group of the International Agency for Research on Cancer (IARC) that "the excessive mortality from myelogenous and monocytic leukemia had occurred among workers with occupational exposure to benzene that was generally within accepted limits," recognizing that "the possible contribution of the occasional excursions in exposure and of the employment of some workers in other areas of the plant must be noted; and * * * May have made some contribution to the observed excess in mortality from leukemia." (*23*)

Aksoy et al. studied the incidence of leukemia and other diseases among workers occupationally exposed to benzene in the Turkish shoeworking industry. (*24*) (*25*) (*26*) Based on case ascertainment by contact with medical care and comparison of leukemia incidence in the exposed population to estimates for the general population of Western nations, Aksoy et al. found a two fold exces leukemia risk among shoeworkers with chronic benzene exposure.

Although commenters generally agreed that the study was of value "in reaffirming, * * * that prolonged exposures to high concentrations of

benzene result in serious blood disorders including a small number of leukemias" (OAQPS-79-3 [Part II] IV-F-1, IV-F-9), several specific criticisms suggested that the excess risk observed was exaggerated. Two commenters argued that Aksoy et al. relied on inappropriate figures (6 per 100,000) for the background leukemia incidence and that when a more reasonable estimate derived from the experience of the Eurpean Standard Population (8 to 14 per 100,000) was used, the study no longer shows an excess incidence among the exposed workers (OAQPS-79-3 [Part I] IV-D-13 [Part II] IV-F-1, IV-F-9; A-79-49 IV-D-9). One commenter expressed concern that the age distribution of exposed workers was not available and speculated that the margin for error in the "official count" used as the denominator of the shoeworking population (28,500) was "probably substantial" (OAQPS-79-3 [Part II] IV-F-1, IV-F-9).

EPA agrees that Aksoy's choice of the 6-per-100,000 background leukemia incidence is subject to criticism since it is not easily attributed to the Turkish rural population. It is also reasonable that the "official count" of 28,500 shoeworkers may be an underestimate and therefore overestimates the excess leukemogenic risk in the exposed population. It is equally likely, however, that Aksoy's methodology leads to an underestimate of the excess risk. First, only leukemia cases of which the author was directly aware as a medical practitioner were counted in the study. As Aksoy testified before OSHA, "undoubtedly there were other additional patients among shoeworkers who were not included in our study." (*18*) Second, as EPA's health assessment points out, "the distribution of cases reported by Aksoy et al. strongly differs from that of leukemia in the general population. If the relative incidence were computed solely for acute myeloblastic leukemia and its variants [the forms of leukemia associated with benzene exposure], a magnification of the risk in benzene-exposed shoeworkers would be observed." (*6*) Finally, Aksoy has also testified that rural leukemia incidence in Turkey may be on the order of 3 per 100,000, or half of what he had estimated originally.(*18*) This fact would also increase the calulated excess risk.

Concerning the age distribution of the shoemaker population, the limited age information available led EPA to incorporate an age adjustment factor in the Agency's risk assessment. On the basis of better information on the age stucture of Turkey's male population, (*27*) EPA now believes this adjustment was unnecessary and has revised the unit risk derivation accordingly.

Ott et al. (*16*) reported long-term mortality patterns and associated benzene exposure for a cohort of 594 chemical manufacturing workers. Three cases of leukemia were observed where 0.8 was expected, an excess risk of 3.75. The finding was statistically significant ($p=0.047$) in a one-tailed test of significance.

One commenter criticized the statement in EPA's health assessment (*6*) that excess leukemia incidence observed in the Ott et al. study was only of "borderline" statistical significance. The commenter noted that "[s]ince the p value observed (0.047) is less than the p value (0.050) commonly used to determine statistical significance, there is no basis for considering the value borderline" (OAPQS 79-3 [Part I] IV-D-8). Other commenters argued that the study should be appropriately regarded as "inconclusive" (OAQPS 79-3 [Part I] IV-D-9, IV-D-13, [Part II] IV-D-22, IV-F-1, IV-F-9; A-79-49 IV-D-9, IV-F-2). One commenter remarked that while the cases were too few to draw "solid statistical conclusions," the Ott et al. study was the "best documented study of chronic exposures to benzene in the literature to date" (OAQPS 79-3 [Part II] IV-F-1, F-9).

Commenters also contended that the exclusion of one decedent whose leukemia was identified as a "significant other condition" rather than the cause of death eliminated the significance (QAQPS 79-3 [Part I] IV-D-13). One commenter asserted that Ott et al. applied an "inappropriate one-tailed [statistical] test" to determine significance and that the use of an appropriate test (two-tailed) did not reveal a significant association between the leukemia cases and exposure to benzene (OAQPS 79-3 [Part I] IV-D-13).

The presence of confounding exposures to other potential carcinogens was also noted by commenters as evidence that the study should not be viewed as conclusive of a benzene-leukemia association. The same commenters noted that the cases of leukemia occurred in workers exposed to lower benzene levels (2 to 9 ppm) than those encountered by many other individuals in the study population (OAQPS 79-3 [Part I] IV-D-13, [Part II] IV-F-1, VI-F-9).

While EPA does not view the Ott et al. study, taken alone, as conclusive evidence of an association between low-level (2 to 9 ppm) occupational exposure to benzene and leukemia, the Agency believes that this work, combined with other findings in the benzene health literature, serves to reinforce the public health concerns regarding benzene exposure.

EPA does not agree that the use of "borderline" in describing the significance of the Ott et al. study is inappropriate since the value calculated (0.047) was very close to the predetermined limit (0.050) chosen for the test. EPA does agree that the test, as constructed, supports a finding of significance.

EPA disagrees that the use of a "two-tailed" test for significance would be more appropriate than the one-tailed test employed by Ott et al. The hypothesis to be tested in that benzene exposure increases the leukemia risk, not that risk may increase or decrease. The benzene health literature does not support a finding that benzene exerts a protective influence on exposed individuals.

Omitting from the study the individual for whom leukemia was not the immediate cause of death would not, in EPA's opinion, be an appropriate change. In view of the recognized causal relationship between benzene and nonlymphatic leukemias, EPA believes that a case of myelogenous leukemia, such as this, should not be ignored.

EPA does not view the extent of confounding exposures in Ott et al. as severe. The authors did exclude from their analysis persons known to have been exposed to levels of arsenicals, vinyl chloride, and asbestos, all of which have been associated with human health effects. This exclusion eliminated 53 persons from consideration including one leukemia victim. The remaining substances, which include the suspect carcinogen vinylidene chloride, have not been shown to be associated with a leukemia risk in either man or animals. Therefore, inclusion of such exposed persons would not be likely to affect the target organ site for benzene in terms of increased risk.

According to the authors' testimony before OSHA, the "low levels of potential benzene exposure relative to other employees in the cohort . . . made a retrospective assessment of the possible relationship to benzene exposure very judgmental." (*18*) EPA, while recognizing this uncertainty, agrees with the reservation expressed by OSHA in its benzene rulemaking that "because of the small population size as well as the possibility of sensitivity of those individuals developing leukemia, it cannot be concluded that these deaths are not caused by benzene exposure" (43 FR 5928).

Commenters cited other epidemiological studies, notably the work of Thorpe, (*28*) for which no correlation between leukemia and benzene exposure was demonstrated (OAQPS–79–3 [Part I] IV–D–9, IV–D–13, [Part II] IV–F–1, IV–F–9; A–79–27 IV–D–24, IV–F–1; A–79–49 IV–D–9, IV–F–2). The Thorpe study found "no excess incidence of leukemia among petroleum workers exposed to benzene levels estimated to range up to 20 ppm" (OAQPS–79–3 [Part I] IV–D–13).

EPA believes that deficiencies in the Thorpe study preclude a judgment that exposure to benzene below 20 ppm poses no risk of leukemia. The author of this study dwells on the shortcomings of the work, the most important of which are that (1) quantitative determinations of the extent of exposure could not be done, (2) follow up of members of the cohort was inadequate, and (3) problems existed with verifying the leukemia diagnosis.

Followup was left to each unit (plant) separately. Since the author did none of it, the follow up was poor. Many units had no mechanisms by which to notify the plant of the death of an annuitant and, where notification was made, often no cause of death was reported to the company. Cases reported among annuitants were included, although possible underreporting in the group was recognized. No mention was made concerning follow up efforts on former employees who did not qualify for an annuity. Unfortunately, no table on completeness of ascertainment of vital status was given.

Other problems with this study involve the questionable practice of reporting on the pooled results of a study of eight separate and perhaps considerably different plants. A significant risk that may be present in one or more of the plants could have been obscured by the inclusion of populations of nonexposed individuals. Additionally, no consideration of latent factors was presented; no effort was made by the author to require a minimum time since onset of employment of individuals in the study or to provide even cause-specific mortality by time since first employment. Furthermore, the study has been criticized by Brown (*29*) with respect to factors relating to underreporting of leukemia in the study population.

Animal Studies. EPA originally concluded in the benzene health assessment that "there is no convincing evidence that benzene causes neoplasias, including leukemia, in animals."(*6*) One commenter submitted that two animal studies, reports by Maltoni and Scarnato(*12*) and Synder et al.(*13*) had become available demonstrating benzene-induced tumors in rodents (OAQPS–79–3 [Part I] IV–D–8).

EPA agrees that the studies referenced support the finding of a positive tumorigenic effect of benzene in rodents. The study by Maltoni and Scarnato indicated an increased incidence of Zymbal gland carcinomas, mammary gland carcinomas, and leukemia in benzene-treated Sprague-Dawley rats. Snyder et al. observed a higher occurrence of hematopoietic neoplasms, bone marrow hyperplasia, and splenic hyperplasia in benzene-treated C57BL mice. The hematopoietic neoplasms were categorized as lymphocytic lymphoma with thymic involvement, plasmacytoma (myeloma), and leukemia with a hematocytoblast apparently as the predominant cell type. The finding of a tumorigenic effect of benzene in other mammalian species serves to strengthen the concern over benzene's effects on human populations.

Health Issues Relevant to Benzene Listing Decision

EPA listed benzene as a hazardous air pollutant based on evidence linking occupational benzene exposure with leukemia and on the knowledge that large numbers of people are exposed to and, therefore, may be at risk from, benzene emitted into the ambient air by a variety of stationary sources. This rationale assumes that (1) it is reasonable to conclude that a causal relationship continues to exist at the significantly lower exposure levels characteristic of the ambient air, and (2) that the magnitude of the relationship warrants efforts to reduce human exposure.

A number of commenters took issue with EPA's judgment, arguing that an exposure threshold for benezene-induced leukemia exists below which there is no health risk and that, even granting an association with leukemia at ambient levels, the magnitude of the health risks to exposed populations is negligible. (Due to the number of commenters on these subjects, the comment numbers are not listed.) The comments focus on EPA's presumption that effect thresholds do not exist for carcinogens (the nonthreshold hypothesis) and the methodology used by EPA's Carcinogen Assessment Group (CAG) in deriving quantitative estimates of benzene leukemogenic risks. A summary of public comments addressing the issue of a carcinogenic threshold for benzene follows the statement of EPA's position on carcinogenic thresholds.

EPA's Position on Carcinogenic Thresholds (Nonthreshold Hypothesis). In evaluating the public health hazards associated with exposure to known and potential carcinogens, EPA has maintained that, in the absence of sound scientific evidence to the contrary, such substances must be considered to pose some finite cancer risk at any exposure level above zero (41 FR 21402, May 25, 1976; 44 FR 58642, October 10, 1979; 44 FR 39858, July 6, 1979). OSHA (45 FR 5002, January 22, 1980), the Consumer Product Safety Commission (CPSC), the Food and Drug Administration (FDA), the Food Safety and Quality Service, and the President's Regulatory Council (44 FR 60038, October 17, 1979), among others, have shared this conviction.

Support for the nonthreshold hypothesis for carcinogens dervices from both scientific and practical considerations. As summarized by the Interagency Regulatory Liaison Group (IRLG): "[t]he self-replicating nature of cancer, the multiplicity of causative factors to which individuals can be exposed, the additive and possibly synergistic combination of effects, and the wide range of individual susceptibilities work together in making it currently unreliable to predict a threshold below which human population exposure to a carcinogen has no effect on cancer risk" (44 FR 39876).

The mechanism by which a carcinogen acts is of particular importance in postulating whether or not an effect threshold exists. NAS has observed:

> Whether or not a particular effect follows a dose-response relationship that has a threshold depends entirely on the mechanism of the effect. Many effects have thresholds. For example, the gastrointestinal-radiation syndrome, acute drug toxicity, and radiation or drug control of some tumors all have dose-response curves that show thresholds. The curves are sigmoid, and below a particular dose there is a zero probability of producing the effect, because the effect requires many independent events and will not occur until the number of such events exceeds some critical value. The gastrointestinal-radiation (or drug) syndrome is a case in point. An animal will not die until the number of intestinal crypt cells that have been killed exceeds a value that is critical to the integrity of the organ. Any radiation or drug dose that kills fewer cells than this critical number can be considered to be safe (at least for this one syndrome).
>
> We are used to thinking in terms of thresholds and sigmoid dose-response curves. For example, if it costs $4,000 to buy an automobile, we do not imagine that we will have a 50% chance of buying the same vehicle for $2,000. If 100 aspirin tablets constitute a lethal dose, we do not calculate that we will have a 1% chance of dying if we

swallow a single tablet. Because we know the mechanisms underlying these events, we expect thresholds to the dose-response curves, and indeed they are evident.

However, other effects may well *not* have threshold dose-effect relationships. If an effect can be caused by a single hit, a single molecule, or a single unit of exposure, then the effect in question cannot have a threshold in the dose-response relationship, no matter how unlikely it is that the single hit or event will produce the effect. Mutations in prokaryotic and eukaryotic cells can be caused by a single cluster of ion pairs which were produced by a beam of ionizing radiation. We would expect that mutations can be caused by a single molecule or perhaps group of molecules in proximity to the DNA. The necessary conclusion from this result is that the dose-response relationship for radiation and chemical mutagenesis cannot have a threshold and must be linear, at least at low doses.

It is one step further to correlate mutagenesis with carcinogenesis. Nevertheless, the evidence is strong that there is a close relationship between the two [references].

We therefore conclude that, if there is evidence that a particular carcinogen acts by directly causing a mutation in the DNA, it is likely that the dose-response curve for carcinogenesis will not show a threshold and will be linear with dose at low doses.(*1*)

Evidence for a linear-carcinogenic response at low dose comes from studies suggesting cancers may arise from the "transformation" of a single cell. (*30*)(*31*) One study observed that in women with a genetic condition that leads to their body cells being of two recognizable types, tumors are characteristically of one cell type, while normal tissues are composed of a mixture of both types. Another described experimental efforts in which transformed cells were transplanted into whole animals. Both of these observations further support the theory that cancers may arise from single cells. A single cell origin of cancers implies that the statistical form of the carcinogenic dose response relationship may be highly influenced by the extreme tail of the distribution of cell transformations with dose. As Crump points out "the effect of this is to make virtually any process of discrete events approximately linear at low dose." (*18*)

EPA's presumption that any exposure to a carcinogen poses a health risk is not intended to foreclose discussion or ignore evidence or real or practical effect thresholds for such substances. In this regard, a number of theories postulate the existence of thresholds. These include consideration of the body's defense and repair capabilities (immunosurveillance, detoxification, and DNA repair) and reports of the regression of preneoplastic lesions with the cessation of exposure. Observations of an inverse relationship between dose and the latency period for tumor expression have been proposed as evidence of practical thresholds where the dose corresponds to a latency that exceeds the individual's lifespan. Proponents also have suggested, as indirect evidence of thresholds, the carcinogenicity at high doses of certain substances for which a biological requirement exists. Threshold levels have, in addition, been inferred from "negative" epidemiological and animal studies.

While EPA agrees that the evidence for real or practical carcinogenic thresholds should play a role in hazard evaluation, the Agency is persuaded that the utility of such information in establishing "no effect" levels is seriously limited. Although protective mechanisms such as DNA repair are reasonably effective, it is generally recognized that few, if any, biological processes are 100 percent efficient (45 FR 5126, 5129). Similarly, while decreased dose could increase the *median* time-to-tumor to greater than a lifespan, the typical distribution of tumors across age groups still would result in "early" cancers arising.

Evidence for practical thresholds is also questionable. There is no reason to believe that biologically required substances, which have been found to be carcinogenic at high levels, may not pose some cancer risk at levels where they are normally found in the body. In the same way, the failure to detect a positive association in the animal bioassay or epidemiological study does not constitute evidence of a no-effect level. NAS has noted that

> * * * the observation of no positive responses does not guarantee that the probability of response is actually zero. From a statistical viewpoint, zero responders out of a population of size N is consistent at the 5% significance level with an actual response probability between zero and approximately 3/N (e.g., when N=100 and zero responders are observed, the true probability of response may be as high as 3%).(*1*)

Finally, EPA concurs with NAS that theoretical arguments for the existence of carcinogenic thresholds must be tempered by the knowledge that the exposed human population is a "* * * large, diverse, and genetically heterogeneous group exposed to a variety of toxic agents. Genetic variability to carcinogenesis is well documented (Strong), 1976, (*32*) and it is also known that individuals who are deficient in immunological competence (for genetic or environmental reasons) are particularly susceptible to some forms of cancer (Cottier et al., 1974)(*33*)." (*1*)

OSHA noted in its summary of public hearings on an occupational carcinogen policy:

> A number of witnesses testified that, even if thresholds could be established for the circumstances in which animals are exposed only to single carcinogens, this would have little or no relevance to risk assessment for humans, who are exposed to many carcinogens, either simultaneously or sequentially. Specifically, several witnesses pointed out that there is already a ralatively high incidence of cancer in the human population. Hence many individuals are already at or close to the threshold for certain processes involved in cancer development, so that incremental exposure to even small quantities of an agent that accelerates these processes would be expected to lead to an increase in the frequency of cancer. (45 FR 5135)

NAS has further elaborated:

> In considering the possiblity of thresholds for carcinogenesis, it is important to understand that there is no agent, chemical or physical, that induces a form of cancer in man that does not occur in the absence of that agent. In other words, when there is exposure to a material, we are not starting at an origin of zero cancers. Nor are we starting at an origin of zero carcinogenic agents in our environment. Thus, it is likely that any carcinogenic agent added to the environment will act by a particular mechanism on a particular cell population that is already being acted on by the same mechanism to induce cancers. This reasoning implies that only if it acted by a mechanism entirely different from that already operating on the tissue could a newly added carcinogen show a threshold in its dose-response curve. (*1*)

In summary, EPA's position has been that the nonthreshold hypothesis is, for carcinogens, a reasonable and appropriate presumption that must be overcome by sound scientific evidence before any exposure to such substances can be concluded to be without health risk. At the same time, however, EPA regards relevant evidence of the ability of biological systems to mitigate adverse health effects as important considerations in the evaluation of the health hazard.

Support for a Threshold for Benzene. Commenters challenged EPA's nonthreshold presumption for benzene, arguing that the Agency had failed to consider convincing evidence that a leukemogenic threshold for benzene does exist and that this threshold is well above any ambient levels that might be encountered by the general population. In support of this position, commenters cited studies of benzene metabolism, alternative mechanisms for cancer induction, and evidence derived from epidemiological studies.

One commenter cited the work of Richert and Irons (*34*) as evidence that

exposure to levels of benzene below 10 ppm does not produce any adverse health consequences in human cells (OAQPS-79-3 [Part I] IV-D-13, [Part II] IV-F-1, IV-F-2, IV-F-3).

Rickert studied benzene metabolism in rodents and human cells *in vitro* to determine the concentrations of toxic benzene metabolites that might occur in the bone marrow of humans exposed to benzene (OAQPS 79-3 [Part II] IV-F-2). He concluded that the metabolite concentrations in rats and human tissue are of the same order of magnitude at similar benzene doses. Irons used this information to compare the metabolite concentrations expected at various benzene exposures with those at which the first signs of hematotoxicity (lymphocytopenia) occurred. He found "that a significant difference exists between the projected concentration of benzene metabolities in bone marrow, as calculated for a 6 hour exposure to 10 ppm benzene *in vitro*, and the concentration of the same metabolites which produce a demonstrable effect on a sensitive population of human cells *in vitro*" (OAQPS 79-3 (Part II) IV-F-3).

Although EPA regards this work, published after the release of the health assessment document, as generally supportive of the concept of a threshold for lymphocytopenia and other hematotoxic effects that may result from benzene exposure, EPA does not agree with the inference drawn from this study that exposures below 10 ppm pose no health risk. The *in vitro* system used may not represent the most sensitive human population at risk of hematotoxic effects. Further, it is not clear that effects such as lymphocytopenia must precede the induction of leukemia, nor has it been established that the benzene metabolities studied are related to the onset of leukemia.

Several commenters submitted that EPA's presumption of low-level benzene risk ignored alternative mechanisms for carcinogenesis, applicable to benzene, for which effect thresholds appear likely. One commenter asserted that, while a substance's ability to directly alter genetic material could be viewed as support for a nonthreshold mechanism, there is "no evidence that [benzene] react[s] with DNA" (OAQPS-79-3 [Part I] IV-D-9, [Part II] IV-D-22). According to the commenter, "Benzene induces neoplasia through cell injury" to the bone marrow. The injury is "followed by regeneration of the bone marrow and myelogenous leukemia in a small number of cases." During exposures of humans to benzene levels in the air of 10 ppm or less, the metabolic detoxification reactions maintain the levels [of benzene] and its metabolites to be sufficiently low in the blood to be below the threshold for any effect on the bone marrow or metabolic effects on lymphocytes" (OAQPS 79-3 [Part I] IV-D-9, IV-D-13, [Part II] IV-D-22, IV-F-1, IV-F-9; A-79-27 IV-D-24, IV-D-27, IV-D-29; A-79-49 IV-D-9, IV-D-11, IV-D-12, IV-F-1, IV-F-2; A-80-14 IV-D-1, IV-D-3, IV-F-1).

Similarly, commenters argued that the documented association between hematotoxic effects (usually decreases in the levels of various formed elements in blood: cytopenia, pancytopenia, and lymphocytopenia) and leukemia supports the finding that such effects may be a necessary precondition for leukemia. In this regard, one commenter quotes Goldstein's observation that "there [do] not appear to be any proven cases in which leukemia began in the absence of previous cytopenia." (*35*) Commenters contend that because "pre-leukemic" changes such as cytopenia "do not occur below about 35 ppm," this exposure level or, more conservatively, a level of 20 or 10 ppm constitutes an effective threshold below which benzene "presents no health risk whatsoever."

While EPA agrees that the nongenetic, or "epigenetic," mechanism constitutes a possible explanation for the way in which cancers could arise in the absence of direct interaction with genetic material, the Agency is not persuaded, based on the largely theoretical nature of this position, that such a mechanism has been demonstrated in the case of benzene. For similar reasons, the Agency continues to regard as inconclusive the contention that hematotoxic effects must necessarily precede the development of leukemia in benzene-exposed individuals.

Covalent bonding (reaction) with DNA is generally regarded as evidence that an agent may have the ability to "transform" a normal cell into an abnormal, and possibly cancerous, cell via a somatic mutation. The absence of such bonding or its nondetection, however, does not demonstrate that substances such as benzene may not interact directly with genetic material to produce aberrant cells. In fact, there is good evidence that benzene, at levels as low as 1 to 2.5 ppm, significantly increases chromosome abnormalities in bone marrow cells including chromosome breaks and marker chromosomes (rings, dicentrics, translocations, and exchange figures).(*3*)(*9*) Whether such changes are appropriately considered mutations or simply toxic events depends on the fate of the affected cell. As OSHA has pointed out in its benzene rulemaking:

> If the alteration in the chromosomal material results in an inhibition of further cellular division, then in terms of its reproductive potential, the cell is dead and the damage inflicted may be classified as a toxic event. However, if the damage does not interfere with the reproductive ability of the cell, and the alteration is replicated, this may constitute a persistent gross mutation. The finding of gross chromosomal damage in bone marrow cells clearly demonstrates that despite competing detoxification reactions * * * benzene, or a reactive metabolite is able to overwhelm protective defense mechanisms and enter the nucleus of hematopoietic cells. (43 FR 5918)

The quote attributed to Goldstein noting that "there [do] not appear to be any proven cases in which leukemia began in the absence of previous cytopenia" is correct but incomplete. Later in the page Goldstein cautions that this interpretation is "open to speculation, especially in view of the paucity of routine laboratory data preceding the onset of leukemia."(*36*)

The lack of information, as well as the retrospective nature of most of the analysis, makes it difficult to substantiate a precedent relationship between hematotoxic effects and leukemia. In this regard, OSHA has observed:

> * * * since the mechanism by which benzene induces leukemia has not been elucidated it is possible that leukemia develops, not in response to the pancytopenic effects of benzene, but rather to the direct carcinogenic effect on the marrow hematopoietic stem cells not necessarily accompanied by any other evidence of marrow effect * * *. In such events, protection against non-neoplastic blood disorders would not rule out subsequent development of leukemia (43 FR 5929).

Similarly, Browning, in 1965, noted: "benzene leukemia is frequently superimposed upon a condition of aplastic anemia, but it can develop without a preceding peripheral blood picture characteristic of bone marrow aplasia."(*18*)

Finally, EPA is not persuaded that the "thresholds" identified by commenters for benzene-induced "injury" are sound. First, it is not clear that techniques such as peripheral blood counts and aspiration of bone marrow are capable of consistently detecting injury to the hematopoietic system, particularly when the normal ranges of such counts are broad.(*6*)

Second, injury may be occurring at levels below those at which cytopenia is observed. In its review of benzene, NAS commented on a report of benzene-induced chromosome abnormalities:

"Vigliani and Forni (*37*) reported chromosomal aberrations of both the stable and unstable type. In general, the chromosome aberrations were higher in peripheral blood lymphocytes of workers exposed to benzene than in those of controls. This was true *even in the absence of overt signs of bone marrow damage*" (*4*) [emphasis added]. As noted above, Picciano and Kilian and Daniel have also reported significant increases in chromosomal aberrations, an effect whose toxic potential cannot be ignored, in workers exposed to benzene at levels substantially below the 10 ppm submitted as the lowest level for a "threshold" for benzene-induced effects.

Commenters found support for a benzene carcinogenic threshold in epidemiological studies that did not find a significant association between benzene exposure and leukemia (citing work by Thorpe, (*38*) Tabershaw, (*38*) and Stallones (*39*)), in control or nonexposed populations for which a case for benzene exposure could be made (citing Infante et al. (*14*)), and among exposed populations following exposure reduction efforts (citing Infante et al. (*14*) and Askoy et al. (*15*)). (OAQPS–79–3 [Part I] IV–D–9, IV–D–11, IV–D–13, [Part II] IV–D–22, IV–F–1. IV–F–9, A–79–27 IV–D–24, IV–D–28; A–79–49 IV–D–10, IV–D–11. IV–D–12. IV–F–1, IV–F–2; A–80–14 IV–F–1).

As indicated in "Health Basis for Listing" above, EPA believes that the shortcomings of the Thorne study do not permit a firm conclusion regarding a carcinogenic threshold for benzene. In the larger context of the utility of negative epidemiological studies, EPA, as a member of the IRLG, concluded that studies not finding a positive statistical correlation do not demonstrate the absence of a hazard, due to the limitations of epidemiologic investigations and long cancer latency periods during which exposure to other potentially carcinogenic substances can occur (44 FR 39858; July 6, 1979). In addition, OSHA (45 FR 5001; January 2, 1980) and the National Cancer Advisory Board (*40*) contend that negative epidemiological data do not necessarily establish the safety of suspect materials.

Similarly, while EPA agrees that follow up studies such as those undertaken on the Infante et al. and Aksoy et al. populations may be useful in demonstrating risk reductions, they are not appropriate support for a position that risks have been eliminated. As with "negative"epidemiological studies, EPA does not agree that such findings demonstrate the absence of a hazard.

Having reviewed the public comments, EPA concludes that the evidence submitted in support of a real or practical threshold for benzene-induced leukemia is not sufficient to overcome EPA's presumption that benzene may pose a finite risk of leukemia at any exposure level greater than zero.

Although commenters have sought to demonstrate that benzene may cause leukemia via a nongenetic mechanism that requires threshold-governed tissue injury prior to leukemia induction and that levels of benzene below this threshold are noninjurious or otherwise detoxified, EPA regards this evidence as largely theoretical in nature and, inconclusive.

EPA believes that the support for a "hematotoxic" threshold as protective against leukemia induction is speculative for two reasons: first, because neither the mechanism for benzene-induced leukemia nor that for blood disorders has been elucidated, and, second, because information is available that other effects of potential, adverse health consequence have been shown to occur at levels lower than those postulated as hematotoxic thresholds. Finally, EPA does not accept the premise that the nonpositive epidemiological studies offer a means of establishing credible no-effect levels.

For these reasons, recognizing the uncertainties in the scientific data base, EPA believes that the nonthreshold presumption should continue to apply in the case of benzene and that benzene should be considered to pose a risk of cancer at any exposure level above zero. EPA believes that this finding is consistent with the mandate of Section 112 requiring the protection of public health against air pollutants that "may reasonably be anticipated" to cause or contribute to the health effects of concern.

Quantitative Risk Estimates of Carcinogens. EPA initially published interim guidelines for the conduct of quantitative risk assessments (QRA) for carcinogens on May 25, 1976 (41 FR 21402). In 1979, these were succeeded by the report of the Work Group on Risk Assessment of IRLG (44 FR 39858; July 6, 1979) of which EPA was a member.

EPA prepared, in conjunction with the listing of benzene under Section 112 and the development of emissions regulations, an assessment of the population risk to ambient benzene exposures.(*8*) The assessment was based on an extrapolation of the human leukemogenic risk drawn from available epidemiological evidence in combination with an assessment of human exposure to benzene emitted into the air by stationary sources. (*7*)

Although a few commenters objected to the performance of a risk assessment, arguing that the underlying uncertainties were too great to permit a meaningful result, most respondents favored attempting to estimate population risks. In an extensive critique of EPA's assessment, however, commenters disagreed with EPA on a number of scientific and technical grounds, ranging from the appropriateness of the dispersion model used in estimating ambient benzene levels to errors in the assumptions made in deriving an estimate of benzene's leukemogenic potency. Commenters argued that the correction of such errors would result in an overall leukemogenic risk from benzene sources substantially below that predicted by EPA, and, in fact, small enough to be regarded as a "statistical artifact" for which regulatory attention was unwarranted.

The original assessment of human exposure to benzene was performed by the Stanford Research Institute (SRI) under contract to EPA. (*7*) A number of commenters on the benzene listing and proposed standards criticized the SRI assessment as relying on outdated emissions estimates, employing an upwardly biased exposure model, omitting plant-specific information, and erroneously including plants no longer using benzene (OAQPS–79–3 [Part I] IV–F–1, IV–F; A–79–49 IV–D–9). One commenter questioned the use of a 29-kilometer radius in developing the exposure estimates (OAQPS–79–3 [Part I] IV–D–8). Several commenters were supportive of an alternative methodology submitted by Systems Applications, Inc. (SAI) (OAQPS–79–3 [Part I] IV–D–9, IV–D–13, [Part II] IV–D–22, IV–F–1, IV–F–8, IV–F–9; A–79–49 IV–D–9).

EPA agrees that the SAI exposure methodology offers some improvements over the exposure methodology used by SRI for the benzene assessment. SAI developed its methodology under contract to EPA in response to a need for a rapid, computer-efficient method for conducting national-level exposure assessments. This methodology, with the additional data submitted in the course of the comment periods on the benzene proposals, has been used to revise the exposure estimates and risk assessments for the promulgated standards.

Although the SAI methodology has supplanted the methodology initially used by EPA to estimate benzene exposures, EPA does not agree that the

SRI report, for the purposes intended, is grossly inaccurate or upwardly biased.

The SRI report was intended to be an initial rough estimate of national-level exposures to ambient air concentrations of benzene caused by air emissions from various types of sources. The purpose of the report was to help EPA decide which benzene sources to study in more depth and thereby determine the extent of regulation needed under the Clean Air Act. The report also helped EPA determine the order in which the studies would be conducted. Those studies, which accompany the development of regulations under section 112 of the Clean Air Act, address far more explicitly the sources of benzene selected for regulation and the public exposures to benzene associated with those sources. The nature of many of the comments suggests that the commenters did not understand EPA's intended use of the report and of the intentionally rough-cut approach considered appropriate for that use.

EPA agrees that much of the SRI report is difficult to evaluate. This report was one of EPA's first attempts at estimating nationwide exposure, and the methodologies were not yet fully described. As explained, the report was not meant to be a definite statement on exposure to benzene, but to be a guide to follow-on studies. All deficiencies considered, EPA considers the report adequate for its intended use.

The selection of a 20-kilometer limit on exposure estimation in the vicinity of stationary sources is based on modeling considerations. Twenty kilometers was chosen as a practical modeling stop-point. The results of dispersion models are considered reasonably accurate within that distance. The dispersion coefficients used in modeling are based on empirical measurements made within 10 kilometers of sources. These coefficients become less applicable at long distances from the source, and the modeling results become more uncertain.

Comments were generally critical of the use by CAG of a linear, nonthreshold model to derive a benzene unit risk factor. One commenter (OAQPS-79-3 [Part II] IV-D-9) rejected the assumptions used by CAG of no threshold and the validity of the linear model extrapolated toward zero. Other commenters viewed the model as "inherently conservative" and likely to yield an upper limit of the health risks (OAQPS-79-3 [Part I] IV-D-13; A-79-27-IV-D-27; A-80-14-IV-D-10a, IV-D-13).

While EPA agrees that the linear, nonthreshold model is conservative and would tend to provide an upper bound to the statistical range for the unit risk factor, the Agency does not believe that the assumptions upon which it is based are unreasonable or that the results of its use are exaggerated. IRLG agreed that although the mathematical model identifies an upper limit estimate of risk from a statistical standpoint, "[t]he risk estimates as applied to humans should not be regarded as upper limit estimates because of large biological uncertainties."(*2*)

The dose-response model with linearity at low dose has been adopted for low-dose extrapolation by EPA because it has the best, albeit limited, scientific basis of any current mathematical extrapolation model.(*41*) This basis is supported by EPA's conclusions in a Federal Register notice (45 FR 79359; November 28, 1980) announcing the availability of Water Quality Criteria documents. The Agency concluded that, "[t]he linear non-threshold dose-response relationship is . . . consistent with the relatively few epidemiological studies of cancer responses to specific agents that contain enough information to make the evaluation possible . . . There is also some evidence from animal experiments that is consistent with the linear non-threshold hypothesis . . . ."

Commenters argues that, in addition to the conservative nature of the model used, the assumptions made by EPA (CAG) in the derivation of a unit leukemia risk factor for benezene represented "serious misinterpretation" of the underlying epidemiological evidence (OAQPS-79-3 [Part I] IV-D-13, [Part II] IV-F-1, IV-F-9; A-79-27-IV-D-27; IV-D-24; A-80-14-IV-D-10a, IV-D-21). Among the specific criticisms were: CAG (1) inappropriately included in its evaluation of the Infante et al. study two cases of leukemia from outside the cohort, inappropriately excluded a population of workers that had been exposed to benzene, and improperly assumed that exposure levels were comparable with prevailing occupational standards; (2) accepted, in the Aksoy et al. studies, an unreasonable undercount of the background leukemia incidence in rural Turkey, made a false adjustment for age, and underestimated the exposure duration; and (3) included the Ott et al. study in the analysis despite a lack of statistical significance.

As previously discussed in "Health Basis for Listing," EPA has reexamined and reevaluated each of the three studies. In summary, EPA concluded that one case of leukemia was inappropriately included from the Infante et al. study in computing the original unit risk factor. Additionally, EPA reaffirmed its decision to exclude dry-side workers from that study in developing the risk factor. The Agency with the commenters that the Aksoy et al. study was adjusted improperly for age; however, the exposures and durations of exposures are still considered reasonable estimates. The Ott et al. study was not eliminated from the risk assessment because the findings meet the test of statistical significance and because it provides the best documented exposure data available from the three epidemiological studies.

Based on these findings, the unit risk factor (the probability of an individual contracting leukemia after a lifetime of exposure to a benzene concentration of one part benzene per million parts air) was recalculated. The revised estimate resulted in a reduction of about 7 percent from the original estimate of the geometric mean, from a probability of leukemia of 0.024/ppm to a probability of leukemia of 0.022/ppm.

Significance of Estimated Carcinogenic Risks from Benzene Exposure. Based on EPA's estimates of carcinogenic risk or on the alternative calculations submitted to the Agency for consideration, a number of commenters asserted that the risk of developing leukemia from exposure to benzene in the ambient air was too small to warrant regulatory consideration under section 112. Specifically, commenters argued that the regulation of benzene under section 112 would have "no meaningful impact on the occurrence of leukemia in the general population" (OAQPS-79-3 [Part I] IV-D-9, [Part II] IV-F-1, IV-F-9). In support of this position, commenters cited EPA's estimate that roughly 80 percent of ambient benzene emissions were attributable to mobile sources that would not be regulated under section 112 and noted that the number of leukemia cases predicted by the EPA assessment to occur as the result of benzene emissions from stationary source categories represented "less than one-tenth of one percent [of] the normal leukemia mortality risk in the U.S. population, . . . a result so small as to be indistinguishable from a risk of zero" (OAQPS-79-3 [Part I] IV-D-13, [Part II] IV-F-1, IV-F-9; A-79-49-IV-D-9; A-79-27-IV-D-18, IV-D-10, IV-F-1; A-80-14-IV-D-10a, IV-F-1).

Several commenters referenced, as evidence of the insignificance of the ambient benzene risk, the comparable or higher risks associated with activities such as skiing, hunting, and sky diving (OAQPS-79-3 [Part I] IV-D-19) and with involuntary hazards such as drowning

and electrocution (OAQPS-79-3 [Part I] IV-D-13, [Part II] IV-F-1, IV-F-9).

Commenters also maintained that the estimated risks posed by benzene emissions were at or below levels recognized by EPA and other Federal agencies as acceptable goals or targets for regulation (OAQPS-79-3 [Part I] IV-D-13).

EPA does not agree with the commenter's assertions that the health risks posed by benzene emissions from all stationary sources are insignificant or that the regulation of benzene under Section 112 is, therefore, unwarranted. EPA continues to believe that the well-documented evidence of benzene's leukemogenicity, the quantity of stationary source emissions, the observed and estimated ambient concentrations, the proximity of large populations to emitting sources, and the numerical estimates of health risks (including consideration of the uncertainties of such estimates) support the judgement that benzene is an air pollutant that "causes or contributes to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness" (section 112(a)(1) of the Clean Air Act).

With an estimated 9.9 billion pounds (4.5 million megagrams) produced in 1981, benzene ranks 16th among all chemicals in terms of production volume in the United States. (*42*) Benzene is the largest production chemical that has been causally linked to cancer in humans.

EPA estimates that more than 120 million pounds (55,000 megagrams) of benzene are emitted annually to the ambient air from stationary industrial sources. The sources are primarily plants involved in benzene production, other chemical manufacturing, and the storage and distribution of benzene and gasoline. At these sources, benzene is emitted from the process vents, storage tanks, and liquid transfer operations as well as from leaks in process components such as pumps and valves. According to EPA estimates at least 30 to 50 million people live within 20 kilometers of stationary sources (excluding gasoline marketing sources) that emit benzene. Levels of benzene have been monitored in the vicinity of benzene-emitting facilities at levels as high as 350 ppb (1,117 $\mu g/m^3$) with median values of 3.0 ppb (9.6 $\mu g/m^3$). (*43*)

EPA regards benzene emissions from some stationary source categories and potential human exposure to these emissions as significant. The fact that mobile sources emit more benzene than do stationary sources has no bearing on the significance of the benzene emissions from stationary sources, since these sources also emit large quantities of benzene. The fact that specific standards have not been proposed for mobile sources does not imply that the Agency has reached a conclusion on the significance of the health risks associated with these sources. As commenters pointed out, mobile sources are not regulated under section 112, but under Title II of the Clean Air Act. A control technology applicable for benzene emissions from mobile sources, as for other hydrocarbon compounds, is installation of a catalytic converter. In fact, benzene emissions from mobile sources are reduced substantially (along with other hydrocarbon compounds) by catalytic converters, installed in response to standards established under Title II of the Clean Air Act. EPA projects that by 1985, mobile source benzene emissions will have been reduced by 69 percent compared with those in the baseline year when the Clean Air Act was enacted (1970), and by 1990 they will have been reduced by 83 percent.

EPA disagrees that benzene does not warrant regulation because such regulation will not have a meaningful impact on the occurrence of leukemia in the general population. Except for established causal relationships with benzene and certain hereditary factors, the causes of leukemia are not known. Because it is estimated that only a small proportion of leukemias may, at present, be preventable does not argue that reasonable control measures should not be taken.

Furthermore, EPA does not agree that the presence of other unregulated or tolerated health risks, equal or greater in magnitude than those estimated for benzene exposure, obviates the need for regulation. Activities such as hunting and skiing are essentially voluntary in nature with well-advertised risks. The risk of someone being struck by lightning, while largely involuntary, would be difficult to reduce effectively. For benzene, however, a large component of the health risk is involuntary. At the same time, reasonable actions are available that can reduce the risks from benzene exposure. EPA questions the appropriateness of weighing risks that are accepted voluntarily or that have little opportunity for mitigation against risks largely beyond the individual's control but for which societal remedies are readily available.

Finally, commenters have chosen to make comparisons based on the "average" lifetime risks or the expected number of leukemia cases attributable to benzene emissions, arguing that an "average" lifetime risk of leukemia from ambient levels of benzene of 1 per 100,000 (10^{-5}) does not constitute a significant hazard and has, in fact, been accepted by EPA and other Federal agencies as an appropriate goal for regulation. Aside from the technical and philosophical difficulties inherent in the selection and verification of such goals described above, EPA has not selected a specific "goal" for carcinogenic risks from hazardous air pollutants and, further, disagrees with the choice of the "average" lifetime risk as an appropriate measure of individual risk. EPA believes that the determination that a substance poses a significant health risk via the ambient air must include consideration of the magnitude of the hazard to those individuals and subpopulations most expose to emissions of the substance. In the case of benzene, the estimated maximum lifetime risks for these populations are generally higher than are "average" risks cited by commenters. Current EPA estimates for the most exposed individuals living in the vicinity of source categories for which standards are being developed range from a leukemia risk of 150 per 100,000 for benzene fugitive sources to 640 per 100,000 for coke by-product plants (OAQPS A-79-16). The reader should recognize that any time leukemia risk numbers are cited, they are subject to considerable uncertainty. These uncertainties are explained in the next section of this preamble, titled "Selection of Benzene Source Categories for Regulations."

In conclusion, EPA continues to believe that benzene emissions from some stationary source categories represent a significant risk of leukemia to exposed populations, particularly to those individuals and subpopulations residing near major point sources. This belief rests on the documented evidence that benzene is a human leukemogen, on the magnitude of benzene emissions to the ambient air, on the observed and estimated ambient concentrations, on the proximity of large populations to emitting sources, and on estimates of the health risks to exposed populations, including consideration of the uncertainties associated with quantitative risk estimates (including the effects of concurrent exposures to other substances and to other benzene emissions).

Thus, EPA still believes that the listing of benzene on June 8, 1977, was appropriate and that delisting is inappropriate. The evidence submitted by commenters is judged insufficient to

support a conclusion that ambient levels of benzene do not pose carcinogenic risks or that the risks posed by benzene emitted by all stationary source categories are insignificant.

Other Issues Relevant to Listing of Benzene

Several commenters asserted that the listing of benzene was unnecessary in view of the "network of regulatory programs already put into effect to control ambient benzene exposures," thus taking benzene out of the statutory definition of "hazardous air pollutant" under section 112 (OAQPS-79-3 [Part I] IV-D-10, IV-D-13, [Part II] IV-F-1, IV-F-9; A-79-49 IV-D-10, IV-F-1, IV-F-2; A-80-14-IV-D-13, IV-D-10a, IV-F-1).

The regulatory programs to which the commenters refer were put into effect to attain and maintain the national ambient air quality standard (NAAQS) for ozone, not to control ambient benzene exposures. The health effects from exposure to ozone are very different from the health effects from exposure to benzene; ozone-caused health effects are serious, but there is no evidence that exposure to ozone causes cancer. Therefore, no scientific or technical basis exists for believing that attaining and maintaining NAAQS for ozone will ensure that the public is amply protected from benzene exposure.

It is true that controlling VOC emissions to attain and maintain the ozone standard often results in a degree of control over benzene emissions, because benzene is often emitted with the VOC's being controlled. EPA did not, as one commenter suggests, "ignore" this fact. The effectiveness of existing State standards and control devices in place for any other reason has been considered when emissions from existing plants have been estimated. In fact, the amount of control currently in place for three benzene source categories for which standards were previously proposed, maleic anhydride and EB/S process vents and benzene storage vessels, is relevant to the Agency's proposed conclusion that benzene emissions from these source categories no longer warrant federal regulatory action. One cannot reasonably assume, however, that the extent and stringency of the control of VOC emissions equates to adequate control of all benzene emissions nationwide. For example, the State regulations that control VOC emissions are federally required only for areas of the State where they are needed to attain and maintain the ozone standard; in areas of the State where such regulations are required, the regulations need be applied only to enough VOC sources with enough regulatory stringency to attain and maintain the ozone standard. Such regulations do not necessarily control all stationary benzene sources adequately. Consequently, the Agency disagrees with the commenters' assertions that existing regulatory programs for ozone/VOC's make it unnecessary to regulate any benzene sources.

Commenters suggested that EPA should adopt an acceptable carcinogenic risk target for benzene and other airborne carcinogens, citing precedents in other EPA and Federal rulemakings (OAQPS-79-3) [Part I] IV-D-13, [Part II] IV-F-1, IV-F-9; A-79-49 IV-F-1, IV-F-2).

EPA agrees that it can identify a lower *range* of risk estimates (incidence and maximum risk) where it is judged that the health risks do not pose such a public health problem as to warrant federal regulation. This, in conjunction with other factors such as achievable emissions and health risk reductions, can convince the Administrator that a source category is not appropriate to regulate under section 112. This is the case for the proposed withdrawal of the proposed benzene standards for maleic anhydride and EB/S process vents and benzene storage vessels.

Selection of Benzene Source Categories for Regulation

EPA proposed standards for four source categories of benzene emissions: maleic anhydride process vents, ethylbenzene/styrene process vents, fugitive emission sources, and benzene storage vessels. A standard will be proposed for a fifth source category, coke by-product plants. Comments submitted on each of the four proposed standards contended that each of the source categories regulated does not pose a significant risk to public health and therefore does not warrant regulation (OAQPS-79-3 [Part II] IV-D-9, IV-D-22, IV-F-1, IV-F-9; A-79-27 IV-D-24, IV-D-27, IV-D-28, IV-F-1, IV-K-1; A-79-49 IV-D-7, IV-D-10, IV-D-12; A-80-14 IV-D-10a, IV-D-13, IV-D-16, IV-F-1). Similar preproposal comments have been received on the coke by-product source category. Arguments advanced in support of this position include the relative insignificance of stationary source emissions of benzene versus mobile source emissions; the low level of estimated benzene risks compared to other public health risks; and the negligible impact of benzene control on the total U.S. leukemia incidence. EPA's response to these comments appears in the section entitled "Significance of the Estimated Carcinogenic Risks from Benzene Exposures." Additionally, commenters maintained that, even if the source categories regulated could be considered significant at proposal, emissions from these source categories are now actually much lower than projected at proposal and, thus, no longer pose significant risk.

Selection of Five Source Categories for Initial Regulation

Following the listing of benzene as a hazardous air pollutant, EPA divided the stationary sources of benzene emissions into 12 source categories. After evaluating these 12 source categories, EPA selected five source categories of benzene for initial regulation: process vents at maleic anhydride and EB/S plants, benzene fugitive emission sources, benzene storage vessels, and coke by-product plants.

EPA is collecting additional data on the remaining seven source categories to use in deciding whether or not standards development is warranted for them.

Proposal of Standards: Significant Risk Judgment

The information used in selecting the five source categories for initial regulation was preliminary information, based on screening studies of the identified source categories. During standards development prior to proposal, EPA gathered more detailed and refined information. The new information necessitated revisions in emissions estimates for the five source categories with some estimates increasing and others decreasing. Examples of the information used to upgrade emissions estimates include emissions test data, updated status on the number of operating plants, and more precise information on the control devices already installed on these plants.

In addition to upgrading the emissions estimates, EPA used the more precise emissions data to revise the quantitative risk estimates. At the time that standards for maleic anhydride process vents, EB/S process vents, benzene fugitive emissions sources, and benzene storage vessels were proposed, EPA made a judgment that the emissions from each of these source categories pose a significant leukemia risk. EPA based this judgment on the upgraded emissions and risk estimates available at that time.

Table I presents information for each source category, based on the emissions status of that source category at the time the standards were proposed. The

uncertainties in the risk estimates are described in the following paragraphs.

The ranges of maximum lifetime risk and annual leukemia incidence at proposal presented in Table I represent the uncertainty of estimates concerning benzene concentrations to which workers were exposed in the occupational studies of Infante, Aksoy, and Ott that served as the basis for developing the benzene unit risk factor. The ranges presented in this table represent 95 percent confidence limits on two sources of uncertainty in the benzene risk estimates. One source derives from the variations in dose/response among the three occupational studies upon which the benzene unit risk factor is based. A second source involves the uncertainties in the estimates of ambient exposure. In the former case, the confidence limits are based on the assumption that the slopes of the dose/response relationships are unbiased estimates of the true slope and that the estimates are log normally distributed. In the latter case, the limits are based on the assumption that actual exposure levels may vary by a factor of two from the estimates obtained by dispersion modeling (assuming that the source-specific input data are accurate).

TABLE I. BASELINE IMPACTS OF BENZENE SOURCE CATEGORIES AT PROPOSAL AND NOW

Standard	Benzene emissions (Mg/year)	Benzene and other VOC emissions (Mg/year)	Number of affected plants	Maximum lifetime risk[2 3]	Leukemia incidence/year [1 3] (Cases per year)
Benzene Fugitive					
At proposal	8,300	13,200	130	1.7×10^{-4} to 1.2×10^{-3}	0.15 to 1.1
Current	7,900	12,600	128	1.5×10^{-3}	0.45
Maleic Anhydride					
At proposal	5,800	7,400	7 (5)[4]	2.3×10^{-4}	0.46
Current	960	1,250	7 (1)[4]	7.6×10^{-5}	0.029
Ethylbenzene/Styrene					
At proposal	2,400	6,240	13 (12)[4]	6.2×10^{-4} to 4.4×10^{-3}	0.027 to 0.20
Current	210	330	13 (3)[4]	1.4×10^{-4}	0.0057
Benzene Storage					
At proposal	2,200	2,200	126	1.5×10^{-4} to 1.0×10^{-3}	0.12 to 0.82
Current	620	620	126	3.6×10^{-5}	0.043

Footnotes for Table I.

[1]Within 20 kilometers of plant.

[2]Maximum lifetime risk is the estimated probability that the people exposed continuously for 70 years to the highest maximum annual average ambient concentration of benzene will contract leukemia as a result of that exposure.

[3]The ranges of maximum lifetime risk and annual leukemia incidence at proposal presented in this table represent the uncertainty of estimates concerning benzene concentrations to which workers were exposed in the occupational studies of Infante, Aksoy, and Ott that served as the basis for developing the benzene unit risk factor. The ranges presented in this table represent 95 percent confidence limits on two sources of uncertainty in the benzene risk estimates. One source derives from the variations in dose/response among the three occupational studies upon which the benzene unit risk factor is based. A second source involves the uncertainties in the estimates of ambient exposure. In the former case, the confidence limits are based on the assumption that the slopes of the dose/response relationships are unbiased estimates of the true slope and that the estimates are lognormally distributed. In the latter case, the limits are based on the assumption that actual exposure levels may vary by a factor of two from the estimates obtained by dispersion modeling. Several other uncertainties are associated with the estimated health numbers and are not quantified here. EPA has extrapolated the leukemia risks identified for occupationally exposed populations (generally healthy, white males) to the general population for whom susceptibility to a carcinogenic insult could differ. The presence of more or less susceptible subgroups within the general population would result in an occupationally-derived risk factor that may underestimate or overestimate actual risks. To the extent that there are more susceptible subgroups within the general population, the maximum individual lifetime risks are underestimated.

On the other hand, general population exposures to benzene are much lower than those experienced by the exposed workers in the occupational studies, often by several orders of magnitude. In relating the occupational experience to the general population, EPA has applied a linear, nonthreshold model that assumes that the leukemia response is linearly related to benzene dose, even at very low levels of exposure. There are biological data supporting this approach, particularly for carcinogens. However, there are also data which suggest that, for some toxic chemicals, dose/response curves are not linear, with response decreasing faster than dose at low levels of exposure. At such levels, the nonlinear models tend to produce smaller risk factors than the linear model. The data for benzene do not conclusively support either hypothesis. EPA has elected to use the linear model for benzene because this model is generally considered to be conservative compared to the nonlinear alternatives. This choice may result in an overestimate of the actual leukemia risks.

EPA estimates ambient benzene concentrations in the vicinity of emitting sources through the use of atmospheric dispersion models. EPA believes that its ambient dispersion modeling provides a reasonable estimate of the maximum ambient levels of benzene to which the public could be exposed. The models accept emission estimates, plant parameters, and meteorology as inputs and predicts ambient concentrations at specified locations, conditional upon certain assumptions. For example, emissions and plant parameters often must be estimated rather than measured, particularly in determining the magnitude of fugitive emissions and where there are large numbers of sources. This can lead to overestimates or underestimates of exposure. Similarly, meteorological data often are not available at the plant site but only from distant weather stations that may not be representative of the meteorology of the plant vicinity.

EPA's dispersion models normally assume that the terrain in the vicinity of the sources is flat. For sources located in complex terrain, this assumption would tend to underestimate the maximum annual concentration although estimates of aggregate population exposure would be less affected. On the other hand, EPA's benzene exposure models assume that the exposed population is immobile and outdoors at their residence, continuously exposed for a lifetime to the predicted concentrations. To the extent that benzene levels indoors are lower and that people do not reside in the same area for a lifetime, these assumptions will tend to overpredict exposure.

Upon reconsideration, EPA has concluded that the presentation of the risk estimates as ranges does not offer significant advantages over the presentation as the associated point estimates of the risk. Further, the proposal ranges for benzene make risk comparisons among source categories more difficult and tend to create a false impression that the bounds of the risks are known with certainty. For these reasons, the benzene risks in this rulemaking are presented as point estimates of the leukemia risk. EPA believes that these risk numbers represent plausible, if conservative, estimates of the magnitude of the actual human cancer risk posed by benzene emitted from the source categories evaluated. For comparison, the proposal ranges may be converted into rough point estimates by multiplying the lower end of the range by a factor of 2.6.

[4]Includes all plants; number in parenthesis denotes number of plants with uncontrolled emissions which would be controlled by the standard

Several other uncertainties are associated with the estimated health numbers and not quantified in the proposal ranges in Table I. EPA has extrapolated the leukemia risks identified for occupationally exposed populations (generally healthy, white males) to the general population for whom susceptibility to a carcinogenic insult could differ. The presence of more or less susceptible subgroups within the general population would result in an occupationally-derived risk factor that may underestimate or overestimate actual risks. To the extent that there are more susceptible subgroups within the general population, the maximum individual lifetime risks are underestimated.

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Post-Proposal Review of Significant Risk Judgment

Some commenters on the proposed standards indicated that benzene emissions were actually much lower than estimated at proposal, citing factors such as increased controls, plant closures, reduced production capacity, and lower emission factors. In support of their contentions, they submitted detailed plant-specific information and results of emission test programs.

Based on this updated information, EPA has revised benzene emissions for the various source categories (see Table I). The maleic anhydride emissions estimates now include consideration of all new controls, plant closures, and changes in feedstock. The EB/S emissions estimates are those provided by the industry, based on plant-specific information. (In addition, EPA-assumed flare efficiency has been revised to 98 percent from 60 percent.) New benzene emission factors have been developed for benzene storage tanks and refined for benzene fugitive sources.

Based on these revised emissions estimates, EPA reconsidered whether benzene emissions from maleic anhydride process vents, EB/S process vents, benzene fugitive emission sources, and benzene storage vessels still warrant Federal regulation under Section 112. The factors considered by EPA are described in the following paragraphs. (The selection of coke by-product recovery plants for regulation is discussed in the preamble to the proposed standard for that source category and is not discussed further here).

Benzene fugitive emissions, which are not substantially different than they were when judged to be significant at proposal, contribute 7,900 Mg/yr; this figure reflects currrent controls. (EPA adjusted the control level for petroleum refineries in nonattainment areas to reflect controls required by States in accordance with EPA's Control Techniques Guideline (CTG) document. This adjustment reduced emissions, but the reduction was offset to some extent by refinements in emissions factors.) Approximately 20 to 30 million people live within 20 kilometers of the 128 plants with these fugitive emissions. These people are exposed to higher levels of benzene than is the general population. Due to the lack of a demonstrated threshold for benzene's carcinogenic effects, these people not only incur a higher benzene exposure but also run greater risk of contracting leukemia due to that exposure.

EPA revised the quantitative risk assessments for this source category based on the updated emissions estimates, the revised risk factor, and the more detailed SAI human exposure model. The lifetime risk of contracting leukemia for the most exposed individuals is estimated to be about 1.5×10^{-3} for benzene fugitive emission sources, and the increased leukemia incidence as a result of exposure to the current fugitive emissions is estimated to be about 0.45 cases per year. As explained earlier in this section, there is considerable uncertainty associated with the calculation of leukemia incidence and maximum lifetime risk numbers.

The number of process units emitting benzene fugitive emissions is anticipated to grow from about 240 to 310 units. These new sources probably would increase the number of people exposed to benzene emitted from this

source category and increase the estimated leukemia incidence accordingly.

Based on the human carcinogenicity of benzene, the magnitude of benzene fugitive emissions, the estimated ambient benzene concentrations in the vicinity of the plants with fugitive emissions, the proximity of people to these plants, the resulting estimated maximum individual risks and estimated incidence of leukemia cases in the exposed population, the projected increase in benzene emissions as a result of new sources, the estimated reductions in emissions and health risks that can be achieved, and consideration of the uncertainties associated with the quantitative risk estimates (including effects of concurrent exposures to other substances and to other benzene emissions), EPA finds that benzene emissions from benzene fugitive emission sources pose a significant cancer risk and that the establishment of a national emission standard under Section 112 is warranted. These factors will be discussed in more detail in the forthcoming document, "Benzene Fugitive Emissions—Background Information for Promulgated Standards," EPA-450/3-80-032b.

Several other factors were also considered which support this finding. First, if no standards were promulgated, several existing plants would remain uncontrolled or poorly controlled. Some benzene fugitive emissions sources are located in nonattainment areas and are controlled to some extent in accordance with the CTG; others are in attainment areas where no control is required. Control techniques are readily available to reduce uncontrolled emissions from benzene fugitive emission sources at reasonable costs. Second, nationwide standards would ensure that existing sources are controlled on a continuing basis. Third, if no standard were promulgated, new sources could remain uncontrolled or poorly controlled, thereby increasing cancer risks.

The revised estimated baseline emission and health impacts for maleic anhydride and EB/S process vents and benzene storage vessels have decreased significantly since proposal of the standards for these source categories. These impacts are presented in Table I. Because of this decrease and the small additional reduction in health risks that could be achieved, the Agency has concluded that these source categories no longer warrant federal regulation under section 112. The basis for this decision is discussed in an accompanying **Federal Register** notice that proposes withdrawal of the proposed benzene standards for these three source categories.

Docket

The dockets are organized and complete files of all the information submitted to, or otherwise considered by, EPA in the development of this proposal. The principal purposes of the docket are to allow interested parties to effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review except for interagency review materials [307(d)(7)(A)].

Miscellaneous

This proposal was submitted to the Office of Managment and Budget (OMB) for review as required by Executive Order 12291. Any comments from OMB to EPA responses to those comments are available for inspection in Docket Number OAQPS-79-3 (maleic anhydride), A-79-49 (EB/S), or A-80-14 (benzene storage), Central Docket Section, at the address given in the **ADDRESSES** section of this preamble.

References

(1) Safe Drinking Water Committee, National Research Council, "Drinking Water and Health," National Academy of Sciences, Washington, D.C., 1977.

(2) Picciano, D. "Monitoring Industrial Populations by Cytogenetic Procedures" in *Proceedings of a Workshop on Methodology for Assessing Reproductive Hazards in the Workplace*, P. F. Infante and M. S. Legator, eds. April 19–22, 1978.

(3) Kilian, D. J., and Daniel, R. C. "A Cytogenetic Study of Workers Exposed to Benzene in the Texas Division of Dow Chemical, U.S.A." February 27, 1978.

(4) National Academy of Sciences–National Research Council "Health Effects of Benzene: A Review" for U.S. EPA (EPA-560/5-76-003).

(5) National Institute for Occupational Safety and Health "Update Criteria and Recommendations for a Revised Benzene Standard," September 1976.

(6) U.S. EPA "Assessment of Health Effects of Benzene Germane to Low-Level Exposures," Office of Health and Ecological Effects, Office of Research and Development. September 1978 (EPA-600/1-78-061).

(7) U.S. EPA, "Assessment of Human Exposures to Atmospheric Benzene," Office of Air Quality Planning and Standards, June 1978. EPA-450/3-78-031.

(8) U.S. EPA, "Carcinogen Assessment Group's Final Report on Population Risk to Ambient Benzene Exposures," Roy Albert, Chairman, Carcinogen Assessment Group, January 10, 1979 (EPA-450/5-80-004).

(9) Picciano, D. "Cytogenetic Study of Workers Exposed to Benzene," *Env. Res.* *19*:33–38, 1979.

(10) Bloom, A. D., Y. Nakagone, A. Awa, and S. Neriishi, "Chromosome aberrations and malignant disease among A-bomb survivors," *Am. J. Public Health*, *60*:641–644, 1970.

(11) Mulvihill, J. J. In *Persons at High Risk of Cancer*, ed. Fraumeni, J. F., Jr., Academic Press, N.Y., 1975, pp 3–37.

(12) Maltoni, C., and C. Scarnato, "First Experimental Demonstration of the Carcinogenic Effects of Benzene," Estratto da "La Medicina del Lavoro" *70*:5, 1979.

(13) Snyder, Carroll A. et al. "The Inhalation Toxocology of Benzene: Incidence of Hematopoietic Neoplasms and Hematotoxicity in AKR/J and C57BL/6J Mice" Tox. and Appl. Pharm. *54*:323–331, 1980.

(14) Infante, P. F., R. Rinsky, J. Wagoner, and R. Young, "Leukemia in Benzene Workers," Lancet, 2:76–78, 1977a.

(15) Aksoy, M., S. Erdem, and G. Dincol, "Types of Leukemia in Chronic Benzene Poisoning, A Study in Thirty-Four Patients. Acta Hematol. *55*:65–72, 1976.

(16) Ott, M. G., J. C. Townsend, W. A. Fishback, and R. A. Langner, "Mortality Among Individuals Occupationally Exposed to Benzene," Exhibit 154, OSHA Benzene Hearings, July 19–August 10, 1977.

(17) Rinsky, R. A., R. Young, and A. Smith, "Leukemia in Benzene Workers," American Journal of Industrial Medicine, *2*:217–245, 1981.

(18) Occupational Safety and Health Administration, Docket #H-059, Occupational Exposure to Benzene, Proposed Standard, Transcript of Public Hearing, July 19–August 10, 1977b.

(19) Supreme Court of the United States. *Industrial Union Department v. American Petroleum Institute et al.*, 448 U.S. 607 (1980).

(20) Infante, P. F., R. Rinsky, J. Wagoner, and R. Young, "Benzene and Leukemia," Lancet, October 22, 1977b.

(21) White, M. C., P. Infante, and B. Walker, Jr. "Occupational Exposure to Benzene: A Review of Carcinogenic and Related Health Effects Following the U.S. Supreme Court Decision," Am J. Indust. Med., *1*:233–243, 1980.

(22) Environmental Survey. Occupational Health Study Group, University of North Carolina, School of Public Health, 1974.

(23) International Agency for Research on Cancer, Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, 29:93–148, May 1982.

(24) Aksoy, M. K. Dincol, T. Akgun, E. Erdem, and G. Dincol, "Haematological effects of chronic benzene poisoning in 217 workers," Br. J. Ind. Med, *28*:296–302, 1971.

(25) Aksoy, M. K. Dincol, S. Erdem, and G. Dincol, "Acute leukemia due to chronic exposure to benzene," Am. J. Med., *52*:160–166, 1972.

(26) Aksoy, M., S. Erdem, and G. Dincol, "Leukemia in shoeworkers exposed chronically to benzene," Blood, *44*(6):837–841, 1974.

(27) U.S. Department of Labor, Bureau of the Census, "County Demographic Profiles, Turkey," ISP-DP-25, August 1980.

(28) Thorpe, J. J. "Epidemiologic survey of leukemia in persons potentially exposed to benzene," J. Occup. Med. *16*(6):375–382, 1974.

(29) Brown, S. "Letter to the editor concerning Thorpe article or leukemia and potential benzene exposure," JOM *17*(1):5–6, 1975.

(30) Fiaklow, P. J. "The origin and development of human tumors: studies with cell markers," New Eng. J. Med. *291*:26–35, 1974.

(31) Gartler, S. M. "Utilization of mosaic systems in the study of the origin and progression of tumors" in *Chromosomes and Cancer*, J. German, ed. Wiley Interscience, New York, p. 313–334, 1974.

(32) Strong, L. C. "Susceptible subgroups," presented at NIEHS Conference on the Problems of Extrapolating the Results of Laboratory Animal Data to Man and of Extrapolating the Results from High-Dose Level Experiments to Low Dose Level Exposures, Pinehurst, N.C., March 10–12, 1976.

(33) Cottier, H., M. W. Hess, H. U. Keller, P. Luscieti, and B. Sordat "Immunological deficiency states and malignacy," In: *Interaction of Radiation and Host Immune Defense Mechanisms in Malignancy*. Proceedings of a conference at Greenbrier, W. Va., March 1974, p. 30–44.

(34) Rickert, D., and R. Irons (oral statements) from U.S. EPA, "Public Hearing: National Emission Standards for Hazaradous Air Pollutants: Benzene Emissions from Maleic Anhydride Plants," August 21, 1980 (Transcript pp. 5–24).

(35) Goldstein, B. "Hematotoxicity in Man," *A Critical Evaluation of Benzene Toxicity*, S. Laskin, and B. Goldstein, ed., 1977, p. 105.

(36) Goldstein, p. 165.

(37) Vigliani, E. C., and A. Forni, "Benzene, chromosome changes, and leukemia," J. Occup. Med. *11*:148–149, 1969.

(38) Tabershaw Cooper Associates, *A Mortality Study of Petroleum Refinery Workers Project OH–1* (1974) (OSHA Benzene Record, Ex. 2–59).

(39) Stallones, R. A., and D. Syblik, *Report on Mortality from Leukemia* (1977) (OSHA Benzene Record, Ex. 115, C.2).

(40) National Cancer Advisory Board, "General Criteria for Assessing the Evidence for Carcinogenicity of Chemical Substances: Report of the Subcommittee on Environmental Carcinogens," J.N.C.I. *58*:461–465, 1977.

(41) Crump, K., D. Hoel, C. Langley, and R. Peto, "Fundamental carcinogenic processes and their implications for low-dose risk assessment," Cancer Res. *36*:9, pp. 2973–2979, 1976.

(42) Chemical and Engineering News, May 3, 1978, p. 11.

(43) U.S. EPA, "Volatile Organic Chemicals in the Atmosphere: An Assessment of Available Data" Office of Research and Development, 1983 (EPA–600/3–83–027(A)).

Dated: May 23, 1984.

William D. Ruckelshaus,

Administrator.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

[FR Doc. 84–14478 Filed 6–5–84; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2538-4]

National Emission Standards for Hazardous Air Pollutants; Benzene Equipment Leaks (Fugitive Emission Sources)

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) listed benzene as a hazardous air pollutant under Section 112 of the Clean Air Act on June 8, 1977 (42 FR 29332). A standard was subsequently proposed for benzene fugitive emission sources (46 FR 1165, January 5, 1981). This **Federal Register** notice responds to comments on and promulgates the standards for benzene fugitive emission sources.

EFFECTIVE DATE: June 6, 1984. Under section 307(b)(1) of the Clean Air Act, judicial review of national emission standards for hazardous air pollutants (NESHAP) is available *only* by filing a petition for review in the United States Court of Appeals for the District of Columbia circuit within 60 days of today's publication of these rules. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements. The director of the **Federal Register** approves the incorporation by reference of certain publications in 40 FR effective on June 6, 1984.

ADDRESSES: *Background Information Documents.* The background information documents (BID's) may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. For background information on today's promulgated standard, please refer to "Benzene Fugitive Emissions—Background Information for Promulgated Standards," EPA-450/3-80-032b. The BID for the promulgated standard contains: (1) A summary of all public comments on the proposed standard and the Administrator's response to the comments; (2) a summary of changes to the standard since proposal; and (3) the final environmental impact statement (EIS), which summarizes the impacts of the standard.

Dockets. Docket No. A-79-27 contains technical information considered in developing the promulgated standard for benzene fugitive emissions. Docket No. OAQPS 79-3 (Part I) contains information considered on the health effects, listing, and regulation of benzene. These dockets are available for public inspection between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section (LE-131), West Tower Lobby, Gallery 1, 401 M Street, S.W., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: For further information concerning the background technical information supporting the promulgated standard, contact Mr. James F. Durham, Chemicals and Petroleum Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5671. For further information on the regulation of benzene and the promulgated standard, contact Mr. Gilbert H. Wood, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

SUPPLEMENTARY INFORMATION:

Background Information on Health Effects of Benzene

On June 8, 1977, the Administrator announced his decision to list benzene as a hazardous air pollutant under section 112 of the Clean Air Act (42 FR 29332). Supplementary background information regarding the health effects and listing of benzene as a hazardous air pollutant may be obtained from Docket No. OAQPS-79-3 (Part I). A public hearing was held on August 21, 1980, to discuss the health effects and listing of benzene as a hazardous air pollutant. Comments were received and EPA's responses are detailed in the EPA document, "Response to Public Comments on EPA's listing of Benzene Under section 112" (EPA-450/5-82-003).

Summary of the Standard

The standard applies to certain new and existing equipment in benzene service (i.e., equipment containing materials with a benzene concentration of 10 percent or more by weight) except those located in process units that produce benzene or benzene mixtures at coke by-product plants or at plant sites that are designed to produce or use benzene in quantities of 1,000 megagrams per year (Mg/yr) or less. Equipment covered by the standard includes new and existing valves, pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, pipeline flanges, product accumulator vessels, and closed vent systems and control devices used to comply with the standard. The standard includes work practices and other requirements as provided by section 112(e) of the Clean Air Act and discussed in the preamble to the proposed rule (46 FR 1177). Permission to use any alternative means of emission limitation will be granted after a notice is published in the **Federal Register** and an opportunity for a public hearing.

Valves. A monthly leak detection and repair program is required by the standard for valves in gas or liquid service. However, EPA will allow quarterly monitoring for valves that have been found not to leak for 2 successive months. This is monthly/quarterly leak detection and repair. Leak detection is to be performed with a portable organic vapor analyzer according to Reference Method 21 (see Appendix A of 40 CFR Part 60). If a reading of 10,000 ppm or greater of organic materials is obtained, a leak is detected. Initial repair of the leak must be attempted within 5 days, and the repair must be completed within 15 days.

Since proposal, provisions for difficult-to-monitor and unsafe-to-monitor valves have been added to the standard for valves. For existing valves, the standard has been changed to allow an annual leak detection and repair program for valves that are difficult to monitor. Valves that are difficult to monitor are defined as valves that would require elevating the monitoring personnel more than 2 meters above any permanent available support surface. This means valves that cannot be safely monitored by the use of step ladders could be classified as difficult to monitor.

In addition, some valves are unsafe to monitor. Valves that are unsafe to monitor cannot be eliminated in new or existing units. The final standard has been changed to allow an owner or operator to submit a plan that defines a leak detection and repair program conforming with the routine monitoring requirements of the standard as much as possible, with the understanding that monitoring should not occur during unsafe conditions. Valves that are unsafe to monitor are defined as those valves that could, as demonstrated by the owner or operator, expose monitoring personnnel to imminent hazards from temperature, pressure, or

explosive process conditions. EPA expects very few unsafe-to-monitor valves in benzene service.

At proposal, two alternative standards were presented for valves in gas/vapor and liquid service. Both of these alternatives called for 1 year of monthly monitoring to obtain data on which to base the alternative standard. However, since proposal, the two alternative standards have been changed in response to comments concerning the need to collect data.

The first alternative standard specifies a 2 percent limitation as the maximum percent of valves leaking within a process unit, determined by a minimum of one performance test annually. This alternative provides the flexibility of a performance level that could be met by implementing any type of leak detection and repair program and engineering controls chosen at the discretion of the owner or operator. If the results of a performance test show a percentage of valves leaking higher than 2 percent, however, the process unit would not be in compliance with the standard. Finally, if owners or operators determine that they no longer wish to comply with this alternative standard, they must submit a notification in writing to EPA stating that they will comply with the monthly/quarterly leak detection and repair program.

The second alternative standard specifies two statistically-based skip-period leak detection and repair programs. Under skip-period leak detection, an owner or operator can skip from routine monitoring (monthly/quarterly monitoring) to less frequent monitoring after completing a number of consecutive monitoring intervals with performance levels less than 2 percent. This approach provides that the performance level is achieved for each skipped period with better than 90 percent certainty. Based on this skip-period approach, two sets of consecutive periods and fraction of periods skipped were determined for benzene process units. First, after two consecutive quarterly periods with fewer than 2 percent of valves leaking, an owner or operator may skip to semiannual monitoring. Second, after five consecutive quarterly periods with fewer than 2 percent of valves leaking, an owner or operator may skip to annual monitoring. This alternative standard also requires that, if a process unit exceeds the 2 percent of valves leaking, the owner or operator must revert to the monthly/quarterly leak detection and repair program. Compliance with this alternative standard would be determined by inspection and review of records.

The delay of repair provisions for valves have been expanded in the final standard. In the proposed standard, delay of repair was allowed where repair is technically or physically infeasible without a process unit shutdown. In addition to the provision already in the proposed standard, several provisions have been added to the final standard. One added provision allows for delay of repair beyond a process unit shutdown for valves when unforeseeable circumstances deplete valves used for repair. Another provision has been added to allow delay of repair for valves if the owner or operator shows that leakage of purged material during repair is greater than the equipment leaks that are likely to result from delay of repair. EPA expects this provision to be used seldom.

A definition of "process unit shutdown" has been added to the standard to avoid extended delays in returning a process unit to production if the unit shuts down briefly due to unforeseen circumstances. Delay of repair beyond an unforeseen process unit shutdown will be allowed if the shutdown is less than 24 hours in duration. Repair of leaking equipment for which repair has been delayed would be required at the next process unit shutdown.

As part of the delay of repair requirements, EPA is clarifying its intent for spare equipment that does not remain in benzene service. Delay of repair of equipment for which leaks have been detected will be allowed if the equipment is isolated from the process and no longer contains benzene in concentrations greater than 10 percent. The equipment purge must be destroyed or recovered in a system that complies with the requirements discussed in the *Closed-vent systems and control devices* portion of this section of the preamble.

Pumps. A monthly leak detection and repair program is required by the standard for benzene-handling pumps in liquid service. Leak detection is to be performed with a portable organic vapor analyzer according to Reference Method 21. If a reading of 10,000 ppm or greater of organic materials is obtained, a leak is detected. Initial repair of the leak must be attempted within 5 days, and the repair must be completed within 15 days. Delay of repair will be allowed for pumps that cannot be repaired without a process unit shutdown. Delay of repair, up to 6 months after detecting a leak, is also allowed when the plant owner or operator determines that repair of the pump requires using a dual mechanical seal system. Delay of repair is not expected to be needed for most situations, however, because pumps are commonly spared.

At proposal, EPA required a monthly leak detection and repair program for existing pumps but required the installation of dual mechanical seal systems for new pumps. Since proposal, as discussed in the *Selection of the Final Standard* section of this preamble, EPA analyzed the annualized cost of controlling benzene emissions and the resultant emission reduction for each alternative control technique. Based on comparison of costs and emission reductions, including estimates of exposures to benzene, EPA selected the work practice standard (leak detection and repair) for new as well as existing pumps. However, EPA is allowing the use of dual mechanical seal systems in the final standard. If an owner or operator prefers, he or she may comply with the equipment standard. The details or provisions of the equipment standard have not been changed since proposal.

Compressors. The standard for new and existing compressors requires the use of mechanical seals with barrier fluid systems and controlling degassing vents. The controlling degassing vents must use a closed-vent system and a control device that complies with the requirements as discussed in the *Closed-vent systems and control devices* portion of this section of the preamble. For existing compressors, EPA proposed a monthly leak detection and repair program. Since proposal, EPA reconsidered the selection of the final standard and concluded that the installation of control equipment is the only viable control technique for compressors.

Pressure relief devices. The use of control equipment (rupture disk systems or closed-vent systems to flares) is the basis for the standard for pressure relief devices in gas service. For control techniques that eliminate equipment leaks, such as the use of rupture disk systems, an emission limit measurement for "no detectable emissions" can be established. An instrument reading of less than 500 parts per million by volume (ppmv) above a background concentration based on Reference Method 21 will be used to indicate whether equipment leaks have been eliminated.

The "no detectable emission" limit will not apply to discharges through the pressure relief device during overpressure relief because the function of relief devices is to discharge process

fluid, thereby reducing dangerous high pressures within the equipment. The standard specifies, however, that the relief device be returned to a "no detectable emissions" status within 5 days after such a discharge. The standard further requires an initial and annual test to verify the "no detectable emissions" status of the pressure relief devices.

Plant owners or operators may also comply with this standard by connecting pressure relief devices in gas service to a system that complies with the requirements as discussed in the *Closed-vent systems and control devices* portion of this section of the preamble. Since proposal, the use of flares has been allowed as an alternative control device in the final standard. EPA judges that the added emission reduction achieved by reducing the emissions that occur during overpressure relief offsets the decrease in emission reduction that would occur by allowing 95 percent reduction (level of control required of all control devices) rather than the 100 percent reduction associated with rupture disk systems.

Sampling connection systems. Closed-purge sampling is the required standard for sampling connection systems. Closed-purge sampling connection systems eliminate emissions due to purging by either returning the purge material directly to the process or by collecting the purge in a collection system that is not open to the atmosphere. Collected purge material must be destroyed or recovered in a system that complies with requirements discussed in the *Closed-vent systems and control devices* portion of this section of the preamble.

Since proposal, EPA decided to allow closed-vent vacuum systems connected to a control device and *in-situ* sampling systems in addition to closed-purge sampling. Closed-vent vacuum systems that are connected to a control device extract the sample purge and then reduce emissions from the sample purge by transporting benzene to the control device. If closed-vent vacuum systems are not open to the atmosphere and the system complies with the requirements discussed in the *Closed-vent systems and control devices* portion of this section of the preamble, then their reduction of benzene emissions would be equivalent to the reduction achieved by closed-purge sampling connection systems. *In-situ* sampling systems involve measurement or sampling of process stream conditions without extraction of the sample from the process stream. *In-situ* sampling systems, therefore, result in no emissions of benzene.

Open-ended valves or lines. The standard for open-ended valves or lines requires the use of caps, plugs, or any other equipment that will effect enclosure of the open end. The standard has not changed since proposal. If a second valve is used, the standard requires the upstream valve to be closed first. After the upstream valve is completely closed, the downstream valve must be closed. This operational requirement is necessary in order to prevent trapping process fluid between the two valves, which could result in a situation equivalent to the uncontrolled open-ended valve or line.

Product accumulator vessels, pipeline flanges, and pressure relief devices in liquid service. The standard for product accumulator vessels effectively requires venting accumulator vessel emissions to a system that complies with the requirements as discussed in the *Closed-vent systems and control devices* portion of this section of the preamble. Flanges and pressure relief devices in liquid service will be excluded from the routine leak detection and repair requirements. However, if leaks are detected from these sources, the same allowable repair interval that applies to valves and pumps will apply.

Closed-vent systems and control devices. Control devices will be used to reduce benzene equipment leaks captured and transported through closed-vent systems. Reference Method 21 will be used to verify that a closed-vent system has been designed and installed properly. At proposal, control devices were required to be either enclosed combustion devices designed to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760°C or vapor recovery systems with an efficiency of 95 percent or greater. Based on review of comments on the proposed standard, EPA concluded that all reasonably designed, existing control devices for organic emissions can achieve a reduction efficiency for benzene of at least 95 percent. EPA, therefore, has not changed the requirements for control devices. EPA has made it clear, however, that an enclosed combustion device with a reduction efficiency of at least 95 percent can be used even if the residence time and minimum temperature requirements are not achieved.

Additionally, EPA decided to allow use of smokeless flares operated under certain conditions in complying with the control device requirements because EPA believes that destruction efficiencies better than 95 percent can be obtained with properly operated flares. Flares operated within these conditions are considered as alternatives to enclosed combustion devices (incinerators, catalytic incinerators, boilers, process heaters, etc.) and vapor recovery systems (such as carbon adsorbers and condensation units). They may be applied to control emissions from pump seals (or degassing reservoirs), compressor seals (or degassing reservoirs), pressure relief devices, and product accumulator vessels. The conditions include a requirement for the presence of a flame: this can be ensured by monitoring the flare's pilot light with an appropriate heat sensor, such as a thermocouple. The conditions also include requirements for smokeless operation (visible emissions are limited to less than 5 minutes in any 2-hour period) and for the heat content of gases combusted by the flare. The standards for closed vent systems and control devices permit the use of devices that have an efficiency better than 95 percent, including steam-assisted and nonassisted flares designed for and operated with an exit velocity of less than 18 m/sec. EPA has been studying the question of whether additional types of flares will also achieve better than 95 percent efficiency; if so, the Agency will revise the standards accordingly.

Reporting and recordkeeping. The promulgated standard includes reporting provisions requiring semiannual reports of leak detection and repair efforts within a process unit. The amount of reporting and the burden associated with the reporting have been reduced from those in the proposed standard. In particular, the quarterly reporting requirement in the proposed standard has been reduced to semiannual reporting. The burden associated with the recordkeeping requirements has also been reduced since proposal. However, the final standard additionally requires that records be kept of periods when a flare pilot light does not have a flame and that unsafe-to-monitor and difficult-to-monitor valves be identified.

Summary of Impacts of the Standard

The standard applies to certain equipment in benzene service. This equipment is used in the production of benzene and other chemicals and products, such as maleic anhydride, ethanol, and pharmaceuticals. The standard will affect equipment located in more than 200 existing process units and an expected 60 new process units by 1985.

The environmental, health, economic, and energy impacts are summarized here and are discussed in greater detail in the BID for the promulgated standard, "Benzene Fugitive Emissions—Background Information for Promulgated Standard," EPA–450/3–80–032b.

Environmental and health impacts. Since the standard was proposed, EPA has revised the baseline emission estimate and the estimate of benzene leaks to the atmosphere that will be reduced by the standard. The final standard will reduce emissions from existing benzene equipment leaks by about 69 percent from the baseline control level, which includes petroleum refinery CTG controls. This percentage reduction represents a decrease in emissions from about 7,920 megagrams of benzene per year (Mg/yr) to about 2,470 Mg/yr for existing equipment leaks of benzene. Implementation of the standard will result in negligible impacts on water quality and solid waste. No noise impact will result.

EPA has also revised the assessment of leukemia risk from exposure to existing equipment leaks of benzene as a result of revised emission estimates, exposure modeling techniques, and the benzene unit risk factor. In its revised estimate, EPA has calculated that the standard will reduce the estimated maximum lifetime risk for the most exposed population from about 1.5×10^{-3} at current (baseline) controls to about 4.5×10^{-4} for existing benzene equipment leaks. The standard will reduce the estimated annual incidence of leukemia (cases per year) for the public living within 20 kilometers of existing benzene equipment leaks from about 0.45 cases per year at current controls to about 0.14 cases per year. Due to the assumptions that were made in calculating these maximum lifetime risk and leukemia incidence numbers, there is uncertainty associated with the numbers presented here and elsewhere in this preamble. The use of the risk numbers is discussed in the Federal Register notice regarding the regulation of benzene as a hazardous air pollutant.

Cost and economic impacts. Since the standard was proposed, EPA has reanalyzed the cost of controlling benzene equipment leaks and the resultant benzene emission reduction for each type of equipment covered by the standard and for each control technique. In response to comments, EPA considered the costs and emission reductions associated with each type of equipment in selecting the final standard.

For existing equipment the nationwide capital cost for the standard will be about $5.5 million, and the 1985 nationwide annualized cost as a result of the standard will be about $400,000. Because the cost of the standard is mostly offset by the value of the benzene recovered by the standard and, to the extent that the cost is not completely offset, the cost is very small in comparison to the value of the product made by this equipment, product prices will not increase as a result of the standard. Thus, profits and market positions of individual manufacturers would be unchanged.

Energy impacts. The final standard will result in a positive energy impact by conserving benzene and other organic compounds that have an energy value. Implementation of the standard will result in an energy savings of about 10,000 barrels of crude oil in the fifth year of the standard.

New sources. The standard will result in positive environmental and health impacts for new equipment leaks of benzene. The magnitude of these impacts is difficult to determine because it will depend on several factors, including the location of the new equipment, the number and distribution of people living in the vicinity of the new equipment, and the level of control that would have been used in the absence of the standard. The nationwide capital and 1985 annualized costs for new equipment will depend on the level of control that would have been used in the absence of this standard. These factors cannot be determined definitely before sources are actually constructed. Because EPA recognizes this additional uncertainty in environmental and health impacts, cost and economic impacts, and energy impacts for leaks of benzene from new equipment, these impacts are not presented here. The impacts, however, will be proportionately similar to the impacts for existing sources; that is, if the standard result in less emission reduction for new sources than for existing sources (because fewer new sources would be covered), then the cost of this emission reduction will be proportionately less also.

Public Participation

Prior to proposal of the standard, interested parties were advised by public notice in the Federal Register (45 FR 18474, March 21, 1980) of a meeting of the National Air Pollution Control Techniques Advisory Committee to discuss the national emission standard for benzene fugitive emissions recommended for proposal. This meeting was held on April 16, 1980. The meeting was open to the public, and each attendee was given an opportunity to comment on the standard recommended for proposal. The standard was proposed in the Federal Register on January 5, 1981 (46 FR 1165). The preamble to the proposed standard discussed the availability of the BID for the proposed standard (EPA–450/3–80–032a), which described in detail the regulatory alternatives considered and the impacts of those alternatives. Public comments were solicited at the time of proposal, and when requested, copies of the BID were distributed to interested parties. To provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed standard, a public hearing was held on July 14, 1981, at Research Triangle Park, North Carolina. The hearing was open to the public, and each attendee was given an opportunity to comment on the proposed standard. The public comment period was extended to September 14, 1981.

EPA received 30 comment letters on the proposed standard and BID. Industry representatives submitted most of the comments. Also commenting were representatives of State and local air pollution agencies and a representative of an environmental group. The comments have been considered carefully and, where determined to be appropriate by EPA, changes have been made to the proposed standard.

EPA published an Additional Information Document (AID) in April of 1982. The AID contains a technical discussion of methodologies and estimates of emissions, emission reductions, and cost associated with control of equipment leaks of organic compounds, including benzene. A notice of the availability of the AID and a request for comments on the AID was published in the Federal Register on May 7, 1982 (47 FR 19724). Fourteen letters were received containing comments on the AID. Comments on the AID have been considered carefully, and changes have been made to the technical aspects of EPA's analysis where appropriate.

Significant Comments and Changes to the Proposed Standard

Most of the comment letters contained multiple comments, and many of the comment letters repeated comments contained in other letters. A detailed discussion of these comments and responses can be found in the BID for the promulgated standard, which is referred to in the ADDRESSES section of this preamble. The comments and responses in the BID for the promulgated standard serve as the basis for the revisions that have been made to the

standard between proposal and promulgation. The major revisions to the standard are indicated in the SUMMARY OF THE STANDARD section of this preamble.

The most important comments, in addition to the comments on the listing of benzene, considered by EPA concerned whether benzene fugitive emissions warrant regulation. Benzene fugitive emissions, which are not substantially different from the emissions judged to be significant at proposal, contribute 7,900 Mg/yr; this figure reflects current controls. (EPA adjusted the control level for petroleum refineries in nonattainment areas to reflect controls required by States in accordance with EPA's Control Techniques Guideline (CTG) document. This adjustment reduced emissions, but the reduction was offset to some extent by refinements in emission factors.) Approximately 20 to 30 million people live within 20 kilometers of the 128 plants with these fugitive emissions. These people are exposed to higher levels of benzene than is the general population. Due to the lack of a demonstrated threshold for benzene's carcinogenic effects, these people not only incur a higher benzene exposure but also run greater risk of contracting leukemia due to that exposure.

EPA revised the quantitative risk assessments for this source category based on the updated emissions estimates, the revised risk factor, and the more detailed SAI human exposure model. The lifetime risk of contracting leukemia for the most exposed individuals is estimated to be about 1.5×10^{-3} for benzene fugitive emission sources, and the increased leukemia incidence as a result of exposure to the current fugitive emissions is estimated to be about 0.45 cases per year.

The number of process units emitting benzene fugitive emissions is anticipated to grow from about 240 to 310 units. These new sources would probably increase the number of people exposed to benzene emitted from this source category and increase the estimated leukemia incidence accordingly.

Based on the human carcinogenicity of benzene, the magnitude of benzene fugitive emissions, the estimated ambient benzene concentrations in the vicinity of the plants with fugitive emissions, the proximity of people to these plants, the resulting estimated maximum individual risks and estimated incidence of leukemia cases in the exposed population, the projected increase in benzene emissions as a result of new sources, the estimated reductions in emissions and health risks that can be achieved, and consideration of the uncertainties associated with the quantitative risk estimates (including effects of concurrent exposures to other substances and to other benzene emissions), EPA finds that benzene emissions from benzene fugitive emission sources pose a significant cancer risk and that the establishment of a national emission standard under Section 112 is warranted.

In this preamble, only the major comments concerning the standard for equipment leaks of benzene are addressed. Comments on the need for standards to cover emission sources of benzene (including equipment leaks of benzene) and health effects and risk assessment of exposure to benzene are addressed in detail in the Federal Register notice regarding the regulation of benzene as a hazardous air pollutant. Comments on minor issues, such as test methods and procedures, are addressed in detail in the BID for the promulgated standard. This preamble addresses issues concerning selection of the final standard, economic impact of the final standard, and recordkeeping and reporting requirements.

Selection of the Final Standard

EPA selected the appropriate levels of control for the benzene fugitive emissions standard in light of carcinogenic risks and technological and economic factors. EPA is requiring that the source categories selected for regulation, as a minimum, achieve emission levels reflecting best available technology considering costs, energy, and economic impacts (BAT), to control benzene emissions. After selecting BAT, EPA identified a level of control more stringent than BAT and evaluated the incremental reductions in health risks obtainable against the incremental costs and economic impacts estimated to result from the application of a more stringent alternative. As described in more detail later in this notice, EPA concluded from this evaluation that the estimated risks remaining after the application of BAT to benzene fugitive emission sources are not unreasonable in view of the costs and economic impacts of reducing risks further, and that for this reason, BAT provides an ample margin of safety to protect human health.

Many people commented on the basis for section of the proposed standard. Several commenters questioned the cost effectiveness (cost per unit of emission reduction) and impacts of Regulatory Alternatives III and IV for existing and new equipment in benzene service. Some of the commenters recommended the selection of less stringent regulatory alternatives, and some recommended the selection of a more stringent regulatory alternative. Other commenters stated that selection should be based on the cost and emission reduction impacts for each type of equipment covered by the standard instead of regulatory alternatives.

After considering these comments, EPA selected the final standards for new and existing equipment in benzene service. Selection of the basis of the final standard was a two-step process and was similar to the approach used when the standard was proposed. The first step was the selection of the best available technology (BAT). Best available technology for equipment in benzene service is technology which, in the judgment of the Administrator, is the most effective level of control considering economic, energy, and environmental impacts and any technological problems associated with the retrofitting of existing equipment. After consideration of these impacts for each alternative control technique, one set of control techniques was selected as BAT for equipment in benzene service.

After selecting certain control techniques as BAT, EPA evaluated the estimated health risks remaining after application of BAT to determine if they are unreasonable in view of health risk reductions and cost (economic) impacts that would result if a more stringent level of control were applied. This provides a comparison of the costs and economic impacts of control with the benefits of further risk reduction. The benefits of risk reduction are expressed in terms of the estimated leukemia incidence (cases per year) within 20 kilometers of the equipment covered by the standard and the estimated maximum lifetime risk at the point of maximum exposure. The results of this comparison determine whether, in the judgment of the Administrator, the residual risks remaining after application of BAT are unreasonable. If the risks remaining after application of BAT are judged to be unreasonable, further controls would be required.

The cost of the proposed control techniques for benzene equipment leaks are very small relative to the capital and operating costs of affected process units. As a consequence, none of these control techniques impact the ability of an owner or operator to raise capital or measurably impact product prices or energy requirements. Therefore, EPA selected BAT primarily based on a comparison of costs and emission reductions associated with each alternative control technique. In making

this decision, EPA is accepting the suggestions of commenters to consider further cost per unit emission reduction estimates and to consider these estimates for each type of equipment covered by the standard in the selection of BAT. In selecting BAT, EPA intitially selected control techniques that achieve the greatest emission reduction with reasonable control costs per megagram of emission reduction. The emission reductions and the average and incremental costs per megagram of benzene and total emissions (including benzene and other volatile organic compounds (VOC)) are summarized in Tables 1 and 2, respectively, for each type of equipment covered by the standard. After initially selecting one set of control techniques as BAT for each type of equipment covered by the standard, EPA analyzed economic and other impacts of this set of control techniques. To the extent that these impacts were reasonable, the control techniques were selected as BAT and then were used in estimating the risks remaining after application of BAT.

Table 1. CONTROL COSTS PER MEGAGRAM OF BENZENE REDUCED[a]

Type of Equipment	Control Technique	Benzene Emission Reduction[b] (Mg/yr)		Average $/Mg Benzene[c]		Incremental $/Mg Benzene[d]	
		New	Existing	New	Existing	New	Existing
Valves	Annual leak detection and repair	162	799	--e	--e	--e	--e
	Quarterly leak detection and repair	639	2,750	--e	--e	--e	--e
	Monthly leak detection and repair[f]	736	3,160	--e	--e	210	120
	Sealed bellows valves	998	4,280	8,500	11,000	33,000	44,000
Pumps	Annual leak detection and repair	77	290	870	870	870	870
	Quarterly leak detection and repair	266	959	--e	--e	--e	--e
	Monthly leak detection and repair[f]	307	1,140	--e	--e	--e	--e
	Dual mechanical seal systems	372	1,360	2,100	2,400	13,000	15,000
Compressors	Degassing reservoir vents[f]	3.59	--h	--e	--h	--e	--h
Pressure Relief Devices	Quarterly leak detection and repair[f]	53	190	--e	--e	--e	--e
	Monthly leak detection and repair[f]	58	207	--e	--e	300	290
	Equipment control[f,i]	82	295	96	180	1,400	1,700
Open-ended Lines	Caps on open ends[f]	54	187	430	470	430	470
Sampling Connection Systems	Closed-purge sampling[f]	87	318	880	900	880	900
Product Accumulator Vessels	Closed-vent system[f]	27	106	94	97	94	97

[a]Costs and emission reductions are presented on a nationwide basis and are derived from the BID for the promulgated standard, EPA-450/3-80-032b.

[b]Benzene emission reductions are presented on a nationwide basis as explained in Docket No. A-79-27-IV-B-14.

[c]Average dollars per megagram (cost effectiveness) = net annualized cost ÷ annual benzene emission reduction. These cost-effectiveness numbers can be calculated on a component basis, on a model unit basis, or on a nationwide basis. In any case, the resulting cost effectiveness will be essentially the same. The numbers in this table have been calculated on a nationwide basis by multiplying the net annual cost per component (BID Tables A-1 through A-11) by the total number of components nationwide (BID Tables 2-6 and 2-7) and then dividing the resulting nationwide net cost by the nationwide emission reduction.

[d]Incremental dollars per megagram = (net annualized cost of the control technique - net annualized cost of the next less restrictive control technique) ÷ (annual benzene emission reduction of control technique - annual benzene emission reduction of the next less restrictive control technique).

[e]Dashes denote savings.

[f]Control technique selected as the basis for the final standard.

[g]Emission reduction associated with one new compressor.

[h]Existing compressors in benzene service are not known to exist; however, if one does, the emission reduction and control costs per megagram of benzene would be the same as for a new compressor.

[i]Costs of equipment controls for pressure relief devices are based on the following: 75 percent of relief devices are already controlled. For the remaining uncontrolled sources, 75 percent of relief devices will be vented to a flare, 12.5 percent will be controlled by rupture disk/block valve systems, and 12.5 percent will be controlled by rupture disk/3-way valve systems.

Table 2. CONTROL COSTS PER MEGAGRAM OF TOTAL EMISSIONS REDUCED[a]

Type of Equipment	Control Technique	Total Emission Reduction[b] (Mg/yr)		Average $/Mg[c]		Incremental $/Mg[d]	
		New	Existing	New	Existing	New	Existing
Valves	Annual leak detection and repair	313	1,306	--[e]	--[e]	--[e]	--[e]
	Quarterly leak detection and repair	1,005	4,440	--[e]	--[e]	--[e]	--[e]
	Monthly leak detection and repair[f]	1,150	5,090	--[e]	--[e]	140	74
	Sealed bellows valves	1,540	6,960	4,900	6,900	20,000	26,000
Pumps	Annual leak detection and repair	124	468	540	540	540	540
	Quarterly leak detection and repair	413	1,560	--[e]	--[e]	--[e]	--[e]
	Monthly leak detection and repair[f]	484	1,830	--[e]	--[e]	--[e]	--[e]
	Dual mechanical seal systems	584	2,210	1,400	1,500	8,200	8,700
Compressors	Degassing reservoir vents[f]	5.59	--[h]	--[e]	--[h]	--[e]	--[h]
Pressure Relief Devices	Quarterly leak detection and repair[f]	83	308	--[e]	--[e]	--[e]	--[e]
	Monthly leak detection and repair[f]	90	336	--[e]	--[e]	190	180
	Equipment control[f,i]	128	475	61	110	940	1,100
Open-ended Lines	Caps on open ends[f]	83	313	280	280	280	280
Sampling Connection Systems	Closed-purge sampling[f]	136	510	560	560	560	560
Product Accumulator Vessels	Closed-vent system[f]	42	171	60	60	60	60

[a]Costs and emission reductions are presented on a nationwide basis and are derived from the BID for the promulgated standard, EPA-450/3-80-032b.

[b]Total emission reductions are estimated for benzene and other VOC and are presented on a nationwide basis as explained in Docket No. A-79-27-IV-B-14.

[c]Average dollars per megagram (cost effectiveness) = net annualized cost ÷ annual emission reduction. See Table II-1, footnote c.

[d]Incremental dollars per megagram = (net annualized cost of the control technique - net annualized cost of the next less restrictive control technique) ÷ (annual emission reduction of the control technique - annual emission reduction of the next less restrictive control technique).

[e]Dashes denote savings.

[f]Control technique selected as the basis for the final standard.

[g]Emission reduction associated with one new compressor.

[h]Existing compressors in benzene service are not known to exist; however, if one does, the emission reduction and control costs per megagram of total emissions would be the same as for a new compressor.

[i]Cost of equipment controls for pressure relief devices are based on the following: 75 percent of relief devices are already controlled. For the remaining uncontrolled sources, 75 percent of relief devices will be vented to a flare, 12.5 percent will be controlled by rupture disk/block valve systems, and 12.5 percent will be controlled by rupture disk/3-way valve systems.

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For each type of equipment, the average cost effectiveness of each control technique was calculated based in the net annualized cost and the annual emission reduction from the uncontrolled level. Starting with the most stringent control technique, which achieves the greatest emission reduction at the greatest annualized cost, EPA examined the incremental cost effectiveness between the most stringent control technique and the next less restrictive control technique. The incremental cost effectiveness between any two alternative control techniques was based on the difference in net annualized costs divided by the difference in the annual emission reductions of the alternate control techniques. If the incremental cost in comparison to the incremental emission reduction is judged unreasonable, then the next increment is examined until a control technique with a reasonable incremental cost in comparison to the incremental emission reduction is available.

Costs per megagram of emission reduction (average and incremental) were calculated in terms of total emissions (benzene and other VOC) as well as benzene alone. Control of benzene equipment leaks results in the destruction of other organic compounds (mainly VOC) as well as benzene; therefore, control of VOC is an added benefit of controlling benzene. In making decisions about the acceptability of the cost of emisison reductions achieved by a control technique, it is appropriate to consider the VOC as well as the benzene emission reductions. However, VOC emission reductions were considered only in the sense that VOC emission reductions can add weight to selecting a control technique as BAT.

The basis for selecting BAT for each type of equipment in benzene service is discussed below. It should be noted that the control costs for each type of equipment do not represent the actual amounts of money spent at any particular plant site. The cost of emission reduction systems will vary according to the chemical product being produced, production equipment, plant layout, geographic location, and company preferences and policies. However, these costs and emission reductions are considered typical of control techniques for benzene equipment leaks and can be used in selecting the level of control to be required by the standard.

Valves. EPA first considered the use of sealed bellows valves. However, a requirement for sealed bellows valves is considered unreasonable. The incremental cost for the use of sealed bellows valves compared to a monthly leak detection and repair program for valves is about $49 million/yr for existing valves and results in an emission reduction of about 1,100 Mg/yr of benzene; this represents an incremental cost effectiveness of about $44,000/Mg. Furthermore, the use of sealed bellows valves results in an incremental emission reduction of 1,870 Mg/yr of total emissions (including benzene and other VOC). Because the incremental cost effectiveness ($44,000/Mg of benzene) of this control technique is relatively high and because the additional emission reduction of VOC does not add enough weight to convince EPA that the costs are reasonable, EPA decided not to require the use of sealed bellows valves.

Next, EPA considered several leak detection and repair programs for valves. The leak detection and repair programs differed in the monitoring frequency that could be implemented. As Tables 1 and 2 show, all of the monitoring programs would result in net credits because the value of recovered product resulting from implementation of each program is greater than the cost of each program. The largest emission reduction is associated with the monthly program. The incremental cost for a monthly program compared to a quarterly program is about $48,000/yr for existing valves and results in an incremental benzene emission reduction of about 400 Mg/yr; this represents an incremental cost effectiveness of about $120/Mg of benzene. Because EPA considers the incremental cost effectiveness associated with the monthly program to be reasonable, EPA selected a monthly leak detection and repair program as BAT for valves.

Pumps. The costs and emission reductions associated with the control of pumps were determined for three leak detection and repair programs and the use of dual mechanical seal systems. The incremental cost associated with the use of dual mechanical seal systems (compared to the monthly program) on existing pumps is about $3.3 million/yr and results in an incremental emission reduction of about 220 Mg/yr of benzene; this represents an incremental cost effectiveness of $15,000/Mg. Furthermore, the use of dual mechanical seal systems reduces an incremental 380 Mg/yr of total emissions (including benzene and other VOC). Because the incremental cost effectiveness ($15,000/Mg of benzene) is relatively high and because the additional emission reduction of VOC does not add enough weight to convince EPA that the costs are reasonable, EPA decided not to require the use of dual mechanical seal systems.

Next, EPA considered leak detection and repair programs for pumps. Monthly and quarterly leak detection and repair programs both result in net annual savings. The annual program results in a cost of about $250,000/yr for a benzene emission reduction of about 290 Mg/yr; this represents a cost effectiveness of about $870/Mg of benzene. EPA decided not to select an annual program as BAT because it results in higher costs and lower emission reductions in comparison to either a monthly or a quarterly program. The monthly program achieves a higher degree of control than the quarterly program at a slightly lower credit. The monthly program (compared to the quarterly program) results in a savings and an incremental emission reduction of about 180 Mg/yr of benzene; this represents an incremental cost effectiveness of essentially zero for existing pumps in benzene service. Because EPA considers the incremental cost effectiveness associated with monthly monitoring of pumps reasonable, monthly leak detection and repair was selected as BAT for pumps.

Compressors. One control technique is considered viable for compressors in benzene service—the installation of equipment such as control of the barrier fluid system. The installation of control equipment results in an emission reduction of about 3.5 Mg/yr per compressor at a savings in cost for each compressor. The control technique results in a savings because the value of product retained by controlling the barrier fluid system exceeds the cost of the control equipment. Since this cost is reasonable, control equipment was selected as BAT for compressors.

For existing compressors, EPA proposed a monthly leak detection and repair program. At proposal, EPA selected, as the basis of the standard for existing pumps and compressors, a monthly leak detection and repair program because some existing pumps could not be reasonably retrofitted with dual mechanical seal systems and because the cost of retrofitting compressors and replacing pumps was considered exorbitant in light of the resulting emissions reductions. Since proposal, EPA has concluded that the effectiveness of a leak detection and repair program for compressors in benzene service would be negligible. Also, as requested by commenters, EPA has analyzed compressors separately from pumps. This analysis yields the cost and emission reduction estimates

above. EPA has thus concluded that control equipment is reasonable for existing compressors and, therefore, selected it as BAT for existing compressors as well as new compressors.

Pressure relief devices. The annualized costs and emission reductions associated with monthly and quarterly leak detection and repair programs and with the use of control equipment (rupture disks and flares) were determined for pressure relief devices in gas service. As Tables 1 and 2 show, both the quarterly and monthly leak detection and repair programs are less expensive than installation of equipment controls, but they result in lower emission reductions. These programs result in an incremental cost effectiveness of about $300/Mg of benzene for the monthly program (compared to the quarterly program) and a credit for the quarterly program. Equipment controls would result (compared to a monthly program) in incremental emission reductions of about 90 Mg/yr of benzene and an incremental cost of about $150,000/yr. This reflects an incremental cost effectiveness of about $1,700/Mg. Because EPA considers the incremental cost effectiveness of equipment controls reasonable, equipment controls were selected as BAT for pressure relief devices.

Open-ended lines, sampling connection systems, and product accumulator vessels. EPA considered caps or closures as the control technique for the standard for open-ended lines. Costs of $430/Mg and $470/Mg of benzene are reasonable for controlling equipment leaks of benzene from new and existing open-ended lines, respectively. EPA selected caps or closures as BAT for open-ended lines.

EPA considered closed-purge sampling as the control technique for the standard for sampling systems. Costs of $880/Mg and $900/Mg of benzene are reasonable for controlling equipment leaks of benzene from new and existing sampling systems, respectively. EPA selected closed-purge sampling as BAT for sampling systems.

EPA considered closed-vent systems connected to a control device as the control technique for the final standard for product accumulator vessels. For existing units in benzene service, the installation of closed-vent systems connected to a control device will result in a nationwide net annual cost of $10,300 and an annual emission reduction of about 100 Mg of benzene; this represents a cost effectiveness of about $160/Mg. Since the cost associated with this control technique is reasonable, EPA selected closed-vent systems as BAT for product accumulator vessels.

New sources. Emission reductions and costs for new sources are similar to those for existing sources. If the standard results in less emission reduction for new sources than for existing sources (because fewer new sources would be covered), then the cost of the emission reduction for new sources will be less. However, as seen in Tables 1 and 2, the costs that are unreasonable for existing sources are also unreasonable for new sources; therefore, BAT for new sources is the same as BAT for existing sources.

Economic impact considerations of BAT. As mentioned above, once BAT was identified for each type of equipment covered by the standard, EPA analyzed the economic impact of the initial set of BAT control techniques. As a result and as explained in the next section of this preamble, EPA concluded that the control techniques initially selected as BAT have reasonable economic impacts. In addition, EPA has also concluded that other impacts, environmental and energy, associated with these control techniques are reasonable. Thus, they were selected as BAT for equipment in benzene service.

Selection of the final standards. After selecting certain control techniques as BAT (those identified above), EPA evaluated the estimated health risks remaining after application of BAT to determine if they are unreasonable in view of health risk reductions and cost (economic) impacts that would result if a more stringent level of control were applied. Because the most stringent, viable control technique for each type of equipment covered by the standard is already selected for all types of equipment except for valves and pumps, EPA identified a more stringent level of control by reviewing the control techniques for valves and pumps. The more stringent level of control used for this anaylsis includes the use of dual mechanical seal systems on pumps in addition to the requirements selected as BAT. This control technique was selected for analysis because it adds the next most cost-beneficial control technique. Thus, if EPA decided not to require this control technique in addition to those control techniques selected as BAT, then EPA would not require less cost-beneficial control techniques, such as sealed bellows valves.

Health and cost impacts were first examined for existing equipment covered by the standard to determine whether a more stringent level of control should be required. Requiring a more stringent level of control instead of BAT would reduce estimated leukemia incidence within 20 kilometers of the equipment covered by the standard from about 0.14 cases per year to about 0.13 cases per year for existing equipment. It would reduce the estimated maximum lifetime risk at the point of maximum exposure from about 4.5×10^{-4} to about 4.2×10^{-4}. Requiring the more stringent level of control rather than BAT would increase capital cost from $5.5 million to $19.5 million and would increase 1985 net annualized costs from $400,000 to a cost of $3.7 million for existing equipment. Because of the relatively small health benefits to be gained with the additional costs of requiring the more stringent level of control instead of BAT for existing equipment, EPA considers the risks remaining after application of BAT to existing equipment not to be unreasonable. For this reason, EPA judged the level of control selected as BAT to provide an ample margin of safety and decided not to require a more stringent level of control than BAT for existing equipment.

Health and cost impacts were next examined for new equipment covered by the standard to determine whether a more stringent control level should be required. As with existing equipment, EPA considered the use of dual mechanical seal systems on pumps as the more stringent control level that is next most cost-beneficial. Thus, if EPA decides not to require the use of these seals, then EPA would not require less cost beneficial control technologies, such as sealed bellows valves. Requiring the more stringent level of control—the use of dual mechanical seals on pumps in addition to BAT—could reduce estimated leukemia incidence within 20 kilometers of the equipment covered by the standard from about 0.034 cases per year to about 0.032 cases per year for new equipment. It would reduce the estimated maximum lifetime risk at the point of maximum exposure from about 4.5×10^{-4} to about 4.2×10^{-4}. Requiring the more stringent level of control rather than BAT would increase capital cost from $1.4 million to $5.1 million and net annualized costs of $100,000 to $900,000 for new equipment. Because of the relatively small health benefits to be gained with the additional costs of requiring the more stringent level of control instead of BAT for new equipment, EPA considers the risks remaining after application of BAT to new equipment not to be unreasonable. For this reason, EPA judged the level of control selected as BAT to provide an ample margin of safety and decided not

to require a more stringent level of control than BAT for new equipment.

Economic Impacts of the Final Standard

The cost of the proposed standard is discussed in Chapter 8 of the BID for the proposed standard, and economic impacts are discussed in Chapter 9. Changes made to the standard since proposal make the annualized cost of the final standard smaller than the annualized cost for the proposed standard. The 1985 net annualized cost of the final standard is $400,000 for existing units and $100,000 for new units. The BID for the proposed standard concludes that any potential price increases resulting from imposition of the proposed standard would be well under 1 percent and that the profits and market positions of individual manufacturers would not be changed. In view of the lower cost of the final standard, these conclusions can be underscored.

Comments and responses in this section are addressed in three categories: impacts on small facilities, cost effectiveness, and benefit-cost considerations. This categorization is not rigid because some comments are quite broad.

Impacts on small plants. This subsection addresses two principal concerns: the effect of the standard on small businesses, and the application of the standard to small process units and to process units that use minor amounts of benzene or that use benzene intermittently.

The Regulatory Flexibility Act (Pub. L. 96-354, September 19, 1980) directs Federal agencies to pay close attention to minimizing any potentially adverse impacts of a standard on small businesses, small governments, and small organizations. Accordingly, EPA has reviewed the final standard in accordance with the Regulatory Flexibility Act. This standard will have no known effects on small governments and small organizations. A small business in the benzene-using industries generally is one that employs fewer than 750 persons. This level was set by the Small Business Administration (SBA) as a criterion for extending SBA loans and related assistance (13 CFR Part 121, Schedule A). The definition applies to firms that manufacture cyclic crudes and cyclic intermediates, pharmaceuticals, and many other chemicals. The BID for the proposed standard lists 77 existing companies that may be affected by the standard. Most of these companies manufacture cyclic crudes and many other chemicals. With the possible exception of two companies, all of these firms either employ more than 750 persons, or are subsidiaries of large firms. To the extent these two companies are small businesses, the impacts of the standard will be few and minor. Because the standard is expected to result in small annualized costs, EPA concluded that there will be no adverse impacts on firms regardless of whether they are a small business or not.

One commenter felt that the leak detection and repair requirements would impose substantial costs on small-volume users of benzene with no appreciable benefit to public health. According to the commenter, small-volume pipeline systems at pharmaceutical plants may contain several hundred valves that would need to be monitored monthly when in benzene service. The commenter added that the economic and administrative burden of complying with the standard would be heavy for small-volume users, as compared to large benzene production units, in proportion to the level of equipment leaks from such facilities.

As discussed in section 2.8.1 of the BID for the promulgated standard, EPA is exempting from the standard equipment at plant sites that are designed to produce or use 1,000 Mg/yr or less of benzene. This cutoff is based on the amount of equipment in a process unit and relates this amount to a design production rate. The 1,000 Mg/yr exemption would exclude most research facilities, pilot plants, and intermittent users of benzene from the standard.

The possibility that pharmaceutical operations could be adversely affected by the standard is very small. This is true for several reasons. First, most pharmaceutical plants use very little benzene. According to estimates contained in *Market Input/Output Studies—Benzene Consumption as a Solvent* (EPA-560/6-77-034, October 1978, p. 41), 1978 benzene consumption by pharmaceutical manufacturers was about 0.72 Gg. No companies consumed more than 1,000 Mg/yr in 1978. The commenter states that they consumed about 325 Mg/yr during 1981. Thus, it is unlikely that pharmaceutical operations would be affected by the standard because the final standard exempts equipment at plant sites that are designed to produce or use 1,000 Mg/yr or less of benzene. Second, benzene consumption by the pharmaceutical industry is declining rapidly. The market input/output study just noted estimates that consumption declined from 2.14 Gg in 1976 to 0.72 Gg in 1978, a decline of about 66 percent over the 2-year period. Third, the number of companies using benzene has also declined and is expected to continue to fall. For the 2-year period 1976 to 1978, the study estimates that the number of pharmaceutical companies using benzene declined from 10 to 5. And finally, even though pharmaceutical operations that are designed to produce or use benzene in excess of 1,000 Mg/yr are subject to the standard, they have substantial equipment inventories in benzene service, and, therefore, emit benzene in enough quantity to warrant coverage by the final standard. EPA has reviewed the cost for these operations and has concluded that the cost is reasonable.

Use of cost effectiveness. Commenters felt that EPA had not selected the most cost-effective alternative as the basis for the proposed standard. One commenter said that industry's experience in air pollution abatement control programs has led it to conclude that capital costs in excess of $3,000/Mg are not cost effective and should be rejected unless the other alternatives do not substantially achieve the necessary degree of control. The commenter concluded that SOCMI data indicate that the cost effectiveness is definitely higher than the industry guideline of $3,000/Mg.

Selection of BAT was based, in response to these commenters, on an examination of the incremental cost effectiveness among various control techniques for each type of equipment covered by the standard. Whether to require more restrictive control than BAT is based on judging the risks remaining after BAT is applied and the cost and other impacts of reducing these risks. Since proposal, EPA has selected a less restrictive standard than the standard proposed in January 1981; consequently, the cost associated with the standard has decreased.

EPA based emission estimates on refinery emission factors rather than on SOCMI emission factors because recent benzene-specific emission data from refineries and chemical plants are more similar to refining units than to SOCMI units. Therefore, the commenter's conclusion that SOCMI data (discussed in "Fugitive Emission Sources of Organic Compounds—Additional Information on Emissions, Emission Reductions, and Costs," EPA-450/3-82-010) indicate that the cost effectiveness is higher than the industry guideline of $3,000/Mg is not based on the same emission estimates used by EPA. Also in contrast to the commenter, EPA bases cost effectiveness of a standard on net annualized costs rather than on capital costs. It is unclear how the commenter estimated what they called "operating

costs." Using 1985 net annualized costs, however, the overall cost effectiveness for the standard is reasonable ($77/Mg of benzene).

Another commenter felt that cost effectiveness dictates that Alternative IV at a minimum, or preferably Alternative V, should have been selected instead of Alternative III in order to fulfill the mandate of Section 112. This judgment is based on the commenter's observation that the net price increase would be less than one-fourth of 1 percent in benzene prices for Alternative IV and less than 4 percent for Alternative V. The commenter considered this a "trivial price to pay for saving additional lives," noting that, in rulemaking on the vinyl chloride standard in 1975, EPA decided that a price impact as high as 10 percent would have been acceptable. The commenter added that cost estimates are usually exaggerated, and firms often develop innovative, less costly compliance techniques.

EPA has selected the final standard after considering whether the risk that remains after application of BAT warrants the incremental cost of additional control. In analyzing the cost of the standard, EPA has made reasonable attempts to ensure that the cost is not underestimated. Even though industry sometimes may develop less costly compliance techniques, EPA considers its cost estimates reasonable. Based on these cost estimates, EPA judges that the reduction in risk that remains after application of BAT does not warrant the incremental cost of additional control.

Reporting Requirements

One commenter felt that the reporting requirements are purely for the ease of enforcement purposes, for data collection purposes, and require the submittal of duplicate information. The commenter suggested that EPA either delete the requirements or justify the need for the routine reporting requirements in determining compliance with the standard. Other commenters recognized the need for reports but suggested changes to the requirements. One commenter suggested that after submitting the initial report, plants should report only changes in the number of valves or leaks detected and repaired. Other commenters recommended that only leaks not repaired should be reported quarterly and that reporting the number of valves in each process unit is unnecessary since the number rarely changes. One of the commenters added that records of details of unsuccessful repair attempts, while possibly of interest to the owner or operator, should not be made a reporting requirement.

Effective enforcement of standards, such as this one, is important. In doing this, public officials must implement enforcement programs that are efficient in order to reduce the cost of enforcement. Reporting requirements are very helpful for effective and efficient enforcement of the standard. Contrary to what one commenter suggests, EPA is not establishing reporting requirements for the purpose of data collection and has reviewed the requirements to reduce possibly duplicative requirements. Reports will be used in a meaningful manner in conjunction with records and inspections to enforce the standard.

Reporting is an effective mechanism for reducing the cost of enforcement because reports reduce the amount of time required to conduct inspections and make it possible to reduce the number of inspections conducted by enforcement personnel. In response to comments, however, the standard was changed to require semiannual rather than quarterly reports since proposal. Semiannual reports cost less to industry than quarterly reports, and they better indicate to enforcement personnel the efforts of plants to control equipment leaks than quarterly reports. Thus, EPA changed the reporting frequency from quarterly to semiannual.

Also, in response to the comments on reporting requirements, EPA reduced the amount of information that must be reported by the plant owner or operator. The information required in reports is the same information that a plant manager would likely want to evaluate his or her program. The report will include the number of leaks that occurred within the process unit during the reporting period, the number of leaks that could not be repaired within 15 days, and the general reasons for unsuccessful or delay of repair past the 15-day period. Since no reporting format is required by the standard, reports required by other regulations may simply be photocopied and submitted in compliance with the standard for equipment leaks of benzene as long as the report satisfies the informational requirements of § 61.247.

The requirement to report reasons for unsuccessful or delay of repair is necessary to allow EPA to assess whether the owner or operator is making reasonable attempts at repair and understands the workings of the standard. EPA expects that delays will occur only because repair would result in process unit shutdown. Such delays can be readily explained by the owner or operator. Since EPA does not expect many of these delays to occur, EPA considers reporting the reasons for them to be reasonable. The requirement to report the number of leaks found will assist EPA in determining whether the number of leaks not repaired within 15 days indicates reasonable attempts at repair. EPA will gauge the significance of the number of leaks not repaired within 15 days in relation to the number leaks found.

The requirements in the final standard involve recordkeeping along with reporting. This provides enforcement of the standard in an effective and efficient manner. It should fit well with management of the standard by plant personnel. The recordkeeping requirements are the minimum that could be implemented without precluding the possibility of enforcing the standard. The recordkeeping requirements are essentially the same as those proposed and reflect a level of documentation that plant personnel would require to evaluate implementation of the standard. Without retrospective data, inspections would be useless and reporting would be impossible. In the proposed standards, EPA included a requirement to report leak location and I.D. number. This would have allowed EPA to determine whether certain equipment leaks of benzene in a plant were causing repeated problems. However, in order to reduce reporting requirements for industry and to reduce EPA review requirements, EPA has decided to eliminate leak location and I.D. number from the reporting requirements.

During the first 2 years of the program, the average annual burden of reporting and recordkeeping to industry would be about 20 person-years. The burden is distributed among about 240 process units and, on an annual basis, represents about 1 person-month per process unit. Over the same period, the average annual burden of reporting, recordkeeping, and inspections to EPA would be about 10 person-years. This program provides a reasonable level of compliance monitoring.

Incorporation of Volatile Hazardous Air Pollutant Standards

Other standards for volatile hazardous air pollutants (VHAP), if established, will likely be similar to the standard selected by EPA for equipment leaks of benzene. [This will occur unless, for a specific VHAP, BAT is different, or EPA selects a control level associated with a technology more stringent than BAT.] Subpart V (40 CFR Part 61) is being promulgated as

requirements for equipment leaks of VHAP. Subpart J, which promulgates the specific standard for equipment leaks of benzene, refers to Subpart V as the substantive requirements for all the sources covered by Subpart J. Standards for other VHAP, if proposed, would use Subpart V as a general guideline for the standard for equipment leaks of the VHAP. The technology selected as the basis for Subpart J would be used as the basis for the analyses of other VHAP. This provides an extra degree of certainty for public commenters and an effective mechanism to incorporate appropriate technological changes to all standards for equipment leaks of VHAP.

Docket

The docket is an organized and complete file of all the information considered by EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to identify and locate documents readily so that they can effectively participate in the rulemaking process. Along with the statement of basis and purpose of the proposed and final standard EPA responses to significant comments, the contents of the docket will serve as the record in case of judicial review, except for interagency review materials [section 307(d)(7)(A)].

Miscellaneous

The effective date of this regulation is June 6, 1984. Section 112 of the Clean Air Act provides that national emission standards for hazardous air pollutants become effective upon promulgation and apply to all existing and new sources.

As prescribed by section 112, promulgation of this standard was preceded by the Administrator's determination that benzene presents a significant carcinogenic risk to human health and is, therefore, a hazardous air pollutant as defined in section 112(a)(1) of the Act. Benzene was added to the list of hazardous air pollutants on June 8, 1977. In accordance with section 117 of the Act, publication of this promulgated standard was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. In addition, members of the benzene task group of the Interagency Regulatory Liaison Group (IRLG), representing the EPA, the OSHA, the Food and Drug Administration, and the Consumer Product Safety Commission, have met (when the IRLG existed) and reviewed the standard to ensure that each rule is jointly understood and is consistent with their programs.

An economic impact assessment was prepared for the regulation and for other regulatory alternatives. The economic impact assessment for the standard is included in the BID for the proposed and promulgated standard.

The Paperwork Reduction Act (PRA) of 1980 (Pub. L. 96-511) requires clearance from the Office of Management and Budget (OMB) of reporting and recordkeeping requirements that qualify as an "information collection request" under the PRA, which affect 10 or more plants for the standard. OMB is currently clearing information collection requests for a period of 2 years. For the purposes of OMB's review, an analysis of the burden associated with the reporting and recordkeeping requirements of this regulation has been made. During the first 2 years of this regulation, the average annual burden of the reporting and recordkeeping requirements for the benzene fugitive standard would be about 20 person-years, based on an average of about 240 process units per year.

Information collection requirements associated with this regulation (Subpart A and Subpart J of Part 61) have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, and have been assigned OMB control number 2060-0068.

Under Executive Order 12291, the EPA is required to judge whether this regulation is a "major rule" and therefore subject to certain requirements of the Order. The EPA has determined that this regulation will result in none of the adverse economic effects set forth in Section 1 of the Order as grounds for finding a regulation to be a "major rule." This regulation is not major because: (1) Nationwide annual compliance costs are not as great as the threshold of $100 million; (2) the standard does not significantly increase prices or production costs; and (3) the standard does not cause significant, adverse effects on domestic competition, employment, investment, productivity, innovation, or competition in foreign markets.

This regulation was submitted to the OMB for review as required by Executive Order 12291. Any comments from the OMB to the EPA and any EPA response to those comments are included in Docket No. A-79-27 (benzene fugitive). The docket is available for public inspection at the EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460.

The Regulatory Flexibility Act of 1980 requires that adverse effects of all Federal regulations upon small businesses be identified. According to current Small Business Administration guidelines, a small business that manufactures cyclic crudes and cyclic intermediates, pharmaceuticals, and many other chemicals is one that has 750 employees or fewer. Currently, very few of the businesses in the existing industry employ fewer than 750 people. Even if facilities owned by small businesses do become subject to the standard, none will be affected adversely. This conclusion is based on the fact that, in doing the economic analysis for the benzene fugitives standard, the price increase and profitability impacts have been estimated from the perspective of the smaller process units in operation. Therefore, the finding that the annualized cost of the standard will be very small (about $2,000/yr) for units affected by the standard accurately reflects the impacts for benzene fugitive facilities owned by small businesses.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

Dated: May 23, 1984.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

40 CFR Part 61 is amended by adding Subparts J and V and by adding three subparagraphs to paragraph (a) of §61.18 as follows:

1. By adding Subparts J and V to 40 CFR Part 61 as follows:

Subpart J—National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene

Sec.

61.110 Applicability and designation of sources.
61.111 Definitions.
61.112 Standards.
61.113-61.119 [Reserved].

* * * * *

Subpart V—National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

Sec.
61.240 Applicability and designation of sources.
61.241 Definitions.
61.242-1 Standards: General.
61.242-2 Standards: Pumps.
61.242-3 Standards: Compressors.
61.242-4 Standards: Pressure relief devices in gas/vapor service.
61.242-5 Standards: Sampling connection systems.
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61.242-9 Standards: Product accumulator vessels.
61.242-10 Standards: Delay of repair.
61.242-11 Standards: Closed-vent systems and control devices.
61.243-1 Alternative standrds for valves in UHAP Service—allowable percentage of valves leaking.
61.243-2 Alternative standards for valves in VHAP service—skip period leak detection and repair.
61.244 Alternative means of emission limitation.
61.245 Test methods and procedures.
61.246 Recordkeeping requirements.
61.247 Reporting requirements.

Authority: Sections 112 and 301(a) of the Clean Air Act, as amended [42 U.S.C. 7412, 7601(a)], and additional authority as noted below.

Subpart J—National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene

§ 61.110 Applicability and designation of sources.

(a) The provisions of this subpart apply to each of the following sources that are intended to operate in benzene service: pumps, compressors, pressure relief devices, sampling connections, systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this subpart.

(b) The provisions of this subpart do not apply to sources located in coke by-product plants.

(c)(1) If an owner or operator applies for one of the exemptions in this paragraph, then the owner or operator shall maintain records as required in § 61.246(i).

(2) Any equipment in benzene service that is located at a plant site designed to produce or use less than 1,000 megagrams of benzene per year is exempt from the requirements of § 61.112.

(3) Any process unit (defined in § 61.241) that has no equipment in benzene service is exempt from the requirements of § 61.112.

(d) While the provisions of this subpart are effective, a source to which this subpart applies that is also subject to the provisions of 40 CFR Part 60 only will be required to comply with the provisions of this subpart.

§ 61.111 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act, in Subpart A of Part 61, or in Subpart V of Part 61, and the following terms shall have the specific meanings given them:

"In benzene service" means that a piece of equipment either contains or contacts a fluid (Liquid or gas) that is at least 10 percent benzene by weight as determined according to the provisions of § 61.245(d). The provisions of § 61.245(d) also specify how to determine that a piece of equipment is not in benzene service.

"Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after June 6, 1984 for existing sources.

§ 61.112 Standards.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the requirements of Subpart V of this part.

(b) An owner or operator may elect to comply with the requirements of § 61.243-1 and § 61.243-2.

(c) An owner or operator may apply to the Administrator for a determination of an alternative means of emission limitation that achieves a reduction in emissions of benzene at least equivalent to the reduction in emissions of benzene achieved by the controls required in this subpart. In doing so, the owner or operator shall comply with requirements of § 61.244.

§ 61.113-61.119 [Reserved]

* * * * *

Subpart V—National Emission Standard for Equipment Leaks (Fugitive Emission Sources)

§ 61.240 Applicability and designation of sources.

(a) The provisions of this subpart apply to each of the following sources that are intended to operate in volatile hazardous air pollutant (VHAP) service: pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices or systems required by this subpart.

(b) The provisions of this subpart apply to the sources listed in paragraph (a) after the date of promulgation of a specific subpart in Part 61.

(c) While the provisions of this subpart are effective, a source to which this subpart applies that is also subject to the provisions of 40 CFR Part 60 only will be required to comply with the provisions of this subpart.

§ 61.241 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act, in Subpart A of Part 61, or in specific subparts of Part 61; and the following terms shall have specific meaning given them:

"Closed-vent system" means a system that is not open to atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

"Connector" means, flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of equipment.

"Control device" means an enclosed combustion device, vapor recovery system, or flare.

"Double block and bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

"Equipment" means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, flange or other connector, product accumulator vessel in VHAP service, and any control devices or systems required by this subpart.

"First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.

"In gas/vapor service" means that a piece of equipment contains process fluid that is in the gaseous state at operating conditions.

"In liquid service" means that a piece of equipment is not in gas/vapor service.

"*In-situ* sampling systems" means nonextractive samplers or in-line samplers.

"In vacuum service" means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa) below ambient pressure.

"In VHAP service" means that a piece of equipment either contains or contacts

a fluid (liquid or gas) that is at least 10 percent by weight a volatile hazardous air pollutant (VHAP) as determined according to the provisions of § 61.245(d). The provisions of § 61.245(d) also specify how to determine that a piece of equipment is not in VHAP service.

"In VOC service" means, for the purposes of this subpart, that (a) the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight (see 40 CFR 60.2 for the definition of volatile organic compound or VOC and 40 CFR 60.458(d) to determine whether a piece of equipment is not in VOC service) and (b) the piece of equipment is not in liquid service as defined in 40 CFR 60.481.

"Open-ended valve or line" means any valve, except pressure relief valves, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.

"Pressure release" means the emission of materials resulting from the system pressure being greater than the set pressure of the pressure relief device.

"Process unit" means equipment assembled to produce a VHAP or its derivatives as intermediates or final products, or equipment assembled to use a VHAP in the production of a product. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

"Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

"Product accumulator vessel" means any distillate receiver, bottoms receiver, surge control vessel, or product separator in VHAP service that is vented to atmosphere either directly or through a vacuum-producing system. A product accumulator vessel is in VHAP service if the liquid or the vapor in the vessel is at least 10 percent by weight VHAP.

"Repaired" means that equipment is adjusted, or otherwise altered, to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

"Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after the effective date of a specific subpart that references this subpart.

"Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

"Volatile Hazardous Air Pollutant" or "VHAP" means a substance regulated under this subpart for which a standard for equipment leaks of the substance has been proposed and promulgated. Benzene is a VHAP.

§ 61.242-1 Standards: General.

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of § 61.242-1 to § 61.242-11 for each new and existing source as required in 40 CFR 61.05, except as provided in § 61.243 and § 61.244.

(b) Compliance with this subpart will be detemined by review of records, review of performance test results, and inspection using the methods and procedures specified in § 61.245.

(c)(1) An owner or operator may request a determination of alternative means of emission limitation to the requirements of §§ 61.242-2, 61.242-3, 61.242-5, 61.242-7, 61.242-8, 61.242-9 and 61.242-11 as provided in § 61.244.

(2) If the Administrator makes a determination that a means of emission limitation is at least a permissible alternative to the requirements of §§ 61.242-2, 61.242-3, 61.242-5, 61.242-6, 61.242-7, 61.242-8, 61.242-9 or 61.242-11, an owner or operator shall comply with the requirements of that determination.

(d) Each piece of equipment to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment.

(e) Equipment that is in vacuum service is excluded from the requirements of § 61.242-2, to § 61.242-11 if it is identified as required in § 61.246(e)(5).

§ 61.242-2 Standards: Pumps.

(a)(1) Each pump shall be monitored monthly to detect leaks by the methods specified in § 61.245(b), except as provided in § 61.242-1(c) and paragraphs (d), (e), and (f) of this section.

(2) Each pump shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(b)(1) if an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of pargraph (a), provided the following requirements are met:

(1) Each dual mechanical seal system is:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or

(ii) Equipped with a barrier fluid degassing reservior that is connected by a closed-vent system to a control device that complies with the requirements of § 61.242-11; or

(iii) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.

(2) The barrier fluid is not in VHAP service and, if the pump is covered by standards under 40 CFR Part 60, is not in VOC service.

(3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump is checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.

(5)(i) Each sensor as described in paragraph (d)(3) of this section is checked daily or is equipped with a audible alarm, and

(ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii), a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is

detected, except as provided in § 61.242-10.

(iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 61.246(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) if the pump:

(1) Has no externally actuated shaft penetrating the pump housing,

(2) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c), and

(3) Is tested for compliance with paragraph (e)(2) initially upon designation, annually, and at other times requested by the Administrator.

(f) If any pump is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 61.242-11, it is exempt from the requirements of paragraphs (a)-(e).

§ 61.242-3 Standards: Compressors.

(a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to atmosphere, except as provided in § 61.242-1(c) and paragraphs (h) and (i) of this section.

(b) Each compressor seal system as required in paragraph (a) shall be:

(1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or

(2) Equipped with a barrier fluid system that is connected by a closed-vent system to a control device that complies with the requirements of § 61.242-11; or

(3) Equipped with a system that purges the barrier fluid into a process stream with zero VHAP emissions to atmosphere.

(c) The barrier fluid shall not be in VHAP service and, if the compressor is covered by standards under 40 CFR Part 60, shall not be in VOC service.

(d) Each barrier fluid system as described in paragraphs (a)-(c) of this section shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(e)(1) Each sensor as required in paragraph (d) shall be checked daily or shall be equipped with an audible alarm.

(2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(f) If the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined under paragraph (e)(2) of this section, a leak is detected.

(g)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after eack leak is detected.

(h) A compressor is exempt from the requirements of paragraphs (a) and (b) if it is equipped with a closed-vent system capable of capturing and transporting any leakage from the seal to a control device that complies with the requirements of § 61.242-11, except as provided in paragraph (i).

(i) Any Compressor that is designated, as described in § 61.246(e)(2), for no detectable emission as indicated by an instrument reading of less than 500 ppm above background is exempt from the requirements of paragraphs (a)-(h) if the compressor:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c); and

(2) Is tested for compliance with paragraph (i)(1) initially upon designation, annually, and at other times requested by the Administrator.

§ 61.242-4 Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the method specified in § 61.245(c).

(c) Any pressure relief device that is equipped with a closed-vent system capable of capturing and transporting leakage from the pressure relief device to a control device as described in § 61.242-11 is exempt from the requirements of paragraphs (a) and (b).

§ 61.242-5 Standards: Sampling connecting systems.

(a) Each sampling connection system shall be equipped with a closed-purge system or closed vent system, except as provided in § 61.242-1(c).

(b) Each closed-purge system or closed-vent system as required in paragraph (a) shall:

(1) Return the purged process fluid directly to the process line with zero VHAP emissions to atmosphere; or

(2) Collect and recycle the purged process fluid with zero VHAP emissions to atmosphere; or

(3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of § 61.242-11.

(c) *In-situ* sampling systems are exempt from the requirements of paragraphs (a) and (b).

§ 61.242-6 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in § 61.242-1(c).

(2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

(c) When a double block and bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) at all other times.

§ 61.242-7 Standards: Valves.

(a) Each valve shall be monitored monthly to detect leaks by the method specified in § 61.245(b) and shall comply with paragraphs (b)-(e), except as provided in paragraphs (f), (g), and (h) of this section, §§ 61.243-1 or 61.243-2. and § 61.242-1(c).

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in § 61.242-10.

(2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the following best practices where practicable:

(1) Tightening of bonnet bolts;

(2) Replacement of bonnet bolts;

(3) Tightening of packing gland nuts; and

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 61.246(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) if the valve:

(1) Has no external actuating mechanism in contact with the process fluid;

(2) Is operated with emissions less than 500 ppm above background, as measured by the method specified in § 61.245(c); and

(3) Is tested for compliance with paragraph (f)(2) initially upon designation, annually, and at other times requested by the Administrator.

(g) Any valve that is designated, as described in § 61.246(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a); and

(2) The owner or operator of the valve has a written plan that requires monitoring of the valve as frequent as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 61.246(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:

(1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface;

(2) The process unit within which the valve is located is an existing process unit; and

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 61.242-9 Standards: Pressure relief devices in liquid service and flanges and other connectors.

(a) Pressure relief devices in liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in § 61.245(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.242-10.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 61.242-7(e).

§ 61.242-8 Standards: Product accumulator vessels.

Each product accumulator vessel shall be equipped with a closed-vent system capable of capturing and transporting any leakage from the vessel to a control device as described in § 61.242-11.

§ 61.242-10 Standards: Delay of repair.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment for which leaks have been detected will be allowed for equipment that is isolated from the process and that does not remain in VHAP service.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

(2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with § 61.242-11.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair beyond a process unit shutdown will be allowed for a valve if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

§61.242-11 Standards: Closed-vent systems and control devices.

(a) Owners or operators of closed-vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section.

(b) Vapor recovery systems (for example, condensers and adsorbers) shall be designed and operated to recover the organic vapors vented to them with an efficiency of 95 percent or greater.

(c) Enclosed combustion devices shall be designed and operated to reduce the VHAP emissions vented to them with an efficiency of 95 percent or greater or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760°C.

(d)(1) Flares shall be designed for an operated with no visible emissions as determined by the methods specified in § 61.245(e), except for periods not to exceed a total of 5 minutes during any 1 consecutive hours.

(2) Flares shall be operated with a flame present at all times, as determined by the methods specified in § 61.245.(e).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm or greater if the flare is nonassisted. The net heating value of the gas being combusted shall be determined by the method specified in § 61.245(e).

(4) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in § 61.245(e)(4), less than 18 m/sec (60 ft/sec).

(5) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max}, as determined by the method specified in § 61.245(e)(5).

(6) Flares used comply with this subpart shall be steam-assisted, air-assisted, or nonassisted.

(e) Owners or operators of control devices that are used to comply with the provisions of this supbart shall monitor

these control devices to ensure that they are operated and maintained in conformance with their design.

(f)(1) Closed-vent systems shall be designed for and operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified as § 61.245(c).

(2) Closed-event systems shall be monitored to determine compliance with this section initially in accordance with § 61.05, annually, and at other times requested by the administrator.

(3) Leaks, as indicated by an instrument reading greater than 500 ppm and visual inspections, shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected.

(4) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

(g) Closed-vent systems and control devices use to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 61.243-1 Alternative standards for valves in VHAP service—allowable percentage of valves leaking.

(a) An owner or operator may elect to have all valves within a process unit to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator decides to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to have all valves within a process unit to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in § 61.247(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it shall be repaired in accordance with § 61.242-7(d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in VHAP service within the process unit shall be monitored within 1 week by the methods specified in § 61.245(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves in VHAP service for which leaks are detected by the number of valves in VHAP service within the process unit.

(d) Owner or operators who elect to have all valves comply with this alternative standard shall not have a process unit with a leak percentage greater than 2.0 percent.

(e) If an owner or operator decides no longer to comply with § 61.243-1, the owner or operator must notify the Administrator in writing that the work practice standard described in § 61.242-7(a)-(e) will be followed.

§ 61.243-2 Alternative standards for valves in VHAP service—skip period leak detection and repair.

(a)(1) An owner or operator may elect for all valves within a process unit to comply with one of the alternative work practices specified in paragraphs (b)(2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in § 61.247(d).

(b)(1) An owner or operator shall comply initially with the requirements for valves, as described in § 61.242-7.

(2) After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in VHAP service.

(3) After 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quartely leak detection periods for the valves in VHAP service.

(4) If the percentage of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in § 61.242-7 but may again elect to use this section.

§ 61.244 Alternative means of emission limitation.

(a) Permission to use an alternative means of emission limitation under Section 112(e)(3) of the Clean Air Act shall be governed by the following procedures:

(b) Where the standard is an equipment, design, or operational requirement:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.

(2) The Administrator will compare test data for the means of emission limitation to test data for the equipment, design, and operational requirements.

(3) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) Where the standard is a work practice:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data for an alternative means of emission limitation.

(2) For each source for which permission is requested, the emission reduction achieved by the required work practices shall be demonstrated for a minimum period of 12 months.

(3) For each source for which permission is requested, the emission reduction achieved by the alternative means of emission limitation shall be demonstrated.

(4) Each owner or operator applying for permission shall commit in writing each source to work practices that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practices.

(5) The Administrator will compare the demonstrated emission reduction for the alternative means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in paragraph (c)(4).

(6) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practices of this subpart.

(d) An owner or operator may offer a unique approach to demonstrate the alternative means of emission limitation.

(e)(1) Manufacturers of equipment used to control equipment leaks of a VHAP may apply to the Administrator for permission for an alternative means of emission limitation that achieves a reduction in emissions of the VHAP achieved by the equipment, design, and operational requirements of this subpart.

(2) The Administrator will grant permission according to the provisions of paragraphs (b), (c), and (d).

§ 61.245 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test methods and procedures requirements provided in this section.

(b) Monitoring, as required in § 61.242, § 61.243, and § 61.244, shall comply with the following requirements:

(1) Monitoring shall comply with Reference Method 21.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the

procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 3 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 61.242-2(e), 61.242-3(i), 61.242-4, 61.242-7(f), and 61.242-11(f), the test shall comply with the following requirements:

(1) The requirements of paragraphs (b)(1)-(4) shall apply.

(2) The background level shall be determined, as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 655 upm for determining compliance.

(d)(1) Each piece of equipment within a process unit that can conceivably contain equipment in VHAP service is presumed to be in VHAP service unless an owner or operator demonstrates that the piece of equipment is not in VHAP service. For a piece of equipment to be considered not in VHAP service, it must be determined that the percent VHAP content can be reasonably expected never to exceed 10 percent by weight. For purposes of determining the percent VHAP content of the process fluid that is contained in or contacts equipment, procedures that conform to the methods described in ASTM Method D-2267 (incorporated by the reference as specified in § 61.18) shall be used.

(2)(i) An owner or operator may use engineering judgment rather than the procedures in paragraph (d)(1) of this section to demonstrate that the percent VHAP content does not exceed 10 percent by weight, provided that the engineering judgment demonstrates that the VHAP content clearly does not exceed 10 percent by weight. When an owner or operator and the Administrator do not agree on whether a piece of equipment is not in VHAP service, however, the procedures in paragraph (d)(1) of this section shall be used to resolve the disagreement.

(ii) If an owner or operator determines that a piece of equipment is in VHAP service, the determination can be revised only after following the procedures in paragraph (d)(1) of this section.

(3) Samples used in determining the percent VHAP content shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(e)(1) Reference Method 22 shall be used to determine compliance of flares with the visible emission provisions of this subpart.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\left(\sum_{i=1}^{n} C_i H_i\right)$$

Where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25°C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20°C.

K = Constant, 1.740×10^{7} (1/ppm) (g mole/scm) (MJ/kcal) where standard temperature for (g mole/scm) is 20°C

C_i = Concentration of sample component i in ppm, as measured by Reference Method 18 of Appendix A of 40 FR Part 60 and ASTM D2504-67 (reapproved 1977) (incorporated by reference as specified in § 61.18).

H_i = Net heat of combustion of sample component i, kcal/g mole. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in § 61.18) if published values are not available or cannot be calculated.

(4) The actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Method 2, 2A, 2C, or 2D, as appropriate, by the unobstructed (free) cross section area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation:

$$VMax = 8.76 + 0.7084(H_T)$$

Where:

VMax = Maximum permitted velocity, m/sec

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(3) of this section.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).)

§ 61.246 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator of more than one process unit subject to the provisions of this subpart may comply with the recordkeeping requirements for these process units in one recordkeeping system if the system identifies each record by each process unit.

(b) When each leak is detected as specified in §§ 61.242-2, 61.242-3, 61.242-7, and 61.242-8, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in § 61.242-7(c) and no leak has been detected during those 2 months.

(3) The identification on equipment, except on a valve, may be removed after it has been repaired.

(c) When each leak, is detected as specified in §§ 61.242-2, 61.242-3, 61.242-7, and 61.242-8, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) "Above 10,000" if the maximum instrument reading measured by the methods specified in § 61.245(a) after each repair attempt is equal to or greater than 10,000 ppm.

(5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 calendar days.

(8) Dates of process unit shutdowns that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(d) The following information pertaining to the design requirements for closed-vent systems and control devices described in § 61.242-11 shall be

recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3) A description of the parameter or parameters monitored, as required in § 61.242–11(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

(4) Periods when the closed-vent systems and control devices required in §§ 61.242–2, 61.242–3, 61.242–4, 61.242–5 and 61.242–9 are not operated as designed, including periods when a flare pilot light does not have a flame.

(5) Dates of startups and shutdowns of the closed-vent systems and control devices required in §§ 61.242–2, 61.242–3, 61.242–4, 61.242–5 and 61.242–9.

(e) The following information pertaining to all equipment subject to the requirements in § 61.242–1 to § 61.242–11 shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 61.242–2(e), 61.242–3(i), and 61.242–7(f).

(ii) The designation of this equipment as subject to the requirements of § 61.242–2(e), 61.242–3(i), or 61.242–7(f) shall be signed by the owner or operator.

(3) A list of equipment identification numbers for pressure relief devices required to comply with § 61.242–4(a).

(4)(i) The dates of each compliance test required in §§ 61.242–2(e), 61.242–3(i), 61.242–4, and 61.242–7(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(f) The following information pertaining to all valves subject to the requirements of § 61.242–7(g) and (h) shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for valves that are designated as unsafe to monitor, an explanation for each valve stating why the valve is unsafe to monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult to monitor, an explanation for each valve stating why the valve is difficult to monitor, and the planned schedule for monitoring each valve.

(g) The following information shall be recorded for valves complying with § 61.243–2:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(h) The following information shall be recorded in a log that is kept in a readily accessible location:

(1) Design criterion required in § 61.242–2(d)(5) and § 61.242–3(e)(2) and an explanation of the design criterion; and

(2) Any changes to this criterion and the reasons for the changes.

(i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in the applicability section of this subpart and other specific subparts:

(1) An analysis demonstrating the design capacity of the process unit, and

(2) An analysis demonstrating that equipment is not in VHAP service.

(j) Information and data used to demonstrate that a piece of equipment is not in VHAP service shall be recorded in a log that is kept in a readily accessible location.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).)

(Approved by the Office of Management and Budget under control number 2060–0088)

§ 61.247 Reporting requirements.

(a)(1) An owner or operator of any piece of equipment to which this subpart applies shall submit a statement in writing notifying the Administrator that the requirements of §§ 61.242, 61.245, 61.246, and 61.247 are being implemented.

(2) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under § 61.11, along with the information required under § 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.

(3) In the case of new sources which did not have an initial startup date preceding the effective date, the statement shall be submitted with the application for approval of construction, as described in § 61.07.

(4) The statement is to contain the following information for each source:

(i) Equipment identification number and process unit identification.

(ii) Type of equipment (for example, a pump or pipeline valve).

(iii) Percent by weight VHAP in the fluid at the equipment.

(iv) Process fluid state at the equipment (gas/vapor or liquid).

(v) Method of compliance with the standard (for example, "monthly leak detection and repair" or "equipped with dual mechanical seals").

(b) A report shall be submitted to the Administrator semiannually starting 6 months after the initial report required in § 61.247(a), that includes the following information:

(1) Process unit identification.

(2) For each month during the semiannual reporting period,

(i) Number of valves for which leaks were detected as described in § 61.242–7(b) of § 61.243–2.

(ii) Number of valves for which leaks were not repaired as required in § 61.242–7(d).

(iii) Number of pumps for which leaks were detected as described in § 61.242–2(b) and (d)(6).

(iv) Number of pumps for which leaks were not repaired as required in § 61.242–2(c) and (d)(6).

(v) Number of compressors for which leaks were detected as described in § 61.242–3(f).

(vi) Number of compressors for which leaks were not repaired as required in § 61.242–3(g).

(vii) The facts that explain any delay of repairs and, where appropriate, why a process unit shutdown was technically infeasible.

(3) Dates of process unit shutdowns which occurred within the semiannual reporting period.

(4) Revisions to items reported according to paragraph (a) if changes have occurred since the initial report or subsequent revisions to the initial report.

(5) The results of all performance tests to determine compliance with § 61.242–2(e), § 61.242–3(i), § 61.242–4(a), § 61.242–7(f), § 61.242–11(f), § 61.243–1 and § 61.243–2 conducted within the semiannual reporting period.

(c) In the first report submitted as required in § 61.247(a), the report shall include a reporting schedule stating the months that semiannual reports shall be submitted. Subsequent reports shall be submitted according to that schedule, unless a revised schedule has been submitted in a previous semiannual report.

(d) An owner or operator electing to comply with the provisions of §§ 61.243-1 and 61.243-2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.

(e) An application for approval of construction or modification, § 61.05(a) and § 61.07, will not be required if—

(1) The new source complies with the standard, § 61.242;

(2) The new source is not part of the construction of a process unit; and

(3) In the next semiannual report required by § 61.247(b), the information in § 61.247(a)(1) is reported.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414).) (Approved by the Office of Management and Budget under control number ICR-1153.)

2. By adding paragraphs (a) (4), (5), and (6) to § 61.18 of Subpart A—General Provisions as follows. The introductory text of the section and of paragraph (a) are shown for reader convenience.

§ 61.18 Incorporation by reference.

The materials listed below are incorporated by reference in the corresponding sections noted. These incorporations by reference were approved by the Director of the Federal Register on the date listed. These materials are incorporated as they exist on the date of the approval, and a notice of any changes in these materials will be published in the **Federal Register**. The materials are available for purchase at the corresponding address noted below, and all are available for inspection at the Office of the Federal Register Information Center, Room 8401, 1100 L Street, N.W., Washington, D.C. 20408 and the Library (MD-35), U.S. EPA, Research Triangle Park, North Carolina 27711.

(a) The following materials are available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; or the University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

* * * * *

(4) ASTM D 2267-68 (Reapproved 1978), Aromatics in Light Naphthas and Aviation Gasolines by Gas Chromatography, IBR approved June 6, 1984, for § 61.245(d)(1).

(5) ASTM D 2382-76, Heat of Combustion of Hydrocarbon Fuels by Bomb Calorimeter (High-Precision Method), IBR approved June 6, 1984, for § 61.245(e)(3).

(6) ASTM D 2504-67 (Reapproved 1977), Noncondensable Gases in C_3 and Lighter Hydrocarbon Products by Gas Chromatography, IBR approved June 6, 1984, for § 61.245(e)(3).

(Sections 112 and 301(a) of the Clean Air Act as amended, [42 U.S.C. 7412, 7601(a)])

[FR Doc. 84-14479 Filed 6-5-84; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[FRL-2592-8]

Subdelegation of Authority to the Oklahoma City-County Health Department for the New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) Programs

AGENCY: Environmental Protection Agency (EPA), Region 6.

ACTION: Final rulemaking.

SUMMARY: The Oklahoma State Department of Health (OSDH) has subdelegated the authority to implement and enforce the NSPS and NESHAP programs in Oklahoma City and County to the Oklahoma City-County Health Department (OCCHD). Except as specifically limited, all of the authority and responsibilities delegated to the OSDH by EPA, which are found in 40 CFR Parts 60 and 61, are subdelegated to the OCCHD. Any such authority and responsibilities may be redelegated by the OCCHD to its staff.

EFFECTIVE DATE: August 1, 1983.

ADDRESS: A copy of the OCCHD/OSDH agreement for this subdelegation of authority is available for public inspection at the Air Branch, Air and Waste Management Division, Environmental Protection Agency, Region 6, InterFirst Two Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270.

FOR FURTHER INFORMATION CONTACT: Donna M. Ascenzi, Air Branch, EPA, address above; Telephone (214) 767-9873.

SUPPLEMENTARY INFORMATION: On June 10, 1983, EPA delegated the additional authority to the OSDH to subdelegate the authority for the NSPS and NESHAP programs to local air pollution control agencies in Oklahoma. Effective on August 1, 1983, this authority was granted to the OCCHD to administer the requirements for the NSPS and NESHAP programs specified in 40 CFR Parts 60 and 61, as delegated to the OSDH by EPA.

In April 1983, the OCCHD requested the OSDH to delegate to them the authority to implement and enforce the NSPS and NESHAP programs as specified under 40 CFR Parts 60 and 61 for sources located in Oklahoma County and all sources located in Canadian County that are in the Oklahoma City limits. On August 1, 1983, the OSDH approved subdelegating this authority to the OCCHD.

This notice will have no effect on the National Ambient Air Quality Standards.

The Office of Management and Budget has exempted this information notice from the requirements of section 3 of Executive Order 12291.

Sources locating in Oklahoma City and County should submit all information pursuant to 40 CFR Parts 60 and 61 directly to the Oklahoma City-County Health Department, 1000 Northeast 10th Street, Oklahoma City, Oklahoma 73152.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil fuel-fired steam generators, Fiberglass insulation, Synthetic fibers.

40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

Dated: May 10, 1984.

Dick Whittington,

Regional Administrator.

PART 60—NEW SOURCE PERFORMANCE STANDARDS

Part 60 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

Section 60.4 is amended by revising paragraph (b)(LL)(i) to read as follows:

§ 60.4 Address.

* * * * *

(b) * * *

(LL) * * *

(i) Oklahoma City and County: Oklahoma City-County Health Department, 1000 Northeast 10th Street, Oklahoma City, Oklahoma 73152.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

Section 61.04 is amended by revising paragraph (b)(LL)(i) to read as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(LL) * * *

(i) Oklahoma City and County: Oklahoma City-County Health Department, 1000 Northeast 10th Street, Oklahoma City, Oklahoma 73152.

(Clean Air Act, secs. 111 and 112, 42 U.S.C. 7411 and 7412)

[FR Doc. 84-13787 Filed 6-7-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[AD-FRL 2611-4]

National Emission Standards for Hazardous Air Pollutants; Amendments to Asbestos Standard; Correction

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; correction.

SUMMARY: This document corrects a final rule for amendments to the Asbestos Standard that was published April 5, 1984 (49 FR 13657). This action is necessary to correct typographical errors.

FOR FURTHER INFORMATION CONTACT: Mr. Doug Bell, Standards Development Branch, ESED (MD-13), U.S. EPA, Research Triangle Park, North Carolina 27711, telephone (919) 541-5624.

Dated: June 11, 1984.

Joseph A. Cannon,

Assistant Administrator for Air and Radiation.

The following corrections are made in 40 CFR Part 61 appearing on page 13657 in the issue of April 5, 1984:

1. On page 13661, column two, the definition of "asbestos waste from control devices" is corrected by replacing the word "in" with "by."

2. On page 13661, column two, the term "Emergency renovation operations" is corrected to "Emergency renovation operation."

3. On page 13661, column three, in the definition of "strip," insert "a" between "part of" and "facility."

4. On page 13661, column three, in the third line of the definition of "structural member," replace the word "loan" with "load."

5. On page 13662, column one, § 61.143, the first two lines are corrected to read "No person may surface a roadway with asbestos tailings or * * *"

6. On page 13662, column two, § 61.145(b), the sixth line is corrected to read, "components, only the * * *"

7. On page 13662, column three, § 61.146(c)(3), the first sentence is corrected to read, "Estimate of the approximate amount of friable asbestos material present in the facility in terms of linear feet of pipe, and surface area on other facility components."

8. On page 13664, column one, § 61.152, the first sentence, third line is corrected to read, "§§ 61.147 and 61.149 shall:"

9. On page 13664, column one, § 61.152(b)(1)(iv), the word "hazardous" should be capitalized.

10. On page 13664, column three, § 61.154(a), the third and fourth lines are corrected to read "61.147(d)(2), 61.148(b)(2), 61.149(b), 61.151(b), 61.151(c)(1)(ii), 61.152(b)(1)(ii), and 61.152(b)(2)(ii) shall:"

11. On page 13664, column three, § 61.154(a)(1)(i), the third line is corrected to read, "no more than .295 kilopascal (4 inches water gage), as".

[FR Doc. 84-16320 Filed 6-20-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[OAR-FRL-2615-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of Nevada

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAPS authority to the Nevada Department of Conservation and Natural Resources (NDCNR). This action is necessary to bring the NSPS and NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: June 4, 1984.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The NDCNR has requested authority for delegation of certain NSPS and NESHAPS categories. Delegation of authority was granted by letters dated December 20, 1983, May 14, 1984, and May 18, 1984 and are reproduced in their entirety as follows:

December 20, 1983.

Mr. Richard Serdoz,

Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation and Natural Resources, Capitol Complex, Carson City, NV 89710

Dear Mr. Serdoz: In response to your request of November 15, 1983, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart RR—Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operations and Subpart VV—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Part 60, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

May 14, 1984.

Mr. Richard Serdoz,

Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation and Natural Resources, Capitol Complex, Carson City, NV 89710

Dear Mr. Serdoz: In response to your request of April 23, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart LL—Standards of Performance for Metallic Mineral Processing Plants. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Part 60, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

May 18, 1984.

Mr. Richard Serdoz,

Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation and Natural Resources, Capitol Complex, Carson City, NV 89710

Dear Mr. Serdoz: In response to your request of April 30, 1984, I am pleased to

inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart HHH—Standards of Performance for Synthetic Fiber Production Facilities and the National Emission Standard for Hazardous Air Pollutants (NESHAP) category in 40 CFR Part 61: Subpart M—National Emission Standard for Asbestos. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

With respect to the areas under the jurisdiction of the NDCNR, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAP source categories should be directed to the NDCNR at the address shown in the letters of delegation.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil fuel-fired steam generators, Fiberglass insulation, Synthetic fibers.

40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

Dated: June 18, 1984.

Judith E. Ayres,

Regional Administrator.

[FR Doc. 84-17033 Filed 6-26-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[OAR-FRL-2615-2]

Delegation of National Emission Standards for Hazardous Air Pollutants (NESHAPS); State of California

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation.

SUMMARY: The EPA hereby places the public on notice of its delegation of NESHAPS authority to the California Air Resources Board (CARB) on behalf of the Sacramento County Air Pollution Control District (SCAPCD). This action is necessary to bring the NESHAPS program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NESHAPS categories from EPA to State and local governments.

EFFECTIVE DATE: May 25, 1984.

ADDRESS: Sacramento County Air Pollution Control District, 3701 Branch Center Road, Sacramento, CA 95827.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The CARB has requested authority for delegation of certain NESHAPS categories on behalf of the SCAPCD. Delegation of authority was granted by a letter dated May 10, 1984 and is reproduced in its entirety as follows:

Mr. James D. Boyd,
Executive Officer, California Air Resources Board, 1102 Q Street, P.O. Box 2815, Sacramento, CA 95812

Dear Mr. Boyd: In response to your request of April 4, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the National Emission Standard for Hazardous Air Pollutants (NESHAP) Category in 40 CFR Part 61: Standard of Asbestos on behalf of the Sacramento County Air Pollution Control District (SCAPCD). We have reviewed your request for delegation and have found the SCAPCD programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Part 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you or the District of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

cc: Sacramento County Air Pollution Control District

With respect to the areas under the jurisdiction of the SCAPCD, all reports, applications, submittals, and other communications pertaining to the above listed NESHAPS source category should be directed to the SCAPCD at the address shown in the ADDRESS Section of this notice.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

List of Subjects in 40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

This Notice is issued under the authority of section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: June 18, 1984.

Judith E. Ayres,

Regional Administrator.

[FR Doc. 84-17035 Filed 6-26-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[OAR-FRL-2622-7]

Delegation of Additional Authority to the State of Arkansas for the National Emission Standards for Hazardous Air Pollutants Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; information notice.

SUMMARY: EPA has delegated the authority to implement and enforce that portion of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for the demolition and renovation of buildings containing asbestos to the Arkansas Department of Pollution Control and Ecology (ADPCE). Except as specifically limited, all of the authority and responsibilities of the Administrator or the Regional Administrator which are found in 40 CFR Part 61.22(d) are delegated to the ADPCE. Any of such authority and responsibilities may be redelegated by the Department to its Director or staff.

EFFECTIVE DATE: September 30, 1982.

ADDRESS: Copies of the State request and State-EPA agreement for delegation of authority are available for public inspection at the Air Branch, Environmental Protection Agency, Region 6, InterFirst Two Building, 28th Floor, 1201 Elm Street, Dallas, Texas 75270; (214) 767-1594 or (FTS) 729-1594.

FOR FURTHER INFORMATION CONTACT: Donna M. Ascenzi, Air Branch, address above.

SUPPLEMENTARY INFORMATION: On July 1, 1981, the State of Arkansas submitted to the EPA, Region 6 office, a request for delegation to the ADPCE the authority to implement and enforce the NESHAP (40 CFR Part 61) program with the exception of (1)(d), Demolition and Renovation of Buildings Containing Asbestos. This delegation became effective on September 18, 1981.

On August 23, 1982, the State of Arkansas submitted to EPA, Region 6, a request for delegation of additional authority to the ADPCE to implement and enforce that portion of the NESHAP program for the demolition and renovation of buildings containing asbestos. After a thorough review of the request and information submitted, the Regional Administrator determined that the State's pertinent laws and the rules and regulations of the APDCE were found to provide an adequate and effective procedure to implement and enforce this NESHAP program.

The Office of Management and Budget has exempted this information notice from the requirements of section 3 of Executive Order 12291.

Effective immediately, all information pursuant to 40 CFR 61.22(d) required of sources locating in the State of Arkansas should be submitted to the State agency at the following address: Arkansas Department of Pollution Control and Ecology, 8001 National Drive, Little Rock, Arkansas 72209.

This additional delegation is issued under the authority of Sections 101 and 301 of the Clean Air Act, as amended (42 U.S.C. 7401 and 7601).

Dated: June 25, 1984.

Frances E. Phillips,

Acting Regional Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

1. Section 61.04(b) is amended by revising paragraph (E) to read as follows:

§ 61.4 Address.

* * * * *

(b) * * *

(E) Program Administrator, Air and Hazardous Materials Division, Arkansas Department of Pollution Control and Ecology, 8001 National Drive, Little Rock, Arkansas 72209.

[FR Doc. 84-17619 Filed 7-5-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[Docket No. AM701PA; OAR-FRL-2620-1]

Standards of Performance for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants for Stationary Sources; Delegation of Authority to the City of Philadelphia; Department of Public Health

AGENCY: Environmental Protection Agency.

ACTION: Rule-related notice.

SUMMARY: Section 111(c) and 112(d) of the Clean Air Act permits EPA to delegate to the States the authority to implement and enforce the standards set out in 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS) and 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants for Stationary Sources (NESHAPS) respectively.

On November 3, 1982, the City of Philadelphia Department of Public Health (Department) requested EPA to delegate to it the authority for additional NSPS and NESHAPS categories. EPA granted the request on December 30, 1982. The Department now has the authority to implement and enforce NSPS regulations for Electric Utility Steam Generating Units constructed after September 19, 1978, Storage Vessels for Petroleum Liquids Constructed after May 18, 1978, Ferroalloy Production Facilities, Steel Plants: Electric Arc Furnaces, Kraft Pulp Mills, Glass Manufacturing Plants, Grain Elevators, Stationary Gas Turbines, Lime Manufacturing Plants, Lead-Acid Battery Manufacturing Plants, Automobile and Light-Duty Truck Surface Coating Operations, Phosphate Rock Plants, Ammonium Sulfate Manufacture, and Asphalt Processing and Asphalt Roofing Manufacture and the authority to implement and enforce NESHAPS regulations for Vinyl Chloride.

On April 15, 1983, May 18, 1983, November 7 and November 23, 1983, respectively, the Department requested that EPA delegate to it authority for additional NSPS categories. EPA granted the former two requests on June 30, 1983 and the final two requests on June 11, 1984. The Department now has the authority to implement and enforce NSPS regulations for Industrial Surface Coating: Large Appliances, Metal Furniture Surface Coating, Metal Coil Surface Coating, Bulk Gasoline Terminals, Beverage Can Surface Coating Industry, Pressure Sensitive Tape and Label Surface Coating Operations, and Volatile Organic Compounds in Synthetic Organic Chemicals Manufacturing Industry.

Applications and reports required under the NSPS and NESHAPS for which EPA has delegated authority to the Department to implement and enforce should be sent to the Department.

EFFECTIVE DATES: December 30, 1982, June 30, 1983, and June 11, 1984.

ADDRESSES: Applications and reports required under all NSPS and NESHAPS

source categories for which EPA has delegated authority to the Department to implement and enforce should be addressed to the Philadelphia Department of Public Health, Air Management Services, 500 S. Broad Street, Philadelphia, PA 19146, rather than to EPA Region III.

Copies of the revision and accompanying documents are available for inspection during normal business hours at the Philadelphia AMS address given above or at the following offices:

U.S. Environmental Protection Agency, Region III; Curtis Building, Second Floor, Sixth and Walnut Streets, Philadelphia, Pennsylvania 19106, ATTN: Michael Giuranna (3AM11), Telephone: (215) 597-2842.

Public Information Reference Unit, Room 2922-EPA Library, U.S. Environmental Protection Agency, 401 M Street, SW. (Waterside Mall), Washington, D.C. 20460.

The Office of the Federal Register, 1100 L Street, NW., Room 8401, Washington, D.C. 20408.

FOR FURTHER INFORMATION CONTACT: Michael Giuranna of EPA Region III's Air Programs Branch, telephone (215) 597-9189.

SUPPLEMENTARY INFORMATION: On November 3, 1982, April 25, 1983, May 18, 1983, November 7, 1983, and November 23, 1983, the Department requested EPA delegate to it the authority to implement and enforce additional NSPS and Neshaps source categories. The Department requested these delegations to supplement the delegations for other source categories which Philadelphia had already received and for which EPA published in the Federal Register at 42 FR 6886 on February 4, 1977.

In response to the Department's request of November 3, 1982, delegation of authority was granted by the following letter of December 30, 1982:

Stuart H. Shapiro, M.D. M.P.H.,

Health Commissioner, City of Philadelphia, Municipal Services Building, Room 540, Philadelphia, PA 19107

RE: Delegation of Authority for New Source Performance Standards pursuant to section 111(c) and National Emission Standards for Hazardous Air Pollutants pursuant to section 112(d) of the Clean Air Act, as amended

Dear Dr. Shapiro: This is in response to your letter of November 3, 1982, requesting delegation of enforcement authority for additional New Source Performance Standards (NSPS) and National Emission Standard for Hazardous Air Pollutants (NESHAP).

We have reviewed the pertinent laws and regulations governing the control of air pollution in the City of Philadelphia and have determined that they provide an adequate and effective procedure for implementation and enforcement of the NSPS and NESHAP regulations by the Philadelphia Department of Public Health (the Department).

Therefore, I am pleased to delegate authority to the Department, as follows:

The Department is delegated and shall have enforcement authority for the following source categories subject to the requirements in 40 CFR 60.30:

(1) Electric Utility Steam Generating Units Constructed after 9/18/78
(2) Storage Vessels for Petroleum Liquids Constructed after 5/18/78
(3) Ferroalloy Production Facilities
(4) Steel Plants: Electric Arc Furnaces
(5) Kraft Pulp Mills
(6) Glass Manufacturing Plants
(7) Grain Elevators
(8) Stationary Gas Turbines
(9) Lime Manufacturing Plants
(10) Lead-Acid Battery Manufacturing Plants
(11) Automobile and Light-Duty Truck Surface Coating Operations
(12) Phosphate Rock Plants
(13) Ammonium Sulfate Manufacture
(14) Asphalt Processing and Asphalt Roofing Manufacture.

Enforcement authority is also delegated for Vinyl Chloride Plants subject to the requirement in 40 CFR 61 and 60.

This delegation is based upon the following conditions:

1. Quarterly reports will be submitted to EPA by Philadelphia and should include the following:

A. For New Source Performance Standards:

(i) Sources determined to be applicable during that quarter;

(ii) Applicable sources which started operation during that quarter or which started operation prior to that quarter which have not been previously reported;

(iii) The compliance status of the above, including the summary sheet from the compliance test(s); and

(iv) Any legal actions which pertain to these sources.

B. For National Emission Standards for Hazardous Air Pollutants:

(i) NESHAP sources granted a permit to construct;

(ii) NESHAP sources inspected during that quarter and their compliance status (except under § 61.22 (d) and (e));

(iii) The requirements of (A) above.

2. Enforcement of the NSPS and NESHAP regulations in the City of Philadelphia will be the primary responsibility of the Department. Where the Department determines that such enforcement is not feasible and so notifies EPA, or where the Department acts in a manner inconsistent with the terms of this delegation, EPA will exercise its concurrent enforcement authority pursuant to section 113 of the Clean Air Act, as amended, with respect to sources within the City of Philadelphia subject to NSPS and NESHAP regulations.

3. Acceptance of this delegation for the regulations for the source categories listed above does not commit the City of Philadelphia to request or accept delegation of other present or future standards and requirements. A new request for delegation will be required for any additional standards or amendments to previously delegated standards.

4. The Philadelphia Department of Public Health will at no time grant a waiver of compliance under the NESHAP regulations.

5. The Department will not grant a variance from compliance with the applicable NSPS regulations if such variance delays compliance with the Federal Standards (Part 60). Should the Department grant such a variance, EPA will consider the source receiving the variance to be in violation of the applicable Federal regulations and may initiate enforcement action against the source pursuant to section 113 of the Clean Air Act. The granting of such variances by the Department shall also constitute grounds for revocation of delegation by EPA.

6. The Department and EPA will develop a system of communication sufficient to guarantee that each office is always fully informed regarding the interpretation of applicable regulations. In instances where there is a conflict between a Department interpretation and a Federal interpretation of applicable regulations, the Federal interpretation must be applied if it is more stringent than that of the Department.

7. If at any time there is a conflict between a Department regulation and Federal regulation 40 CFR Parts 60 or 61, the Federal regulation must be applied if it is more stringent than that of the Department. If the Department does not have the authority to enforce the more stringent Federal regulation, this portion of the delegation may be revoked.

8. The Department will utilize the methods specified in 40 CFR Parts 60 and 61, in performing source tests pursuant to these regulations.

9. If the Director of the Air and Waste Management Division determines that a Department program for enforcing or implementing the NSPS or NESHAP regulations is inadequate, or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Department. A Notice announcing this delegation will be published in the Federal Register in the near future. The Notice will state, among other things, that effective immediately, all reports required pursuant to the above-enumerated Federal NSPS and NESHAP regulations by sources located in the City of Philadelphia should be submitted to the Philadelphia Department of Public Health, Municipal Services Building, Room 540, Philadelphia, Pennsylvania 19107 in addition to EPA Region III. Any original reports which have been or may be received by EPA Region III, will be promptly transmitted to the Department.

Since this delegation is effective immediately, there is no requirement that the Department notify EPA of its acceptance. Unless EPA receives from the Department written notice of objections within ten (10) days of receipt of this letter, the City of Philadelphia's Department of Public Health will be deemed to have accepted all of the terms of the delegation.

Sincerely yours,

Stephen R. Wassersug,

Director, Air and Water Management Division.

In response to the City of Philadelphia's requests of April 25, 1983 and May 18, 1983, delegation of authority was granted by the following letter on June 30, 1983:

Stuart W. Shapiro, M.D., M.P.H.,

Health Commissioner, City of Philadelphia, Municipal Services Building, Room 540, Philadelphia, PA 19107

Dear Dr. Shapiro: On September 30, 1976, and December 30, 1982, we delegated to the City of Philadelphia the authority for implementation and enforcement of the Standards of Performance for New Stationary Sources (NSPS) that had been promulgated by the Environmental Protection Agency. On October 27, 1982, October 29, 1982, and November 1, 1982 EPA promulgated NSPS for Industrial Surface Coating: Large Appliances; Metal Furniture Surface Coating; and Metal Coil Surface Coating: respectively. In your letters of April 25, 1983 and May 18, 1983, you requested that EPA delegate to the City of Philadelphia the authority for implementation and enforcement of these Federal regulations.

We have reviewed the pertinent laws, rules and regulations of the City of Philadelphia and have determined that they continue to provide an adequate and effective procedure for implementing and enforcing the NSPS. Therefore, we hereby delegate our authority for the implementation and enforcement of the NSPS regulations to the City of Philadelphia follows:

Authority for all sources located or to be located in the City of Philadelphia subject to the Standards of Performance for New Stationary Sources for Industrial Surface Coating: Large Appliances (SS). Metal Furniture Surface Coating (EE); and Metal Coil Surface Coating (TT), promulgated in 40 CFR Part 60 as of the date of this letter.

This delegation is based upon the following conditions:

1. Quarterly reports which may be combined with other reporting information are to be submitted to EPA Region III, Air Enforcement section (AW12) by the City of Philadelphia and should include the following:

(i) Sources determined to be applicable during that quarter;

(ii) Applicable sources which started operation during that quarter or which started operation prior to that quarter which have not been previously reported;

(iii) The compliance status of the above, including the summary sheet from the compliance test(s); and

(iv) Any legal actions which pertain to these sources.

2. Enforcement of the NSPS regulations in the City of Philadelphia will be the primary responsibility of the Department of Public Health (the Department). Where the Department determines that such enforcement is not feasible and so notifies EPA, or where the Department acts in a manner inconsistent with the terms of this delegation, EPA will exercise its concurrent enforcement authority pursuant to Section 113 of the Clean Air Act, as amended, with respect to sources within the City of Philadelphia subject to NSPS regulations.

3. Acceptance of this delegation for the regulations for the source categories listed above does not commit the City of Philidelphia to request or accept delegation of other present or future standards and requirements. A new request for delegation will be required for any additional standards or amendments to previously delegated standards.

4. The Department of Public Health will not grant a variance from compliance with the applicable NSPS regulations if such variance delays compliance with the Federal Standards. Should the Department grant such a variance, EPA will consider the source receiving the variance to be in violation of the applicable Federal regulations and may initiate enforcement action against the source pursuant to Section 113 of the Clean Air Act. The granting of such variance by the Agency shall also constitute grounds for revocation of delegation by EPA.

5. The Department and EPA will develop a system of communication sufficient to guarantee that each office is always fully informed regarding the interpretation of applicable regulations. In instances where there is a conflict between a Department interpretation and a Federal interpretation of applicable regulations, the Federal interpretation must be applied if it is more stringent than that of the Department.

6. If at any time there is a conflict between a Department regulation and Federal regulation 40 CFR Part 60, the Federal regulation must be applied if it is more stringent than that of the Department. If the Department does not have the authority to enforce the more stringent Federal regulation, this portion of the delegation may be revoked.

7. The Department will utilize the methods specified in 40 CFR Part 60 in performing source tests pursuant to these regulations. However, alternatives to continuous monitoring procedures and requirements may be acceptable upon concurrence by EPA as stipulated in 40 CFR 60.13.

8. If the Director of the Air and Waste Management Division determines that a Department program for enforcing or implementing the NSPS regulations is inadequate, or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Department.

9. Information shall be made available to the public in accordance with 40 CFR 60.9.

EPA procedures permit delegation of all the Administrator's authorities under 40 CFR Part 60 except for any which require rulemaking in the Federal Register to implement or where Federal overview is the only way to ensure national consistency in the application of standards. Accordingly, the following authorities are not delegable under Section 111 of the Clean Air Act, as amended.

1. *Performance Tests, Paragraph 60.8(b)(2) and 60.8(b)(3).* Order to ensure uniformity and technical quality in the test methods used for enforcement of national standards, EPA will retain the authority to approve alternative and equivalent methods which effectively replace a reference method. This restriction on delegation does not apply to 60.8(b)(1), which allows for approval of minor modifications to reference methods on a case-by-case basis.

Some subparts include general references to the authority in 60.8(b) to approve alternative or equivalent standards. Examples include, but are not necessarily limited to, paragraphs 60.11(b), 60.274(d), 60.393(a)(1), 60.393(a)(2), and 60.393(c)(1)(i). These references are reminders of the provisions of paragraph 60.8 and are not separate authorities which can be delegated.

2. *Compliance with Standards and Maintenance Requirements, 60.11(e).* The granting of an alternative opacity standard requires a site-specific opacity limit to be adopted under 40 CFR Part 60.

3. *Subpart S, 60.195(b).* Development of alternative compliance testing schedules for primary aluminum plants is done by adopting site-specific amendments to Subpart S.

4. *Subpart Da, 60.45a.* Commercial demonstration permits allow an alternative emission standard for a limited number of utility steam generators.

5. *Subpart GG, 60.332(a)(3) and 60.335(a)(ii).* These sections pertain to approval of customized factors (fuel nitrogen content and ambient air conditions, respectively) for use by gas turbine manufacturers in assembly-line compliance testing. Since each approval potentially could affect the emissions from equipment installed in a number of States, the decision-making must be maintained at the Federal level to ensure national consistency. Notice of approval must be published in the Federal Register.

6. *Equivalency Determinations, section 111(h)(3) of the Clean Air Act.* Approval of alternatives to any design, equipment, work practice, or operational standard [e.g., 60.114(a) and 60.302(d)(3)] is accomplished through the rulemaking process and is adopted as a change to the individual subpart.

7. *Innovative Technology Waiver, section 111(j) of the Clean Air Act.* Innovative technology waivers must be adopted as site-specific amendments to the individual subpart. Any applications or questions pertaining to such waivers should be sent to the Director, Air and Waste Management Division, Region III. [States may be delegated that authority to enforce waiver provisions if the State has been delegated the authority to enforce NSPS.]

8. *Determination of Construction or Modification (Applicability), Paragraph, 60.5.* In order to ensure uniformity in making applicability determinations pertaining to sources, EPA will retain this authority. The delegated agency may exercise judgement based on the Compendium of Applicability determinations issued by EPA annually, and updated quarterly. Any applicability determinations not explicitly treated in the EPA Compendium must be referred to EPA for a determination. Also, any determinations made by the State agency based on the Compendium must be sent to EPA for

informational purposes in order for EPA to maintain national consistency.

A notice announcing this delegation will be published in the Federal Register in the near future. The Notice will state, among other things, that effective immediately, all reports required pursuant to the above-enumerated Federal NSPS requlations by sources located in the City of Philadelphia should be submitted to the Department of Public Health, Municipal Services Building (Room 540), Philadelphia, PA. 19107, in addition to EPA Region III. Any original reports which have been or may be received by EPA Region III, will be promptly transmitted to the Department.

Since this delegation is effective immediately, there is no requirement that the Department notify EPA of its acceptance. Unless EPA receives from the Department written notice of objections within ten (10) days of receipt of this letter, the Department of Public Health will be deemed to have accepted all of the terms of the delegation.

Sincerely yours,

Stanley L. Laskowski,

Acting Regional Administrator.

In response to the City of Philadelphia's request of November 7, and November 23, 1983, delegation of authority was granted by the following letter of June 11, 1984.

Stuart H. Shapiro,

Health Commissioner, City of Philadelphia, Municipal Services Building, Room 540, Philadelphia, Pennsylvania 19107

Dear Dr. Shapiro: This is in response to your letters of November 7 and 23, 1983, requesting delegation of authority for the Philadelphia Air Management Services to enforce New Source Performance Standards for Bulk Gasoline Terminals, Beverage Can Surface Coating Industry, Pressure Sensitive Tape and Label Surface Coating Operations and Volatile Organic Compounds in Synthetic Organic Chemicals Manufacturing Industry.

We have reviewed the pertinent laws, rules and regulations of the City of Philadelphia and have determined that they continue to provide an adequate and effective procedure for implementing and enforcing the NSPS. Therefore, we hereby delegate the authority for the implementation and enforcement of the NSPS regulation to the City of Philadelphia as follows:

Authority for all sources located or to be located in the City of Philadelphia subject to the Standards of Performance for New Stationary Sources for Bulk Gasoline Terminals (XX), Beverage Can Surface Coating Industry (WW), Pressure Sensitive Tape and Label Surface Coating Operations (RR) and Volatile Organic Compounds in Synthetic Organic Chemicals Manufacturing Industry (VV).

This delegation is based upon the conditions given in our June 30, 1983 letter to you which delegated 7 additional NSPS source categories to the City of Philadelphia.

If you need any further information feel free to contact Mike Giuranna at (215) 597-9189.

Sincerely,

W. Ray Cunningham,

Air Management Division.

For all sources located or to be located in the City of Philadelphia, effective immediately, all applications, reports, and other correspondence required under the NSPS requirements in 40 CFR Part 60 for Electric Utility Steam Generating Units Constructed after September 18, 1978 (Da), Storage Vessels for Petroleum Liquids Constructed after May 18, 1978 (Ka), Ferroalloy Production Facilities (Z), Steel Plants: Electric Arc Furnaces (AA), Kraft Pulp Mills (BB), Glass Manufacturing Plants (CC), Grain Elevators (DD), Metal Furniture Surface Coating (EE), Stationary Gas Turbines (GG), Lime Manufacturing Plants (HH), Lead-Acid Battery Manufacturing Plants (KK), Automobile and Light-Duty Truck Surface Coating Operations (MM), Phosphate Rock Plants (NN), Ammonium Sulfate Manufacture (PP), Industrial Surface Coating: Large Appliances (SS), Metal Coil Surface Coating (TT), Asphalt Processing and Asphalt Roofing Manufacture (UU), Bulk Gasoline Terminals (Part XX), Beverage Can Surface Coating Industry (Part WW), Volatile Organic Compounds in Synthetic Organic Chemicals Manufacturing Industry (Part VV), and Pressure Sensitive Tape and Label Surface Coating Operations (Part RR), and under the NESHAPS requirements in 40 CFR Part 61 for Vinyl Chloride Plants (F) should be sent to the City of Philadelphia, Department of Public Health (address above) rather than to the EPA Region III Office in Philadelphia.

The Office of Management and Budget has exempted this action from the requirements of section 3 of Executive Order 12291.

Authority: Secs. 111(c) and 112(d), Clean Air Act (42 U.S.C. 7411(c)).

Dated: June 26, 1984.

Stanley L. Laskowski,

Deputy Regional Administrator.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Volatile organic compounds, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

[FR Doc. 84-18318 Filed 7-13-84; 8:45 am]
BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[OAR-FRL-2631-3]

Standards of Performance for New Stationary Sources; National Emission Standards for Hazardous Air Pollutants; Delegation of Authority to States

AGENCY: U.S. Environmental Protection Agency (USEPA).

ACTION: Delegation of authority.

SUMMARY: Sections 111(c) and 112(d) of the Clean Air Act permit USEPA to delegate to the States authority to implement and enforce the standards set out in 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), and in 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPS). A number of States in USEPA Region V have recently requested and received one or more of these delegated programs or have recently received an expansion to an existing delegated program. More specifically, a number of NSPS have been added to the delegated programs in Michigan, Minnesota, Indiana, Ohio, and Wisconsin. Furthermore, an additional NESHAPS has been delegated to Michigan and Wisconsin and an initial delegation of all the NESHAPS was made to Ohio. Revisions and amendments to previously delegated standards were also delegated to a number of these States along with an automatic delegation feature covering future Federal NSPS and NESHAPS promulgations.

EFFECTIVE DATES: *Indiana*—March 18, 1982 and June 8, 1983; *Michigan*—March

29, 1982 and June 9, 1983; *Minnesota*—September 1, 1982 and March 29, 1984; *Ohio*—August 9, 1982; and *Wisconsin*—September 27, 1983.

ADDRESSES: The related material in support of these delegations may be examined during normal business hours at the following respective locations:

All Delegations—

U.S. Environmental Protection Agency, Air and Radiation Branch, 230 South Dearborn Street, Chicago, Illinois 60604

Specific State Delegations—

Indiana—Indiana Air Pollution Control Board, 1330 West Michigan Street, Indianapolis, Indiana 46206

Michigan—Air Quality Division, Michigan Department of Natural Resources, State Secondary Government Complex, General Office Building, 7150 Harris Drive, Lansing, Michigan 48917

Ohio—Ohio Environmental Protection Agency, 361 East Broad Street, Columbus, Ohio 43216

Minnesota Pollution Control Agency, 1935 West County Road, B–2, Roseville, Minnesota 55113

Wisconsin Department of Natural Resources, 101 South Webster Street G.E.F.2, Madison, Wisconsin 53707

FOR FURTHER INFORMATION CONTACT: Ronald J. Van Mersbergen of the USEPA Region V, Air and Radiation Branch (5ARB–26), 230 South Dearborn Street, Chicago, Illinois 60604, Telephone (312) 886–6056.

SUPPLEMENTARY INFORMATION:

A. Indiana

On February 19, 1982, the Technical Secretary of the Indiana Air Pollution Control Board requested delegation of authority to implement and enforce the NSPS source category of Automobiles and Light-Duty Truck Surface Coating Operations (40 CFR Part 60, Subpart MM). On March 18, 1982 this source category was added to the delegated program by the letter which follows.

Furthermore, on February 9, 1983 (the following delegation document incorrectly states February 10, 1983) the State requested an automatic delegation for any new NSPS and NESHAPS and any revisions to previously promulgated standards. For Indiana, an automatic delegation means that the State will assume any engineering and administrative responsibilities with respect to a new standard or an amendment upon USEPA promulgation. The State will assume full enforcement authority upon notification that the State has adopted the newly promulgated standards or amendments. The automatic delegation given in a June 8, 1983 letter to Mr. Harry D. Williams supercedes all previous delegations for NSPS and NESHAPS. The June 8, 1983 letter is published below following the March 18, 1982 letter.

Notices of earlier delegations and amendments were published in the Federal Register on September 30, 1976 (41 FR 43237), September 12, 1977 (42 FR 45705), and December 22, 1981 (46 FR 62085).

March 18, 1982.

Mr. Harry D. Williams,
Technical Secretary, Indiana Air Pollution Control Board, 1330 W. Michigan Street, Indianapolis, Indiana 46206

Dear Mr. Williams: Thank you for your February 19, 1982 letter requesting expansion of your existing Delegation of Authority to include an additional New Source Performance Standard (NSPS).

We have reviewed your request and have found the State procedures to be acceptable. Therefore, the U.S. Environmental Protection Agency (U.S. EPA) is hereby delegating to the State of Indiana authority to implement and enforce the NSPS for automative painting found in 40 CFR Part 60 subpart MM.

The terms and conditions applicable to this delegation are in the previous letter of delegation of April 21, 1976 as amended by the letters of June 8, 1977 and February 8, 1981.

A notice of this delegated authority will be published in the Federal Register.

This delegation is effective upon the date of this letter unless the U.S. EPA receives written notice from the Indiana Air Pollution Control Board of objections within 10 days of receipt of this letter.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

5AMD

June 8, 1983.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Harry D. Williams,
Technical Secretary, Indiana Air Pollution Control Board, 1330 West Michigan Street, Indianapolis, Indiana 46206

Dear Mr. Williams: In response to your February 10, 1983, letter, we are amending the delegation of authority agreement for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Pollutants (NESHAPS). Since the original delegation on April 21, 1976, a number of amendments have been made, and it is the purpose of this letter to replace the original and the amendments.

We have reviewed the pertinent laws and regulations of the State of Indiana and the State's 7-year history of implementing the programs, and we have determined that the State of Indiana has the resources and the ability to implement and enforce the NSPS and NESHAPS Programs for the regulations appropriately promulgated by the State, and to implement the additional responsibilities requested in the February 10, 1983, letter. Therefore, subject to the specific conditions and exceptions set forth below, the U.S. Environmental Protection Agency (U.S. EPA) hereby grants delegation of authority to the State of Indiana to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located or to be located in the State of Indiana subject to the NSPS promulgated in 40 CFR Part 60. This delegated authority includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

B. Authority for all sources located or to be located in the State of Indiana subject to the NESHAPS promulgated in 40 CFR Part 61. This delegation includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

This delegation is based upon the following conditions and exceptions:

1. This delegation letter replaces the previous delegation letter of April 21, 1976, and the amendments dated June 6, 1977, February 8, 1981, and March 18, 1982.

2. For new NSPS and NESHAPS pollutants and source categories and for amendments to existing NSPS and NESHAPS which the State of Indiana has not promulgated regulations or amendments, the State will perform the administrative and engineering responsibilities with respect to plan review, applicability determinations, notifications and record keeping, and performance testing in accordance with items 5, 9 and 13 of the conditions and exceptions. The administrative and engineering responsibilities shall continue until such time as the State promulgates appropriate regulations or amendments at which time the State is given full implementation and enforcement responsibility as is cited in item 3 of the conditions and exceptions.

3. Implementation and enforcement of the NSPS and NESHAPS in the State of Indiana will be the primary responsibility of the State of Indiana for those standards for which the State has promulgated appropriate regulations and subsequently notified the Regional Administrator.

4. If, after appropriate discussions with the Indiana Air Pollution Control Board (IAPCB), the Regional Administrator determines that a State procedure is inadequate for implementing or enforcing any NSPS and NESHAPS in accordance with item 2 or 3 of the conditions and exceptions, or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the dates specified in a Notice of Revocation to the Governor of the State of Indiana or his designee for NSPS or NESHAPS matters.

5. If the State of Indiana determines that a violation of a NSPS or NESHAPS exists, the IAPCB shall immediately notify U.S. EPA, Region V, of the nature of the violation together with a brief description of State's efforts or strategy to secure compliance. With respect to those NSPS and NESHAPS for which the State has only administrative and engineering responsibilities and during the time which the State has only administrative and engineering responsibility, any violations

will be immediately referred to U.S. EPA, Region V. The U.S. EPA may exercise its concurrent enforcement authority pursuant to Section 113 of the Clean Air Act, as amended, with regard to any violations of an NSPS or NESHAPS regulation.

6. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not have provisions for granting variances. Hence, this delegation does not convey to the State of Indiana authority to grant variances from NSPS regulations.

7. This delegation includes the authority on a case-by-case basis to waive a NSPS performance test in accordance to 40 CFR 60.8(b)(4), approve use of reference methods with minor modifications as specified in 40 CFR 60.8(b)(1), and waive NESHAPS emission tests in accordance with 40 CFR 61.13. The IAPCB must report any of these actions to the Regional Administrator in accordance with the reporting procedures set forth in condition 10.

8. This delegation does not include the Administrator's authority to waive certain existing requirements or establish alternative requirements under Section 111 or 112 of the Act, or any regulations promulgated thereunder. This would include the following: Alternative design, equipment, work practice or operational standards under Section 111(h)(3); innovative technology waivers under Section 111(j); alternative opacity standards under 40 CFR 60.11(e); approval of equivalent and alternate test methods under 40 CFR 60.8(b) (2) and (3) authority to issue commercial demonstration permits under 40 CFR 60.45a (subpart Da); approval of alternative testing times for primary reduction plants under 40 CFR 60.195(d); and certain portions of the Stationary Gas Turbine Standards dealing with nitrogen fuel allowance in 40 CFR 60.332(a) and ambient condition correction factors in 40 CFR 60.335(a)(ii).

9. Prior U.S. EPA concurrence is to be obtained on any matter involving the interpretation of Section 111 or 112 of the Clean Air Act and of 40 CFR Parts 60 and 61 to the extent that application, implementation, administration, or enforcement of these sections have not been covered by determinations or guidance sent to the IAPCB.

10. The IAPCB and U.S. EPA Region V will develop a system of communication for the purpose of insuring that each office is informed on (a) the current compliance status of subject sources in the State of Indiana; (b) the interpretation of applicable regulations; (c) the description of sources and source inventory data; and (d) compliance test waivers and other approvals under condition 7. The reporting provisions in 40 CFR 60.4 and 61.04 requiring sources to make submissions to the U.S. EPA are met by sending such submissions to the IAPCB. The State will make available this information to the U.S. EPA on a case-by-case basis.

11. At no time shall the State of Indiana enforce a State regulation less stringent than the Federal requirements for NSPS or NESHAPS (40 CFR Part 60 or 61 as amended).

12. Upon approval of the Regional Administrator of Region V, the Technical Secretary of the IAPCB may subdelegate this authority to implement and enforce these NSPS and NESHAPS to other air pollution control agencies in the State when the agencies have demonstrated that they have equivalent or more stringent programs in force.

13. The Indiana Air Pollution Control Board will utilize the methods specified in 40 CFR Parts 60 and 61 in performing source test pursuant to the regulations.

14. At least once a year and more frequently when appropriate, the State will amend its NSPS and NESHAPS to correspond with Federal Amendments and newly promulgated regulations for NSPS and NESHAPS pollutant and source categories.

A notice announcing this delegation will be published in the Federal Register in the near future. This delegation becomes effective as of the date of this letter. Unless the U.S. EPA receives written notice from the IAPCB of objections within 10 days of receipt of this letter, it will be deemed that the State has accepted all the conditions and exceptions of this delegation.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

B. Michigan

On January 4, 1982, the Director of the Michigan Air Quality Division requested delegation of authority for the NSPS and NESHAPS which were promulgated since the previous request of February 3, 1975, as well as any revisions or amendments to the previously delegated standards. On March 29, 1982, a revised delegation was made by the following letter. Furthermore on February 2, 1983, the State requested an automatic delegation for NSPS and NESHAPS. This request was granted on June 9, 1983 and is published below following the March 29, 1982 letter.

Notice of the initial delegation was published in the **Federal Register** on January 13, 1976 (41 FR 1942).

March 29, 1982.

Robert P. Miller,

Chief, Air Quality Division, Michigan Department of Natural Resources, P.O. Box 30028, Lansing, Michigan 48909

Dear Mr. Miller: This is in response to your letter of January 4, 1982, requesting delegation of authority for implementation and enforcement of the New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS) to the State of Michigan.

We have reviewed the pertinent procedures and supporting regulations of the State of Michigan and have determined that the State has an adequate program for the implementation and enforcement of the NSPS and NESHAPS. Therefore, in accordance with Clean Air Act Sections 111(c) and 112(d) and subject to the specific terms and conditions set forth below, the U.S. Environmental Protection Agency (USEPA) hereby delegates authority to the State of Michigan to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located in the State of Michigan subject to the NSPS promulgated in 40 CFR Part 60 as of January 4, 1982. This delegation includes the source categories in Subpart D, Da, E, F, G, H, I, J, K, Ka, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, BB, CC, DD, GG, HH, MM, and PP.

B. Authority for all sources located in the State of Michigan subject to the NESHAPS promulgated in 40 CFR Part 61 as of January 4, 1982. This delegation includes the pollutant categories of asbestos, beryllium, mercury, and vinyl chloride in Subparts B, C, D, E, and F.

This delegation of authority for NSPS and NESHAPS supersedes the previous statewide delegations of November 5, 1975, and is subject to the following terms and conditions:

1. Granting this delegation does not obligate the USEPA to delegate authority for implementation and enforcement of additional NSPS or NESHAPS if other standards are promulgated. In addition, acceptance of this delegation of presently promulgated NSPS and NESHAPS does not commit the State of Michigan to request or accept delegation of future standards and requirements. A new request for delegation and another USEPA review will be required before any standards or requirements not included in the State's request of January 4, 1982, will be delegated.

2. Upon approval of the Regional Administrator of Region V, the Executive Secretary of the Michigan Air Pollution Control Commission may subdelegate this authority to implement and enforce the NSPS and NESHAPS to other air pollution authorities in the State when such authorities have demonstrated that they have equivalent or more stringent programs in force.

3. This delegation does not include the Administrator's responsibility to establish opacity standards as set forth in 40 CFR 60.11(e)(4).

4. The State of Michigan will at no time grant a waiver of compliance with NESHAPS.

5. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not have provisions for granting waivers by class of testing requirements or variances, hence this delegation does not convey to the State of Michigan authority to grant waivers by class of testing requirements or variances from NSPS regulations.

6. The State of Michigan will utilize the methods specified in appendices and Subparts of 40 CFR Parts 60 and 61 in performing source tests pursuant to the regulations.

7. Enforcement of NSPS and NESHAPS in the State of Michigan will be the primary responsibility of the State of Michigan. If, after appropriate discussion with the Air Quality Division, the Regional Administrator determines that a State procedure for implementing and enforcing the NSPS or NESHAPS is not in compliance with Federal regulations (40 CFR Parts 60 and 61), or is not being effectively carried out, this delegation will be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Chief of the Air Quality Division.

8. The Air Quality Division and the USEPA Region V will develop a system of communication for the purpose of insuring that each office is informed on (a) the current compliance status of subject sources in the State of Michigan; (b) the interpretation of applicable regulations; and (c) the description of sources and source inventory data. The reporting provisions in 40 CFR 60.4 and 61.04 requiring industry to make submission to the USEPA are met by sending such submissions to the State. The State will make available this information to the USEPA on a case-by-case basis.

9. Prior USEPA concurrence is to be obtained on any matter involving the interpretation of Sections 111 or 112 of the Clean Air Act or 40 CFR to the extent that application, implementation, administration, or enforcement of these sections have not been covered by determinations or guidance sent to the Air Quality Division. This concurrence request includes the innovative technology waivers authorized in Section 111(j) of ther Clean Air Act.

10. If the State of Michigan determines that a violation of a delegated NSPS or NESHAPS exists, the Air Quality Division shall immediately notify EPA, Region V, of the nature of the violation together with a brief description of the State's efforts or strategy to secure compliance.

A notice announcing this delegation will be published in the Federal Register in the near future. This delegation becomes effective as of the date of this letter and, unless the USEPA receives written notice from the Air Quality Division of objections within 10 days of the receipt of this letter, it will be decided that the State has accepted all the terms and conditions of this delegation.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

June 9, 1983.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Robert P. Miller,

Chief, Air Quality Division, Department of Natural Resources, P.O. Box 30028, Lansing, Michigan 48909

Dear Mr. Miller: This letter is in response to your February 2, 1983, request to amend the March 29, 1982, delegation of authority by including additional authorities to implement the New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS). Additionally, this letter amends the March 29, 1982, NSPS and NESHAPS delegation to the State by providing for Wayne County's implementation and enforcement of the NSPS and NESHAPS.

The U.S. Environmental Protection Agency hereby amends the March 29, 1982, delegation to Michigan as follows.

1. Paragraph "A" is amended to read as follows:

A. Authority for all sources located or to be located in the State of Michigan subject to the NSPS promulgated in 40 CFR Part 60. This delegated authority includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

2. Paragraph "B" is amended to read as follows:

B. Authority for all sources located or to be located in the State of Michigan subject to the NESHAPS promulgated in 40 CFR Part 61. This delegation includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

3. Paragraph "1" of the terms and conditions is amended to read as follows:

1. If the State of Michigan determines that for some reason, including budget reductions, that it is unable to accept any new NSPS or NESHAPS, the Chief of the Air Quality Division will notify the Regional Administrator. Upon such notification by the State, the primary enforcement responsibility for such new standards will return to the U.S. EPA.

4. The following language is added to the first sentence of item "7" of the terms and conditions: "except in Wayne County, Michigan during such time that a NSPS or NESHAPS is delegated to the County."

We trust that these amendments will provide for a more efficient program in Michigan.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

C. Minnesota

On August 13, 1982 the Executive Director of the Minnesota Pollution Control Agency requested delegation of authority for the NSPS which had been promulgated since the State's previous request of June 27, 1977 and requested delegation of authority for revisions and amendments which occurred since June 27, 1977 to its previously delegated source categories of the NSPS and NESHAPS. On September 1, 1982 a revised delegation was made by the following letter. Furthermore, on January 17, 1984 the State requested automatic delegation of the NSPS and NESHAPS. This request was granted on March 29, 1984 and is published below following the September 1, 1982 letter.

Notice of the initial delegation was published in the Federal Register on January 3, 1978 (43 FR 33).

September 1, 1982.

Mr. Louis J. Breimhurst,

Executive Director, Minnesota Pollution Control Agency, 1935 W. County Road 52, Roseville, Minnesota 55113-2785

Dear Mr. Breimhurst: On August 13, 1982 you requested delegation of authority to implement and enforce the New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS) which have been promulgated since your previous request of June 27, 1977. The request included all revisions and amendments to the previously delegated NSPS and NESHAPS.

We have reviewed the pertinent procedures and supporting regulations of the State of Minnesota and have determined that the State has an adequate program for the implementation and enforcement of the NSPS and NESHAPS. Therefore, in accordance with Clean Air Act Sections 111(c) and 112(d) and subject to the specific terms and conditions set forth below, the U.S. Environmental Protection Agency (USEPA) hereby delegates authority to the State of Minnesota to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located in the State of Minnesota subject to the NSPS promulgated in 40 CFR Part 60, as amended, as of August 13, 1982. This delegation includes the source categories in Subpart D, Da, E, F, G, H, I, J, K, Ka, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, BB, CC, DD, GG, HH, KK, MM, NN, PP, and UU.

B. Authority for all sources located in the State of Minnesota subject to the NESHAPS promulgated in 40 CFR Part 61, as amended, as of August 13, 1982. This delegation includes the pollutant categories of asbestos, beryllium, mercury, and vinyl chloride in Subparts B, C, D, E, and F.

C. This delegation of authority for NSPS and NESHAPS supersedes the previous statewide delegations of September 20, 1977, and is subject to the following terms and conditions:

1. Upon approval of the Regional Administrator of Region V, the Executive Director of the Minnesota Pollution Control Agency (MPCA) may subdelegate this authority to implement and enforce the NSPS and NESHAPS to other air pollution authorities in the State when such authorities have demonstrated that they have equivalent or more stringent programs in force.

2. This delegation does not include the Administrator's responsibility to establish opacity standards as set forth in 40 CFR 60.11(e)(4).

3. The State of Minnesota will at no time grant a waiver of compliance with NESHAPS.

4. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not have provisions for granting waivers by class of testing requirements or variances, hence this delegation does not convey to the State of Minnesota authority to grant waivers by class of testing requirements or variances from NSPS regulations.

5. The State of Minnesota will utilize the methods specified in appendices and Subparts of 40 CFR Parts 60 and 61 in performing source tests pursuant to the regulations.

6. Enforcement of NSPS and NESHAPS in the State of Minnesota will be the primary responsibility of the State of Minnesota. If, after appropriate discussion with the MPCA, the Regional Administrator determines that a State procedure for implementing and enforcing the NSPS or NESHAPS is not in compliance with Federal regulations (40 CFR Parts 60 and 61), or is not being effectively carried out, this delegation will be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Executive Director of the MPCA.

7. The Division of Air Quality and the USEPA Region V will develop a system of communication for the purpose of insuring that each office is informed on (a) the current

compliance status of subject sources in the State of Minnesota; (b) the interpretation of applicable regulations; and (c) the description of sources and source inventory data. The reporting provisions in 40 CFR 60.4 and 61.04 requiring industry to make submissions to the USEPA are met by sending such submissions to the MPCA. The MPCA will make available this information to the USEPA on a case-by-case basis.

8. Prior USEPA concurrence is to be obtained on any matter involving the interpretation of Section 111 or 112 of the Clean Air Act or 40 CFR to the extent that application, implementation, administration, or enforcement of these sections have not been covered by determinations or guidance sent to the Division of Air Quality. This concurrence request includes the innovative technology waivers authorized in Section 111(j) of the Clean Air Act.

9. If the State of Minnesota determines that a violation of a delegated NSPS or NESHAPS exists, the Division of Air Quality shall immediately notify USEPA, Region V, of the nature of the violation together with a brief description of the State's efforts or strategy to secure compliance.

A notice announcing this delegation will be published in the **Federal Register** in the near future. This delegation becomes effective as of the date of this letter and, unless the USEPA receives written notice from the MPCA of objections within 10 days of the receipt of this letter, it will be deemed that the State has accepted all the terms and conditions of this delegation.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

March 29, 1984.

CERTIFIED MAIL RETURN
RECEIPT REQUESTED

Sandra S. Gardebring,

Executive Director, Minnesota Pollution Control Agency, 1935 W. County Road B-2, Roseville, Minnesota 55113-2785

Dear Ms. Gardebring: On February 21, 1984, you requested an expansion of the U.S. Environmental Protection Agency's (USEPA) delegation of authority to Minnesota to implement and enforce the New Source Performance Standards (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS). The request included all future promulgated NSPS and NESHAPS standards and all revisions and amendments to existing and future NSPS and NESHAPS.

We have reviewed the pertinent procedures and supporting regulations of the State of Minnesota and have determined that the State has an adequate program for the implementation and enforcement of the NSPS and NESHAPS. Therefore, in accordance with Clean Air Act Sections 111(c) and 112(d) and subject to the specific terms and conditions set forth below, the USEPA hereby delegates authority to the State of Minnesota to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located or to be located in the State of Minnesota subject to the NSPS promulgated in 40 CFR Part 60. This delegation includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards. The delegation of authority to enforce future standards, revisions, and amendments will be effective as of the date that such standards become applicable pursuant to State law.

B. Authority for all sources located or to be located in the State of Minnesota subject to the NESHAPS promulgated in 40 CFR Part 61. This delegation includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards. The delegation of authority to enforce future standards, revisions, and amendments will be effective as of the date that such standards become applicable pursuant to State law.

C. This delegation of authority for NSPS and NESHAPS supersedes the previous statewide delegations of September 20, 1977; September 1, 1982; and June 17, 1983; and is subject to the following terms and conditions:

1. Upon approval of the Regional Administrator of Region V, the Executive Director of the Minnesota Pollution Control Agency (MPCA) may subdelegate this authority to implement and enforce the NSPS and NESHAPS to other air pollution authorities in the State when such authorities have demonstrated that they have equivalent or more stringent programs in force.

2. This delegation does not include the Administrator's responsibility to establish opacity standards as set forth in 40 CFR 60.11(e)(4).

3. The State of Minnesota will at no time grant a waiver of compliance with NESHAPS. The State of Minnesota may grant variances from State standards which are more stringent than the NSPS so long as the variances do not prevent compliance with the NSPS.

4. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not have provisions for granting waivers by class of testing requirements or variances, hence this delegation does not convey to the State of Minnesota authority to grant waivers by class of testing requirements or variances from NSPS regulations. Minnesota may waive a performance test or specify the use of a reference method with minor changes in methodology under 40 CFR 60.8(b) on a case by case basis, however the State must inform USEPA of such actions.

5. The State of Minnesota will utilize the methods specified in appendices and Subparts of 40 CFR Parts 60 and 61 in performing source tests pursuant to the regulations. The Administrator retains the exclusive authority to approve (a) the use of equivalent and alternative test methods pursuant to 40 CFR 60.8(b) (2) and (3), and (b) approve the use of alternative testing times for primary aluminum reduction plants pursuant to 40 CFR 60.195(d).

6. Enforcement of NSPS and NESHAPS in the State of Minnesota will be the primary responsibility of the State of Minnesota. If, after appropriate discussion with the MPCA, the Regional Administrator determines that a State procedure for implementing and enforcing the NSPS or NESHAPS is not in compliance with Federal regulations (40 CFR Parts 60 and 61), or is not being effectively carried out, this delegation will be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Executive Director of the MPCA.

7. The Division of Air Quality and the USEPA Region V will develop a system of communication for the purpose of insuring that each office is informed on (a) the current compliance status of subject sources in the State of Minnesota; (b) the interpretation of applicable regulations; and (c) the description of sources and source inventory data. The reporting provisions in 40 CFR 60.4 and 61.04 requiring industry to make submissions to the USEPA are met by sending such submissions to the MPCA. The MPCA will make available this information to the USEPA on a case-by-case basis.

MPCA's annual report, submitted to USEPA pursuant to 40 CFR Part 51, will include information relating to the status of sources subject to 40 CFR Parts 60 and 61. Such information will include the name and address of the most recent stack test, compliance status of facility, enforcement actions initiated, surveillance action undertaken for each facility and results of reports relating to emissions data.

8. Prior USEPA concurrence is to be obtained on any matter involving the interpretation of Section 111 or 112 of the Clean Air Act or 40 CFR Parts 60 and 61 to the extent that implementation, administration, or enforcement of these sections have not been covered by determinations or guidance sent to the Division of Air Quality. All applicability determinations which have not been specifically treated in the Compendium of Applicability Determinations issued by USEPA annually are reserved for USEPA. Any applicability determination made by MPCA based on a prior USEPA determination must be submitted to USEPA.

9. If the State of Minnesota determines that a violation of a delegated NSPS or NESHAPS exists, the Division of Air Quality shall within 30-days notify USEPA, Region V, of the nature of the violation together with a brief description of the State's efforts or strategy to secure compliance. Furthermore, if the State determines that it is unable to enforce an NSPS or NESHAPS standard, the State shall immediately notify USEPA, Region V. This delegation in no way limits the Administrator's concurrent enforcement authority as provided in Sections 111(c)(2) and 112(d)(2) of the Clean Air Act.

10. In addition to any future provision which may be cited in forthcoming NSPS or NESHAPS which cannot be delegated, the Administrator retains authority for approval of equivalency for design, equipment, or work practice or operational standard pursuant to Section 111(h) or Section 112(e) of the Clean Air Act and for the granting of an innovative technology waiver pursuant to Section 111(j) of the Clean Air Act.

11. If the State of Minnesota determines that for any reason, including budget reductions, it is unable to administer any new NSPS or NESHAPS, the Executive Director of the MPCA will notify the Regional Administrator. Upon such notification by the

State, the primary enforcement responsibility for such new standards will return to the USEPA.

A notice announcing this delegation will be published in the Federal Register in the near future. This delegation becomes effective as of the date of this letter and, unless the USEPA receives written notice from the MPCA of objections within 10 days of the receipt of this letter it will be deemed that the State has accepted all the terms and conditions of this delegation.

We trust that this amended delegation will provide for a more efficient NSPS and NESHAPS enforcement program in Minnesota.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

D. Ohio

On June 8, 1982, the Director of the Ohio Environmental Protection Agency requested authority for the NSPS promulgated since his previous request of May 12, 1980, as well as authority for revisions and amendments to the previously delegated NSPS standards. The request letter asked for automatic delegation of all future standards and revisions. The delegation was made on August 9, 1982 by means of the letter published below. Notices of previous delegations and amendments were published in the Federal Register on December 21, 1976 (41 FR 55575) and December 22, 1981 (46 FR 62085).

Furthermore, on June 2, 1982, the Director of Ohio Environmental Protection Agency made an initial request for the authority to implement and enforce the NESHAPS. The State also requested automatic delegation for all future standards and revisions. The subsequent NESHAPS delegation was combined with the NSPS delegation in the previously cited August 9, 1982 letter.

On September 11, 1979, certain NESHAPS has been delegated to the Regional Air Pollution Control Agency (RAPCA) located in Dayton, Ohio. The delegation agreement with RAPCA was published in the (44 FR 65477) on November 13, 1979. The RAPCA delegation agreement contained a condition which provides for the termination of the delegation when the NESHAPS program was transferred to the State of Ohio. Such a termination letter was sent to RAPCA on September 30, 1982 and follows in this section.

Because the August 9, 1982 delegation was the initial delegation to Ohio for NESHAPS, a rule change is published elsewhere in today's Federal Register which adds to 40 CFR Part 61.04(b) the addresses to which reports and notices required by the NESHAPS must be sent for Ohio sources.

August 9, 1982.

Wayne S. Nichols,

Director, Ohio Environmental Protection Agency, 361 E. Broad Street, Columbus, Ohio 43216

Dear Mr. Nichols: The purpose of this letter is to delegate to the State of Ohio the enforcement authority for additional source categories of the new source performance standards (NSPS) and to delegate for the first time to Ohio Environmental Protection Agency (OEPA) the authority for the National Emission Standards for Hazardous Air Pollutants (NESHAPS). The authority for the NSPS program had been previously delegated to Ohio based upon requests dated June 3, 1976, October 3, 1979, and May 12, 1980, and is hereby being amended based on the most recent request of June 8, 1982. The authority for the NESHAPS program was requested on June 2, 1982 and is hereby being delegated for the first time.

We have reviewed the pertinent procedures and supporting regulations of the State of Ohio and have determined that the State has an adequate program for the implementation and enforcement of the NSPS and NESHAPS. Therefore, in accordance with the Clean Air Act Sections 111(c) and 112(d) and subject to the specific terms and conditions set forth below, the U.S. Environmental Protection Agency (USEPA) hereby delegates authority to the State of Ohio to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located or to be located in the State of Ohio subject to the NSPS promulgated in 40 CFR Part 60. This delegated authority includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

B. Authority for all sources located or to be located in the State of Ohio subject to the NESHAPS promulgated in 40 CFR Part 61. This delegation includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

C. This delegation of authority supersedes all other NSPS and NESHAPS delegations made to agencies in Ohio, and is subject to the following terms and conditions:

1. Upon approval of the Regional Administrator of Region V, the Director of OEPA may subdelegate this authority to implement and enforce the NSPS and NESHAPS to other air pollution authorities in the State when such authorities have demonstrated that they have an equivalent or more stringent program in force.

2. This delegaton does not include the Administrator's responsibility to establish opacity standards as set forth in 40 CFR 60.11(e) (4).

3. The State of Ohio will at no time grant a waiver of compliance with NESHAPS.

4. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not have provisions for granting waivers by class of testing requirements or variances, hence this delegation does not convey to the State of Ohio authority to grant waivers by class of testing requirements or variances from NSPS regulations.

5. The State of Ohio will utilize the methods specified in appendices and Subparts of 40 CFR Parts 60 and 61 in performing source tests required by the regulations.

6. Enforcement of NSPS and NESHAPS in the State of Ohio will be the primary responsibility of the State of Ohio. If, after appropriate discussion with the OEPA, the Regional Administrator determines that a State procedure for implementing and enforcing the NSPS or NESHAPS is not in compliance with Federal regulations (40 CFR Part 60 and 61), or is not being effectively carried out, this delegation will be revoked in whole or in part after a 30 day notification. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Director of OEPA.

7. The OEPA and USEPA Region V will develop a system of communication for the purpose of insuring that each office is informed on (a) the current compliance status of subject sources in the State of Ohio; (b) the interpretation of applicable regulations; and (c) the description of sources and source inventory data. The reporting provisions in 40 CFR 60.4 and 61.04 requiring industry to make submission to the USEPA are met by sending such submissions to the State. The State will make available this information to the USEPA on a case-by-case basis.

8. Prior USEPA concurrence is to be obtained on any matter involving the interpretation of Section 111 or 112 of the Clean Air Act or 40 CFR Parts 60 and 61 to the extent that application, implementation, administration, or enforcement of these sections have not been covered by determinations or guidance sent to the OEPA. This concurrence request includes the innovative technology waivers authorized in Section 111(j) of the Clean Air Act.

9. If the State of Ohio determines that a violation of a delegated NSPS or NESHAPS exists, OEPA shall immediately notify EPA, Region V, of the nature of the violation together with a brief description of the State's efforts or strategy to secure compliance.

A notice announcing this delegation will be published in the Federal Register in the near future. This delegation becomes effective as of the date of this letter and, unless the USEPA receives written notice from the OEPA of objections within 10 days of the receipt of this letter, it will be deemed that the State has accepted all the terms and conditions of this delegation.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

September 30, 1982.

William Burkhart,

Supervisor, Regional Air Pollution Control Agency, Montgomery County Combined General Health District, 451 West Third Street, Dayton, Ohio 45402

Dear Mr. Burkhart: On September 11, 1979, the U.S. Environmental Protection Agency delegated to the Regional Air Pollution Control Agency (RAPCA) authority to implement and enforce certain national emission standards for hazardous air pollutants (NESHAPS) within the six-county

area of RAPCA. According to the agreement, the delegation was scheduled for termination when the State of Ohio received delegated authority for NESHAPS.

Since the State of Ohio now has received a full delegation of the NESHAPS program on August 9, 1982, this letter is to be considered a termination notice of the September 11, 1979 delegation.

Although the agreement must be terminated, we will continue to depend upon your Agency in its new cooperative role with the State of Ohio as the NESHAPS program is administered Statewide. When needed, we will also depend upon your cooperation in supplying source information which was accumulated during the period the authority was transferred to RAPCA.

I appreciate your 3 years of effort in implementing the NESHAPS program in your Region as well as your initiative in taking the lead in the State by assuming responsibility for the NESHAPS program. If you have need for further inquiry, please contact Ron Van Mersbergen, at (312) 886-6056, or me.

Sincerely yours,

Valdas V. Adamkus,

Regional Administrator.

E. Wisconsin

On August 10, 1983, the Secretary of the Wisconsin Department of Natural Resources requested a partial delegation of authority to implement any existing and future NSPS and NESHAPS and, futhermore, full authority for such standards upon notice to USEPA that the State has adopted similar standards. An automatic delegation with a temporary partial feature was granted on September 27, 1983 and is published below. The State was previously granted full delegation on September 29, 1976 for twelve NSPS and three NESHAPS which was published as a notice in the Federal Register on March 30, 1977 (42 FR 16845).

In accordance with the September 27, 1983 delegation, the State on October 20, 1983 informed USEPA that they adopted all Federal NSPS and NESHAPS which were promulgated as of July 1, 1983.

September 27, 1983.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Carroll D. Besadny,

Secretary, Bureau of Air Management, Wisconsin Department of Natural Resources, P.O. Box 7921, Madison, Wisconsin 53707

Dear Mr. Besadny: In response to your August 10, 1983 letter, we are amending the delegation of authority agreement for New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Pollutants (NESHAPS). Since the original delegation on September 28, 1976, a number of additional NSPS and NESHAPS have been promulgated and changes in delegation policy have been made. Therefore this letter replaces the original delegation.

We have reviewed the pertinent laws and regulations of the State of Wisconsin and the State's history of implementing the programs, and we have determined that the State of Wisconsin has the resources and the ability to implement and enforce the NSPS and NESHAPS programs for the regulations appropriately promulgated by the State, and to implement the additional responsibilities requested in your August 10, 1983 letter. Therefore, subject to the specific conditions and exceptions set forth below, the U.S. Environmental Protection Agency (U.S. EPA) hereby grants delegation of authority to the State of Wisconsin to implement and enforce the NSPS and NESHAPS as follows:

A. Authority for all sources located or to be located in the State of Wisconsin subject to the NSPS promulgated in 40 CFR Part 60. This delegated authority includes all future standards promulgated for additional pollutants and source categories and all revisions and amendments to existing and future standards.

B. Authority for all sources located or to be located in the State of Wisconsin subject to the NESHAPS promulgated in 40 CFR Part 61. This delegation includes all future standards promulgated for additional pollutants and sources categories and all revisions and amendments to existing and future standards.

This delegation is based upon the following conditions and exceptions.

1. This delegation letter replaces the previous NSPS and NESHAPS delegation letter of September 28, 1976.

2. Certain provisions of the NSPS and NESHAPS regulations allow the Administrator to take further standard setting actions. Such standard setting provisions cannot be delegated and these are as follows:

a. Alternative means of emission limitations in Clean Air Act (CAA) 111(b)(3) which is exemplified in 40 CFR 60.114a.

b. Innovative technology waivers in CAA Section 111(j).

c. Alternative testing times for Primary Aluminum Reduction Plants in 40 CFR 60.195(d).

d. Approval of equivalent and alternate test methods in 40 CFR 60.8(b) (2) and (3).

e. Establishment of alternative opacity standards in 40 CFR 60.11(e).

f. Issuance of commercial demonstration permits under 40 CFR 60.45a.

g. The portions of the Stationary Gas Turbine Standards dealing with nitrogen fuel allowance in 40 CFR 60.332(a) and the ambient condition correction factors in 40 CFR 60.335(a)(ii).

3. The following provisions are included in this delegation and can only be exercised on a case-by-case basis. When any of these authorities are exercised, the State must notify USEPA Region V in accordance with the reporting procedures referred to in item 10 of the conditions and exceptions.

a. Waiver of a performance test in accordance with 40 CFR 60.8(b)(4), or make minor modifications in accordance with 40 CFR 60.8(b)(1).

b. Determination of representative conditions for the purpose of conducting a performance test as allowed by 40 CFR 60.8(c).

c. Approval of smaller sampling times or sampling volumes under 40 CFR 60.46 (b) or (d).

d. Authorization of both the use of wet collectors in accordance with 40 CFR 61.23(b) and also the use of filtering equipment as explained in 40 CFR 61.23(c).

e. Approval of sampling techniques as specified in 40 CFR 61.43(a).

4. The Federal NSPS regulations in 40 CFR Part 60, as amended, do not provide for granting waivers by source class of testing requirements or granting variances, hence this delegation does not convey to the State of Wisconsin authority to grant waivers by source class of testing requirements or grant variances from NSPS regulations.

5. For Federal NSPS and NESHAPS pollutants and source categories and for amendments to existing Federal NSPS and NESHAPS for which the State of Wisconsin has not promulgated regulations or amendments, the State will exercise a partial delegation by performing the administrative and engineering responsibilities with respect to plan review, notifications and recordkeeping, and performance testing all in accordance with items 9 and 12 of the conditions and exceptions. The partial delegation does not include applicability determinations or enforcement actions. The administrative and engineering responsibilities shall continue until such time as the State promulgates appropriate regulations or amendments at which time the State is given fully delegated responsibility as is cited in item 6 of the conditions and exceptions.

6. Implementation and enforcement of the NSPS and NESHAPS in the State of Wisconsin will be the primary responsibility of the State of Wisconsin for those standards for which the State has promulgated appropriate regulations and for which the State has notified the Regional Administrator. The authority includes but is not limited to those responsibilities in item 5, routine applicability determinations in accordance with item 7, and enforcement actions.

7. The State will make routine applicability determinations pertaining to sources subject to NSPS and NESHAPS regulations. Where previous determinations exist in the form of written guidance from USEPA, the State's source specific determinations will be in accordance with such written guidance. The U.S. EPA will periodically forward such U.S. EPA compiled determinations to the Wisconsin Department of Natural Resources (WDNR). If a non-routine situation arises which is not covered by a U.S. EPA determination, the State will forward the details to U.S. EPA Region V for final resolution. A U.S. EPA resolution is to be obtained on any matter involving the non-routine interpretation of Sections 111 or 112 of the Clean Air Act and of 40 CFR Parts 60 and 61 to the extent that application, implementation, administration, or enforcement of these sections have not been covered by determinations of guidance sent to the WDNR.

8. If, after appropriate discussions with the WDNR, the Regional Administrator determines that a State procedure is inadequate for implementing or enforcing any NSPS or NESHAPS in accordance with item 5

or 6 of the conditions and exceptions, or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the dates specified in a Notice of Revocation to the Secretary of WDNR.

9. If the State of Wisconsin determines that a violation of a NSPS or NESHAPS exists, the WDNR shall immediately notify U.S. EPA, Region V, of the nature of the violation together with a brief description of the State's efforts or strategy to secure compliance. With respect to those NSPS and NESHAPS for which the State has only administrative and engineering responsibilities and during the time which the State has only administrative and engineering responsibility, any violations will be immediately referred to U.S. EPA, Region V. The U.S. EPA may at any time exercise its concurrent enforcement authority pursuant to Section 113 of the Clean Air Act, as amended, with regard to any violation of an NSPS or NESHAPS regulation.

10. The WDNR and the U.S. EPA Region V will develop a system of Communication for the purpose of insuring that both agencies are informed on (a) the current compliance status of subject sources in the State of Wisconsin; (b) the interpretation of applicable regulations; (c) the description of sources and source inventory data; and (d) compliance test waivers and approvals listed in item 3 of the conditions and exceptions. The reporting provisions in 40 CFR 60.4 and 61.04 requiring sources to make submissions to the U.S. EPA are met by sending such submissions to the WDNR. The State will make available this information to the U.S. EPA on a case-by-case basis.

11. At no time shall the State of Wisconsin enforce a State NSPS or NESHAPS regulation less stringent than the Federal requirements for NSPS or NESHAPS (40 CFR Parts 60 or 61 as amended) in accordance with 116 of the CAA.

12. The WDNR will utilize the methods specified in 40 CFR Parts 60 and 61 in performing source tests pursuant to the regulations.

13. From time to time when appropriate, the State will revise its NSPS and NESHAPS to include the provisions of Federal amendments and newly promulgated regulations for NSPS and NESHAPS pollutant and source categories.

A notice announcing this delegation will be published in the **Federal Register** in the near future. This delegation becomes effective as of the date of this letter. Unless the U.S. EPA receives written notice from the WDNR of objections within 10 days of receipt of this letter, it will be deemed that the State has accepted all the conditions and exceptions of this delegation.

Sincerely yours,

Alan Levin,

Acting Regional Administrator.

If further revisions are made to any of the current delegation agreements in Region V, USEPA will publish these in the **Federal Register.**

(Sec. 111(c), sec. 112(d) and sec 301(a), Clean Air Act (42 U.S.C. 7411(c), 7412(d) and 7601(a))

Dated: July 6, 1984.

Valdas V. Adamkus,

Regional Administrator.

[FR Doc. 84-18701 Filed 7-13-84; 8:45 am]

BILLING CODE 0560-50-M

105

40 CFR Parts 60 and 61

[OAR-FRL-2631-2]

Standards of Performance for New Stationary Sources; National Emission Standards for Hazardous Air Pollutants, Delegation of Authority to Ohio

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: On August 9, 1982, authority was delegated to Ohio to implement and enforce the national emission standards for hazardous air pollutants (NESHAPS). Reports and notification from New Source Performance Standards (NSPS) and NESHAPS sources in Ohio must now be submitted to the State, through the appropriate district or local agency office instead of to the EPA. Therefore, EPA today is adding the appropriate addresses for the State of Ohio to 40 CFR Part 61. It is also making corrections to the Ohio addresses in Part 60.

EFFECTIVE DATE: August 9, 1982.

ADDRESSES: The related material in support of the delegation may be examined during normal business hours at the following locations. Support materials for the delegations are available in the Region V office.

Region V Environmental Protection Agency, Air and Radiation Branch, 230 South Dearborn Street, Chicago, Illinois 60604

Ohio—Ohio Environmental Protection Agency, 361 East Broad Street, Columbus, Ohio 43216

FOR FURTHER INFORMATION CONTACT: Ronald J. Van Mersbergen, Air and Radiation Branch (5ARB-26), U.S. Environmental Protection Agency, 230 South Dearborn Street, Chicago, Illinois 60604, (312) 886-6056.

SUPPLEMENTARY INFORMATION: Pursuant to section 112(d) of the Clean Air Act, the Director of the Ohio Environmental Protection Agency requested on June 2, 1982 authority to implement and enforce all the NESHAPS. After a review of the request, the appropriate State laws and regulations, and the State's new source review program, the Regional Administrator of Region V determined that the State procedures in Ohio were adequate to implement and enforce the NESHAPS program. The NESHAPS program was transferred to the State of Ohio on August 9, 1982 in a letter of delegation agreement. The delegation agreement is published elsewhere in today's **Federal Register.**

Effective immediately all information required pursuant to 40 CFR Part 61 from sources in Ohio must be sent directly to the appropriate district office or local agency rather than the EPA Region V office. The appropriate addresses for sources in the various counties are provided in 40 CFR 61.04(b)(KK). Finally, EPA is taking this opportunity today to update the Ohio addresses in 40 CFR 60.4 to reflect administrative changes within Ohio's NSPS program.

Under Executive Order 12291, EPA must judge whether or not a publication is "major" and, if it is "major", whether it is subject to the requirements of a regulatory impact analysis. The delegation of authority is not "major" because it is an administrative change, and no additional burdens are imposed on the parties affected.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Fossil-fuel fired steam generators, Glass and glass products, Grain, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate fertilizer, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Intergovernmental relations, Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

(Sec. 111(c), 112(d) and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7411(c), 7412(d) and 7601(a)).

Dated: July 6, 1984.

Valdas V. Adamkus,

Regional Administrator.

PART 60—STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES

Part 60 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

1. Section 60.4(b) is amended by revising subparagraph (KK) to read as follows:

* * * * *

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter 1, Title 40 of the Code of Federal Regulations is amended as follows:

1. Section 61.04(b) is amended by revising subparagraph (KK) to read as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(KK) State of Ohio—

Medina, Summit and Portage Counties; Director, Air Pollution Control, 177 South Broadway, Akron, Ohio 44308.

Stark County; Director, Air Pollution Control Division, Canton City Health Department, City Hall Annex Second Floor, 218 Cleveland Avenue S.W., Canton, Ohio 44702.

Butler, Clermont, Hamilton and Warren Counties; Director, Southwestern Ohio Air Pollution Control Agency, 2400 Beekman Street, Cincinnati, Ohio 45214.

Cuyahoga County; Commissioner, Division of Air Pollution Control, Department of Public Health and Welfare, 2735 Broadway Avenue, Cleveland, Ohio 44115.

Belmont, Carroll, Columbiana, Harrison, Jefferson, and Monroe Counties; Director, North Ohio Valley Air Authority (NOVAA), 814 Adams Street, Steubenville, Ohio 43952.

Clark, Darke, Greene, Miami, Montgomery, and Preble Counties; Supervisor, Regional Air Pollution Control Agency (RAPCA), Montgomery County Health Department, 451 West Third Street, Dayton, Ohio 45402

Lucas County and the City of Rossford (in Wood County); Director, Toledo Pollution Control Agency, 26 Main Street, Toledo, Ohio 43605.

Adams, Brown, Lawrence, and Scioto Counties; Engineer-Director, Air Division, Portsmouth City Health Department, 728 Second Street, Portsmouth, Ohio 45662.

Allen, Ashland, Auglaize, Crawford, Defiance, Erie, Fulton, Hancock, Hardin, Henry, Huron, Marion, Mercer, Ottawa, Paulding, Putnam, Richland, Sandusky, Seneca, Van Wert, Williams, Wood (except City of Rossford), and Wyandot Counties; Ohio Environmental Protection Agency, Northwest District Office, Air Pollution Group 1035 Devlac Grove Drive, Bowling Green, Ohio 43402.

Ashtabula, Holmes, Lorain, and Wayne Counties; Ohio Environmental Protection Agency, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Athens, Coshocton, Gallia, Guernsey, Hocking, Jackson, Meigs, Morgan, Muskingum, Noble, Perry, Pike, Ross, Tuscarawas, Vinton, and Washington Counties; Ohio Environmental Protection Agency, Southeast District Office, Air Pollution Group, 2195 Front Street, Logan, Ohio 43138.

Champaign, Clinton, Highland, Logan, and Shelby Counties; Ohio Environmental Protection Agency, Southwest District Office, 7 East Fourth Street, Dayton, Ohio 45402.

Delaware, Fairfield, Fayette, Franklin, Knox, Licking, Madison, Morrow, Pickaway, and Union Counties; Ohio Environmental Protection Agency, Central District Office, Air Pollution Group, 361 East Broad Street, Columbus, Ohio 43215.

Geauga and Lake Counties: Lake County General Health District, Air Pollution Control, 105 Main Street, P.O. Box 490 Painesville, Ohio 44077

Mahoning and Trumbull Counties; Mahoning-Trumbull Air Pollution Control, Metropolitan Tower, Room 404, 1 Federal Plaza West, Youngstown, Ohio 44503

* * * * *

[FR Doc. 84-18700 Filed 7-13-84; 8:45 am]
BILLING CODE 6560-50-M

106

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2634-1]

National Emission Standards for Hazardous Air Pollutants; Reference Methods; Method 105 Revision

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: This action revises "Method 105, Determination of Mercury in Wastewater Treatment Plant Sewage Sludges." Changes in the sampling and analytical procedure, which will improve the precision and accuracy of the method, are being made as a result of field and laboratory evaluations of the method.

In addition, it corrects an error in Methods 101 and 101A which resulted when several sentences are inadvertently deleted before publication.

EFFECTIVE DATE: September 12, 1984.

Under section 307(b)(1) of the Clean Air Act, judicial review of this new source performance standard is available *only* by the filing of a petition for review in the U.S. Court of Appeals for the District of Columbia within 60 days of today's publication of this rule. Under section 307(b)(2) of the Clean Air Act, the requirements that are the subject of today's notice may not be challenged later in civil or criminal proceedings brought by EPA to enforce these requirements.

Docket. Docket Number A-83-31, containing materials relevant to this rulemaking, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's at Central Docket Section (LE-131), West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Gary McAlister or Mr. Roger Shigehara, Emission Measurement Branch, Emission Standards and Engineering Division (MD-19), U.S. Environmental Protection Agency,

Research Triangle Park, North Carolina 27711, telephone (919) 541-2237.

SUPPLEMENTARY INFORMATION: The revised Method 105 differs from the present method as follows: (1) A sludge-blending procedure has been added; (2) the sludge sample size has been increased from 3.0 liters; and (3) twenty-ml portions of wet sludge are taken for mercury analysis rather than the 0.2-g portions of dried sludge now required.

Public Participation

The revisions were proposed and published in the Federal Register in November 1983 (48 FR 51034). The opportunity to request a public hearing was presented to provide interested persons the opportunity for oral presentation of data, views, or arguments concerning the proposed revisions, but no person desired to make an oral presentation. The public comment period was from November 4, 1983, to January 8, 1984. Two comment letters were received concerning issues relative to the proposed revisions. The comments have been carefully considered and, where determined to be appropriate by the Administrator, changes have been made.

Comments and Changes To The Proposed Method Revisions

Two comments letters were received on the proposed revisions. The comments and responses are summarized in this preamble. Some of the comment letters contained multiple comments.

1. One commenter reported that the aqua regia digestion procedure described in Method 105 did not give valid results. He recommended that the sulfuric acid digestion specified in Environmental Protection Agency Methods 245.1 and 245.5 be used instead.

EPA has successfully used the aqua regia digestion and has received no other negative comments about it. However, under § 60.8(b), the Administrator can approve alternative procedures which can be demonstrated to give acceptable results.

2. One commenter reported that he had obtained adequate homogenization of 3-liter sludge samples by hand blending and kneading the samples in a heavy plastic bag. The relative standard deviation for the samples ranged from 2.8 to 29.98 percent. He noted that the cost of the equipment for mechnical mixing could be as much as $2,100 and questioned whether the expense was justified if manual mixing could produce adequate sample precision.

Method 105 now requires 15-liter samples which are much larger than the 3-liter samples measured by this commenter. During collaborative testing of the method, EPA determined that manual mixing of these large samples could not provide adequate homogenization, but the mechanical blending procedure described in Method 105 did produce adequate mixing. Because a homogeneous sample is necessary to obtain consistent results, EPA believes that mechanical mixing of samples is required and that the need for representative samples justifies the added expense.

3. Another commenter noted that unless the sludge charging rate, Q, in the equation in § 61.54 for calculating mercury emissions, was on a dry basis, the equation would overestimate the emission rate. This commenter suggested that this be corrected by dividing the charging rate by the weight fraction of solids, F_{ss}.

EPA agrees. The equation in § 61.54 (3)(d) has been changed so that the sludge charging rate will be on a dry basis.

4. One commenter thought that in Appendix B, Section 5.1, m is the mass of mercury in the aliquot analyzed, not the mass in the digested sample.

EPA agrees that m is the mass of mercury in the aliquot of digested sample analyzed instead of the whole digested sample and has made the necessary change.

5. One commenter wrote that the solids content after mixing in the mortar mixer, F_{ss}, has no place in Equation 105-4. The commenter thought that Equation 105-4 should read as follows:

$$M = C_m(avg)/F_s$$

EPA agrees Equation 105-4 was incorrect and has corrected the equation as shown above.

Docket

The docket is an organized and complete file of the information considered by EPA in the development of this rulemaking. The docket is a dynamic file, since material is added throughout the rulemaking development. The docketing system is intended to allow members of the public and industries involved to identify readily and locate documents so that they can intelligently and effectively participate in the rulemaking process. Along with the statement of basis and purposes of the proposed and promulgated rule and EPA responses to significant comments, the contents of the docket will serve as the record in case of judicial review (Section 307(d)(7)(A)).

Miscellaneous

This rulemaking would not impose any additional emission measurement requirements on any facilities. Rather, the rulemaking would simply revise an existing test method associated with emission measurement requirements that would apply irrespective to this rulemaking.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and, therefore, subject to the requirements of a regulatory impact analysis. This regulation is not major because it will not have an annual effect on the economy of $100 million or more; it will not result in a major increase in costs or prices; and there will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of U.S.-based enterprises to compete with foreign-based enterprises in domestic or export markets. It has been submitted to the Office of Management and Budget for review.

Pursuant to the provisions of 5 U.S.C. 605(b), EPA must consider the economic effect of this standard on small entities. Most, if not all, of the facilities covered by this regulation are owned by State or local governments would not be small entities.

This proposed rulemaking is issued under the authority of sections 112, 114, and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412, 7414, and 7601(a)).

List of Subjects in 40 CFR Part 61

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic Minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by Reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil fuel steam generators, Fiberglass insulation, Synthetic fibers.

Dated: September 5, 1984.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

40 CFR Part 61 is amended by revising § 61.54 and Methods 101, 101A, and 105 of Appendix B to read as follows:

1. In § 61.54, paragraphs (c)(1), (c)(3), and (d) are revised as follows:

§ 61.54 Sludge sampling.

* * * * *

(c) * * *

(1) The sludge shall be sampled according to Method 105—Determination of Mercury in Wastewater Treatment Plant Sewage Sludges. A total of three composite samples shall be obtained within an operating period of 24 hours. When the 24-hour operating period is not continuous, the total sampling period shall not exceed 72 hours after the first grab sample is obtained. Samples shall not be exposed to any condition that may result in mercury contamination or loss.

* * * * *

(3) The sampling, handling, preparation, and analysis of sludge samples shall be accomplished according to Method 105 in Appendix B of this part.

(d) The mercury emissions shall be determined by use of the following equation.

$$E_{Hg} = \frac{M Q F_{sm(avg)}}{1000}$$

where:

E_{Hg} = Mercury emissions, g/day.

M = Mercury concentration of sludge on a dry solids basis, μg/g.

Q = Sludge changing rate, kg/day.

F_{sm} = Weight fraction of solids in the collected sludge after mixing.

* * * * *

2. In Appendix B, Method 101, Section 8.3, last paragraph, by replacing the third sentence with the following two sentences. "If conditions (1) and (2) are met, attach the bottle section to the bubbler section of the aeration cell. Pipet 5 ml of stannous chloride solution into the aeration cell through the side arm, and immediately stopper the side arm."

3. In Appendix B, Method 101A, Section 8.2, last paragraph, replace the seventh sentence with the following sentence. "Now add 5 ml of tin (II) solution to the aeration bottle through the side arm, and immediately stopper the side arm."

4. Test Method 105 of Appendix B is revised as follows:

Appendix B—Test Methods

* * * * *

Method 105—Determination of Mecury in Wastewater Treatment Plant Sewage Sludge

1. *Applicability and Principle.* 1.1 Applicability. This method applies to the determination of total organic and inorganic mercury (Hg) content in sewage sludges. The range of this method is 0.2 to 5 μg/g; it may be extended by increasing or decreasing sample size.

1.2 Principle. Time-composite sludge samples are withdrawn from the conveyor belt after dewatering and before incineration or drying. A weighed portion of the sludge is disgested in aqua regia and oxidized by potassium permanganate ($KMnO_4$). Hg in the digested sample is then measured by the conventional spectrophotometric cold-vapor technique.

2. *Apparatus.* 2.1 Sampling.

2.1.1 Container. Plastic, 50-liter.

2.1.2 Scoop. To remove 950-ml (1-qt.) sludge sample.

2.2 Sludge Sample Preparation.

2.2.1 Mixer. Mortar mixer, wheelbarrow-type, 57-liter (or equivalent) with electricity driven motor.

2.2.2 Blender. Waring-type, 2-liter. (Note: Mention of specific trade names does not constitute endorsement by the Environmental Protection Agency.)

2.2.3 Scoop. To remove 100-ml and 20-ml samples of blended sludge.

2.3 Analysis. Same as Method 101, Sections 5.3 and 5.4, except for the following:

2.3.1 Balance. The balance of Method 101, Section 5.3.17, is not needed.

2.3.2 Filter Paper. S and S No. 588 (or equivalent).

3. *Reagents.* 3.1 Water. Same as Method 101A, Section 6.1.1.

3.2 Aqua Regia. Prepare immediately before use. Carefully add one volume of concentrated nitric acid (HNO_3) to three volumes of concentrated hydrochloric acid (HCl).

3.3 Antifoam B Silicon Emulsion. J.T. Baker Company (or equivalent).

3.4 Mercury (II) Stock Solution, 1 mg Hg/ml. Completely dissolve 135.4 mg of ACS reagent-grade $HgCl_2$ in 75 ml of water, add 10 ml of concentrated HNO_3, and adjust the volume to 100.0 ml with water. Mix thoroughly. (This solution is stable for at least 1 month.)

3.5 Intermediate Mercury Standard Solution, 10 μg Hg/ml. Prepare fresh weekly. Pipet 5.0 ml of the Hg stock solution into a 500-ml volumetric flask, and add 20 ml of the 15-percent HNO_3 solution. Adjust the volume to 500 ml with water. Thoroughly mix the solution.

3.6 Working Mercury Standard Solution, 200 ng Hg/ml. Prepare fresh daily. Pipet 5.0 ml of the "Intermediate Mercury Standard Solution" into a 250-ml volumetric flask. Add 20 ml of 15-percent HNO_3, and adjust the volume to 250 ml with water. Mix thoroughly.

3.7 Tin (II) Solution, Sodium Chloride-Hydroxylamine Solution, 15-Percent Nitric Acid, and Potassium Permanganate Solution. Same as Method 101A, Section 6.2.

4. *Procedure.* 4.1 Sludge Sampling. Withdraw equal-volume increments of sludge [for a total of at least 15 liters (16-qt.)] at intervals of 30 min over an 8-hr period, and place in a rigid plastic container.

4.2 Sludge Mixing. Transfer the entire 15-liter sample to a 57-liter capacity (2-ft^3) mortar mixer. Mix the sample for a minimum of 30 min at 30 rpm. Using a 200-ml beaker, take six 100-ml portions of sludge, and combine in a 2-liter blender. Blend sludge for 5 min; add water as necessary to give a fluid consistency. Immediately after stopping the blender, use a 50-ml beaker to withdraw four 20-ml portions of blended sludge, and place them in separate, tared 125-ml Erlenmeyer flasks. Reweigh each flask to determine the exact amount of sludge added. (Use three of the samples to determine the mercury content in the sludge, and use the fourth to measure the solids content of the blended sludge.)

4.3 Solids Content of Blended Sludge. Dry one of the 20-ml blended samples from Section 4.2 in an oven at 105 ° C to constant weight. Cool in a desiccator, and weigh and record the dry weight of the sample.

4.4 Aqua Regia Digestion of Blended Samples. To each of the three remaining 20-ml samples from Section 4.2, add 25 ml of aqua regia, and digest the samples on a hot plate at low heat (do not boil) for 30 min, or until samples are a pale yellow-brown color and are void of the dark brown color characteristic of organic matter. Remove from the hot plate, and allow to cool.

Filter each digested sample separately through an S and S No. 588 filter, or equivalent, and rinse the filter contents with 50 ml of water. Transfer the filtrate and filter washing to a 100-ml volumetric flask, and carefully dilute to volume with water.

4.5 Solids Content of Sludge Before Blending. Using a 200-ml beaker, remove two 100-ml portions of mixed sludge from the mortar mixer, and place in separate, tared 400-ml beakers. Reweigh each beaker to determine the exact amount of sludge added. Dry in an oven at 105 °C, and cool in a desiccator to constant weight.

4.6 Analysis for Mercury. The same as Method 101A, Sections 7.4 and 8, except for the following variation.

4.6.1 Spectrophotometer and Recorder Calibration. The mercury response may be measured by either peak height or peak area Note: The temperature of the solution affects the rate at which elemental Hg is released from solution and, consequently, it affects the shape of the absorption curve (area) and the point of maximum absorbance (peak height) Therefore, to obtain reproducible results, bring all solutions to room temperature before use.

Set the spectrophotometer wavelength to 253.7 nm. Make certain the optical cell is at the minimum temperature that will prevent water condensation from occurring. Then set the recorder scale as follows: Using a 25-ml graduated cylinder, add 25 ml of water to the aeration-cell bottle. Add three drops of Antifoam B to the bottle, and then pipet 5.0 ml of the working Hg standard solution into the aeration cell.

Note.—Always add the Hg containing solution to the aeration cell after the 25 ml of water.

Place a Teflon-coated stirring bar in the bottle. Add 5 ml of 15-percent HNO_3 and 5 ml of 5-percent $KMnO_4$ to the aeration bottle, and mix well. Next, attach the bottle section to the bubbler section of the aeration cell, and make certain that: (1) the exit arm stopcock of the aeration cell (Figure 105-3) is closed (so that Hg will not prematurely enter the optical cell when the reducing agent is being added), and (2) there is no flow through the bubbler. Add 5 ml of sodium chloride-

hydroxylamine solution to the aeration bottle through the side arm, and mix. If the solution does not become colorless, add additional sodium chloride-hydroxylamine solution in 1-ml increments until the solution is colorless. Now add 5 ml of tin (II) solution to the aeration bottle through the side arm, and immediately stopper the side arm. Stir the solution for 15 sec, turn on the recorder, open the aeration cell exit arm stopcock, and then immediately initiate aeration with continued stirring. Determine the maximum absorbance of the standard, and set this value to read 80 percent of the recorder full scale.

5. *Calculations.*

5.1 Nomenclature.

C_m = Concentration of Hg in the digested sample, μg/g.
F_d = Weight fraction of solids in the blended sludge.
F_{ms} = Weight fraction of solids in the collected sludge after mixing.
M = Hg content of the sewage sludge (on a dry basis), μg/g.
m = Mass of Hg in the aliquot of digested sample analyzed, μg.
V_a = Volume of digested sample analyzed, ml.
V_s = Volume of digested sample, ml.
W_f = Weight of empty sample flask, g.
W_b = Weight of sample flask and sample, g.
W_d = Weight of sample flask and sample after drying, g.
W_b = Weight of empty sample beaker, g.
W_b = Weight of sample beaker and sample, g.
W_d = Weight of sample beaker and sample after drying, g.

5.2 Mercury Content of Digested Sample (Wet Basis). For each sample, correct the average maximum absorbance of the two consecutive samples whose peak heights agree with ±3 percent of their average for the contribution of the blank. Use the calibration curve and these corrected averages to determine the final Hg concentration in the solution cell for each sludge sample.

Calculate the total Hg content in each gram of digested sample correcting for any dilutions made to bring the sample into the working range of the spectrophotometer and for the weight of the sludge portion digested.

$$C_m = \frac{mV_s}{V_a(W_b - W_f)} \quad \text{Eq. 105-1}$$

5.3 Solids Content of Blended Sludge. Determine the solids content of the 20-ml aliquot dried in the oven at 105 °C (Section 4.3).

$$F_d = 1 - \frac{W_b - W_d}{W_b - W_f} \quad \text{Eq. 105-2}$$

5.4 Solids Content of Bulk Sample (after mixing in mortar mixer). Determine the solids content of each 100-ml aliquot (Section 4.5), and average the results.

$$F_{ms} = 1 - \frac{W_b - W_d}{W_b - W_b} \quad \text{Eq. 105-3}$$

5.5 Mercury Content of Bulk Sample (Dry Basis). Average the results from the three samples from each 8-hr composite sample, and calculate the Hg concentration of the composite sample on a dry basis.

$$M = \frac{C_m(\text{avg})}{F_d} \quad \text{Eq. 105-4}$$

6. *Bibliography.*

1. Bishop, J.N. Mercury in Sediments, Ontario Water Resources Commission. Toronto, Ontario, Canada. 1971.

2. Salma, M. Private Communication. EPA California/Nevada Basin Office. Alameda, California.

3. Hatch, W.R. and W.L. Ott. Determination of Sub-Microgram Quantities of Mercury by Atomic Absorption Spectrophotometry. Analytical Chemistry. 40:2085. 1968.

4. Bradenberger, H. and H. Bader. The Determination of Nanogram Levels of Mercury in Solution by a Flameless Atomic Absorption Technique. Atomic Absorption Newsletter. 6:101. 1967.

5. Analytical Quality Control Laboratory (AQCL). Mercury in Sediment (Cold Vapor Technique) (Provisional Method). U.S. Environmental Protection Agency. Cincinnati, Ohio. April 1972.

6. Kopp, J.F., M.C. Longbottom, and L.B. Lobring. "Cold Vapor" Method for Determining Mercury. Journal AWWA. 64(1):20-25. 1972.

7. Manual of Methods for Chemical Analysis of Water and Wastes. U.S. Environmental Protection Agency. Cincinnati, Ohio. Publication No. EPA-624/2-76-003. December 1974. p. 118-138.

8. Mitchell, W.J., M.R. Midgett, J. Suggs, R.J. Velton, and D. Albrinch. Sampling and Homogenizing Sewage for Analysis. Environmental Monitoring and Support Laboratory, Office of Research and Development, U.S. Environmental Protection Agency. Research Triangle Park, N.C. March 1979. 7 p.

[FR Doc. 84-24031 Filed 9-11-84; 8:45 am]
BILLING CODE 6560-50-M

107

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[OAR-4-FRL-2668-5]

Standards of Performance for New Stationary Sources National Emission Standards for Hazardous Air Pollutants; Supplemental Delegation of Authority to South Carolina

AGENCY: Environmental Protection Agency.

ACTION: Notice of delegation of authority.

SUMMARY: On February 1, April 17, and 25, 1984, the State of South Carolina requested a delegation of authority for the implementation and enforcement of several additional categories of New Source Performance Standards and one category of National Emission Standards for Hazardous Air Pollutants. EPA's review of South Carolina's laws, rules, and regulations showed them to be adequate for the implementation and enforcement of these Federal standards, and the Agency made the delegation as requested.

EFFECTIVE DATE: These delegations of authority to South Carolina were effective April 6 and May 10, 1984.

ADDRESSES: Copies of the requests for the delegations of authority and EPA's letters of delegation are available for public inspection at EPA's Region IV Office, 345 Courtland Street, N.E., Atlanta, Georgia 30365.

All reports required pursuant to the newly delegated standards should not be submitted to the EPA Region IV Office, but should instead be submitted to the following address: Mr. Otto Pearson, PE, Bureau of Air Quality Control, South Carolina Department of Health and Environmental Control, 2600 Bull Street, Columbia, South Carolina 29201.

FOR FURTHER INFORMATION CONTACT: Al Yeast (404) 881-3286.

SUPPLEMENTAL INFORMATION: Sections 101, 110, and 111 of the Clean Air Act authorize the Administrator to delegate his authority to implement and enforce the National Standards of Performance for New Stationary Sources (NSPS) and the National Emission Standards for

Hazardous Air Pollutants (NESHAP), to any State which has submitted adequate implementation and enforcement procedures.

On October 26, 1976, EPA delegated to the State of South Carolina the authority to implement the NSPS and NESHAP. Subsequent NSPS delegations were made on March 17, 1981, and March 22, 1982. On March 24, 1983, South Carolina requested that EPA delegate authority for the NSPS categories that had been promulgated since the March 22, 1982, delegation. On February 1, April 17 and 25, 1984, the State of South Carolina requested delegation of authority for several NSPS and NESHAP categories. The NSPS categories requested are as follows:

1. *Surface Coating of Metal Furniture. 40 CFR Part 60, Subpart EE,* as promulgated on October 29, 1982.
2. *Industrial Surface Coating: Large Appliances, 40 CFR Part 60, Subpart SS,* as promulgated on October 27, 1982.
3. *Metal Coil Surface Coating, 40 CFR Part 60, Subpart TT,* as promulgated on November 1, 1982.
4. *Synthetic Fiber Production Facilities, 40 CFR Part 60, Subpart HHH* as promulgated on April 5, 1984.
5. *Metallic Mineral Processing, 40 CFR Part 60, Subpart LL,* as promulgated on February 21, 1984.
6. *Pressure Sensitive Tape and Label Coating Operations, 40 CFR Part 60, Subpart RR,* as promulgated on October 18, 1983.
7. *Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry, 40 CFR Part 60, Subpart VV,* as promulgated on October 18, 1983.
8. *Beverage Can Surface Coating Industry, 40 CFR Part 60, Subpart WW,* as promulgated on August 25, 1983.
9. *Bulk Gasoline Terminals, 40 CFR Part 60, Subpart XX,* as promulgated on August 18, 1983.

The NESHAP category being requested is:

1. *Asbestos, 40 CFR Part 61, Subpart M,* as promulgated on April 5, 1984.

Action. Since review of the pertinent South Carolina laws, rules, and regulations showed them to be adequate for the implementation and enforcement of the aforementioned categories of NSPS and NESHAP, I delegated to the State of South Carolina my authority for the source categories listed above on April 6 and May 10, 1984.

The Office of Management and Budget has exempted this delegation from the requirements of section 3 of the Executive Order 12291.

This notice is issued under the authority of sections 101, 110, 111 and 301 of the Clean Air Act, as amended (42 U.S.C. 7401, 7410, 7411, and 7601).

Dated: August 31, 1984.

John A. Little,

Acting Regional Administrator.

[FR Doc. 84-24080 Filed 9-12-84; 8:45 am]

BILLING CODE 6560-50-M

108

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-8-FRL-2671-1]

Standards of Performance for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants Delegation of Authority in Region VIII

AGENCY: Environmental Protection Agency.

ACTION: Final rulemaking.

SUMMARY: This notice is to clear up any confusion which may have arisen concerning the specific subparts of the Federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) which are delegated to each of the States in EPA Region VIII to enforce. These States are Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

EFFECTIVE DATE: September 17, 1984.

FOR FURTHER INFORMATION CONTACT: Dale M. Wells, Air Programs Branch, Environmental Protection Agency, 1860 Lincoln Street, Denver, Colorado 80295, (303) 844-6131.

SUPPLEMENTARY INFORMATION: The New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) are Federal regulations for industries and pollutants of national concern. These regulations were first promulgated in 1971 and have been delegated to the States for enforcement since 1974. The list of affected industries has grown each year, however, and not all industries have a potential for locating in each of the States. As each new subpart has been added, every State has not always adopted an equivalent regulation to enable State enforcement.

The State of Utah has incorporated by reference all present and future NSPS and NESHAPS regulations and does have the authority and resources to enforce them. Utah will automatically receive delegation of each new NSPS and NESHAPS subpart, as it is promulgated. The other States must adopt an equivalent State regulation prior to delegation.

The lists below indicate the delegation status of each State in Region VIII for each NSPS and NESHAPS subpart. This Notice is issued under the authority of Sections 111 and 112 of the Clean Air Act.

(Secs. 111 and 112, 42 U.S.C. 7412 of the Clean Air Act)

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Asphalt, Cement industry, Coal copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Metallic minerals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel sulfuric acid plants, Waste treatment and disposal, Zinc, Tires, Incorporation by reference, Can surface coating, Sulfuric acid plants, Industrial organic chemicals, Organic solvent cleaners, Fossil fuel-fired steam generators, Fiberglass insulation, Synthetic fibers.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: August 8, 1984.

John G. Welles,

Regional Administrator.

PART 60—[AMENDED]

Title 40, Part 60 of the Code of Federal Regulations is amended as follows:

* * * * * * *

PART 61—[AMENDED]

Title 40, Part 61 of the Code of Federal Regulations is amended as follows:

Subpart A—General Provisions

§ 61.04 [Amended]

In § 61.04 the table below is added as follows:

DELEGATION STATUS OF NATIONAL EMISSION STANDARDS FOR HAZARDSOUS AIR POLLUTANTS (NESHAPS) IN REGION VIII

Subpart	State					
	Colorado	Montana	North Dakota	South Dakota	Utah	Wyoming
A General provisions	(*)		(*)		(*)	
B Asbestos	(*)		(*)		(*)	
C Beryllium	(*)		(*)		(*)	
D Beryllium rocket motor firing	(*)		(*)		(*)	
E Mercury	(*)		(*)		(*)	
F Vinyl chloride	(*)		(*)		(*)	

*Indicates delegation.

[FR Doc. 84-24494 Filed 9-14-84; 8:45 am]

BILLING CODE 6560-50-M

109

40 CFR Parts 60 and 61

[Docket No. ACB-NY 8401; A-2-FRL-2675-7]

Standards of Performance for New Stationary Sources (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS); Delegation of Authority to the State of New York

AGENCY: Environmental Protection Agency.

ACTION: Delegation of Authority.

SUMMARY: Section 111(c) of the Clean Air Act permits EPA to delegate to the States the authority to implement and enforce the standards set out in 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS) and 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAPS). On March 8, 1984, in accordance with the agreement set out in EPA's previous delegation letter of July 14, 1983 (48 FR 46535, October 13, 1983), EPA informed the State of New York of those additions, changes and revisions which had occurred since the last delegation (from June 10, 1984 through January 31, 1984) and offered delegation of those additions, changes and revisions which EPA determined the State of New York had the authority to implement and enforce. On May 29, 1984, the State of New York accepted delegation of the new NSPS subparts and the revisions to the previously delegated NSPS and NESHAPS standards which EPA offered in its March 8, 1984 letter. The State of New York now has authority to implement and enforce these standards. Applications, reports and other submittals required under these regulations should now be sent to the State's Department of Environmental Conservation.

EFFECTIVE DATE: June 6, 1984.

ADDRESSES: Applications, reports and other submittals required under those NSPS and NESHAPS categories for which the State of New York has delegation should be addressed to the appropriate regional office of the New York State Department of Environmental Conservation or the central office at 50 Wolf Road, Albany, New York 12233, Attention: Division of Air, Bureau of Source Control.

FOR FURTHER INFORMATION CONTACT: F. W. Giaccone, Chief, Air Compliance Branch, EPA Region II, telephone (212) 264-9627 or FTS 264-9627.

SUPPLEMENTARY INFORMATION: On July 10, 1983 EPA and the New York State Department of Environmental Conservation (DEC) entered into a delegation agreement whereby, among other things, EPA would offer, every six months, delegation of those new categories of NSPS and NESHAPS standards that were promulgated by EPA during that six month period and that EPA found DEC had the authority to implement and enforce. Additionally, by this July 10, 1983 delegation agreement, EPA was to inform DEC of any changes or revisions to previously delegated NSPS or NESHAPS categories. Subsequently, DEC would accept delegation of these changes and revisions if DEC did not decline such delegation.

On March 8, 1984, EPA informed DEC of the new NSPS categories and those changes to previously delegated NSPS and NESHAPS categories.

On April 18, 1984 and again on May 29, 1984, the DEC responded to EPA's offer of delegation of the new NSPS Subparts RR, WW, and XX and the previously undelegated NSPS Subparts D and GG by accepting delegation of these NSPS Subparts. DEC also accepted delegation of all changes and revisions to the previously delegated NSPS and NESHAPS categories. DEC now has the authority to implement and enforce all NSPS and NESHAPS standards promulgated prior to February 1, 1984 except the following:

NSPS

40 CFR Part 60 Subpart Da
40 CFR Part 60 Subpart VV

NESHAPS

40 CFR Part 61 Subpart M 145, 146, 147, 150 & 152

Effective immediately, all applications, reports, correspondence and other submittals required under the categories of NSPS and NESHAPS delegated to the State of New York should be sent to the address listed above.

The Office of Management and Budget has exempted this action from the requirements of section 3 of Executive Order 12291.

This Notice is issued under the authority of sections 111 and 112 of the Clean Air Act, as amended (42 U.S.C. 7411 and 7412).

Dated: August 28, 1984.

Richard T. Dewling,

Acting Regional Administrator.

[FR Doc. 84-24931 Filed 9-20-84; 8:45 am]

BILLING CODE 6560-50-M

110

40 CFR Parts 60 and 61

[A-9-FRL-2681-8]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP); State of Arizona

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAP authority to the Arizona Department of Health Services (ADHS). This action is necessary to bring the NSPS and NESHAP program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAP categories from EPA to State and local governments.

EFFECTIVE DATE: August 12, 1984.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION:

The ADHS has requested authority for delegation of certain NSPS and NESHAP categories. Delegation of authority was granted by a letter dated July 31, 1984 and is reproduced in its entirety as follows:

Mr. Charles Anders,
Assistant Director for Environmental Health Services, Division of Environmental Health, Arizona Department of Health Services, State Health Building, 1740 West Adams Street, Phoenix, AZ 85007.

Dear Mr. Anders: In response to your request of June 26, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable with the exception of Subpart A, General Provisions. This delegation includes authority for the following source categories:

	40 CFR Part 60 subpart
NSPS:	
Storage vessels for petroleum liquids	Ka.
Glass manufacturing plants	CC.
NESHAP:	
General provisions	A.

With regard to your Rule R9-3-801, paragraphs (1) and (3), for Subpart A, General Provisions, EPA cannot approve the substitution of "Director, Arizona Department of Health Services, for (EPA) "Administrator." This is because EPA cannot delegate certain sections of 40 CFR Part 60; namely, §§ 60.8(b)(2), 60.8(b)(3), and 60.11(e) of Subpart A. Section 60.8 applies to the approval of alternate and equivalent test methods. EPA must retain the authority to approve alternate and equivalent methods which effectively replace a reference test method. This restriction on delegation does not apply to § 60.8(b)(1) which allows for approval of minor modifications to reference methods on a case-by-case basis. This authority allows a field engineer to approve deviations to methods that are necessary due to site-specific problems or circumstances. The Administrator also cannot delegate the authority to grant an alternative opacity standard under § 60.11(e). Therefore, Rule No. R9-3-801 of the Arizona rules and regulations cannot be approved to be delegated.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

Judith E. Ayres,
Regional Administrator.

With respect to the areas under the jurisdiction of the ADHS, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAP source categories should be directed to the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of section 111 of the Clean Air Act, as amended (42 U.S.C. 1857, *et seq.*).

Dated: September 17, 1984.

John Wise,

Acting Regional Administrator.

[FR Doc. 84-25581 Filed 9-26-84; 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Parts 60 and 61

[A-9-FRL-2682-1]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP); State of Arizona

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Delegation of Authority.

SUMMARY: The EPA hereby places the public on notice of its delegation on NSPS and NESHAP authority to the Maricopa County Health Department (MCHD) in the State of Arizona. This action is necessary to bring the NSPS and NESHAP program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAP categories from EPA to State and local governments.

EFFECTIVE DATE: August 13, 1984.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The MCHD has requested authority for delegation of certain NSPS and NESHAP categories. Delegation of authority was granted by a letter dated July 31, 1984 and is reproduced in its entirety as follows:

Mr. Robert W. Evans,
Chief Bureau of Air Pollution Control,
Maricopa County Health Department,
1825 E. Roosevelt Street, Phoenix, AZ 85008

Dear Mr. Evans: In response to your request of July 12, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce certain categories of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS). We have reviewed your request for delegation and have found your present programs and procedures to be acceptable. This delegation includes authority for the following source categories:

	40 CFR part 60 subpart
NSPS:	
Surface coating of metal furniture	EE.
Lime manufacturing plants	HH.
Metallic mineral processing plants	LL.
Graphic arts industry: publication rotogravure printing.	QQ.
Pressure sensitive tape & label surface coating operations.	RR.
Industrial surface coating: large appliances	SS.
Metal coil surface coating	TT.
Asphalt processing and asphalt roofing manufacture.	UU.
Synthetic organic chemical manufacturing industry: equipment leaks of VOC.	VV.
Beverage can surface coating industry	WW.
Bulk gasoline terminals	XX.
Equipment leaks of VOC, petroleum refineries and synthetic organic chemical manufacturing industry.	GGG.
Synthetic fiber production facilities	HHH.
NESHAP:	
Equipment Leaks (Fugitive Emission Sources) of Benzene.	J.
Asbestos	M.
Equipment Leaks (Fugitive Emission Sources) Benzene.	V.

I wish to take this opportunity to clarify the effect of EPA's delegation of Subpart A, General Provisions to your agency on April 6, 1983. EPA's delegation does not authorize your agency to approve alternate and equivalent methods which effectively replace a reference test method, unless the modification is minor and the deviation is necessary because of site-specific problems or circumstances (see § 60.8(b)(1)). The Administrator also cannot delegate the authority to grant an alternative opacity standard under § 60.11(e). Therefore, we request that you amend paragraphs (A)(2)(a) and (A)(2)(c) of your Rule 36 to indicate that EPA, rather than the District, maintains authorities identified in §§ 60.8(b)(2), 60.8(b)(3), and 60.11(e).

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA's test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the Federal Register in the near future.

Sincerely,

Judity E. Ayres,

Regional Administrator.

With respect to the areas under the jurisdiction of the MCHD, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAP source categories should be directed to the NCHD at the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of section 111 of the Clean air Act, as amended (42 U.S.C 1857, *et seq.*).

Dated: September 17, 1984.

John Wise,

Acting, Regional Administrator.

[FR Doc. 84-25582 Filed 9-26-84; 8:45 am]

BILLING CODE 6560-50-M

111

40 CFR Parts 60 and 61

[A-9-FRL-2682-3]

Delegation of New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP); State of Nevada

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of Delegation of authority.

SUMMARY: The EPA hereby places the public on notice of its delegation of NSPS and NESHAP authority to the Nevada Department of Conservation and Natural Resources (NDCNR). This action is necessary to bring the NSPS and NESHAP program delegations up to date with recent EPA promulgations and amendments of these categories. This action does not create any new regulatory requirements affecting the public. The effect of the delegation is to shift the primary program responsibility for the affected NSPS and NESHAP categories from EPA to State and local governments.

EFFECTIVE DATE: September 24, 1984.

FOR FURTHER INFORMATION CONTACT: Julie A. Rose, New Source Section (A-3-1), Air Operations Branch, Air Management Division, EPA, Region 9, 215 Fremont Street, San Francisco, CA 94105, Tel: (415) 974-8236, FTS 454-8236.

SUPPLEMENTARY INFORMATION: The NDCNR has requested authority for delegation of certain NSPS and NESHAP categories. Delegation of authority was granted by letters dated June 14, 1984, July 19, 1984, and September 7, 1984 and are reproduced in their entirety as follows:

June 14, 1984.

Mr. Richard Serdoz
Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation & Natural Resources, Capitol Complex, Carson City, NV 89710

Dear Mr. Serdoz: In response to your request of May 21, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart HH—Standards of Performance for Lime Manufacturing Plants. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Part 60, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

July 19, 1984.

Mr. Richard Serdoz
Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation & Natural Resources, Capitol Complex, Carson City, NV 89710

Dear Mr. Serdoz: In response to your request of June 29, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart GGG—Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries and National Emission Standards for Hazardous Air Pollutants Categories in 40 CFR Part 61: Subparts J and V—National Emission Standard for Equipment Leaks/ Fugitive Emission Sources of Benzene. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Parts 60 and 61, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

September 7, 1984.

Mr. Richard Serdoz,
Air Quality Officer, Division of Environmental Protection, Nevada Department of Conservation and Natural Resources, Capitol Complex, Carson City, Nevada 89710

Dear Mr. Serdoz: In response to your request of August 22, 1984, I am pleased to inform you that we are delegating to your agency authority to implement and enforce the New Source Performance Standard (NSPS) category in 40 CFR Part 60: Subpart FFF—Standards of Performance for Flexible Vinyl and Urethane Coating and Printing. We have reviewed your request for delegation and have found your present programs and procedures to be acceptable.

Acceptance of this delegation constitutes your agreement to follow all applicable provisions of 40 CFR Part 60, including use of EPA approved test methods and procedures. The delegation is effective upon the date of this letter unless the USEPA receives written notice from you of any objections within 10 days of receipt of this letter. A notice of this delegated authority will be published in the **Federal Register** in the near future.

Sincerely,

Judith E. Ayres,

Regional Administrator.

With respect to the areas under the jurisdiction of the NDCNR, all reports, applications, submittals, and other communications pertaining to the above listed NSPS and NESHAP source categories should be directed to the address shown in the letter of delegation.

The Office of Management and Budget has exempted this rule from the requirements of section 3 of Executive Order 12291.

I certify that this rule will not have a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act.

This Notice is issued under the authority of section 111 of the Clean Air Act, as amended (42 U.S.C. 1957, *et seq.*).

Dated: September 17, 1984.

John Wise,

Acting Regional Administrator.

[FR Doc. 84-25584 Filed 9-26-84; 8:45 am]
BILLING CODE 6560-50-M

112

40 CFR Part 61

[AD-FRL 2676-5]

National Emission Standards for Hazardous Air Pollutants; Amendments to Standard for Benzene Equipment Leaks; Correction

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule; correction.

SUMMARY: This document corrects portions of 40 CFR Part 61, Subpart V, that were published June 6, 1984 (49 FR 23498).

FOR FURTHER INFORMATION CONTACT: Mr. Fred Dimmick or Mr. Gilbert Wood, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578. This action is necessary to correct errors that appeared in the June 6, 1984, publication of 40 CFR Part 61, Subpart V.

Dated: September 17, 1984.

Joseph A. Cannon,

Assistant Administrator for Air and Radiation.

The following corrections are made in FR Document 84-14479 appearing on page 23498 in the issue of June 6, 1984:

1. On page 23509, bottom of column three; the estimated maximum lifetime risk numbers "4.5×10^{4} to about 4.2×10^{4}" are corrected to read "4.5×10^{-4} to about 4.2×10^{-4}."

§ 61.241 [Corrected]

2. On page 23514, column one, in § 61.241, in the definition for "In VOC service;" the CFR citation, "40 CFR 60.458(d)," is corrected to read "40 CFR 60.485(d)," and the term "in liquid service" is corrected to read "in heavy liquid service."

3. On page 23514, column two, in the definition for "Semiannual;" the phrase "for existing sources" is added to the end of the definition.

§ 61.242-1 [Corrected]

4. On page 23514, column two, § 61.242-1, paragraph (c)(1), the list of section numbers should also include "§ 61.242-6."

§ 61.242-2 [Corrected]

5. On page 23515, column one, § 61.242-2; paragraph (g) is added as follows:

* * * * *

(g) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5)(i) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.

§ 61.242-3 [Corrected]

6. On page 23515, column one, § 61.242-3; paragraph (e)(1) is corrected to read: "(e)(1) Each sensor as required in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm unless the compressor is located within the boundary of an unmanned plant site."

§ 61.242-4 [Corrected]

7. On page 23515, column two, § 61.242-4; paragraph (b)(1) is corrected by adding the following words to the end of the paragraph ", except as provided in § 61.242-10."

§ 61.242-8 [Corrected]

8. On page 23516, column two, § 61.242-8; the phrase ", except as provided in § 61.242-1(c)." is added at the end of paragraph (a).

§ 61.242-9 [Corrected]

9. On page 23516, column two, § 61.242-9; the phrase ", except as provided in § 61.242-1(c)." is added at the end of paragraph (a).

§ 61.242-11 [Corrected]

10. On page 23516, column three, § 61.242-11; the phrase ", except as provided in § 61.242-1(c)." is added at the end of paragraph (a).

§ 61.242-11 [Corrected]

11. On page 23516, column three, § 61.242-11, paragraph (d)(1); "1 consecutive hours" is corrected to read "2 consecutive hours."

§ 61.245 [Corrected]

12. On page 23518, column one, § 61.245, paragraph (b)(4)(i); "3ppm" is corrected to read 10 ppm.

13. On page 23518, column one, § 61.245, paragraph (c)(4); "655 upm" is corrected to read "500 ppm."

14. On page 23518, column two, § 61.245, paragraph (e)(3); "K = constant, 1.74×10^{7} * * *" is corrected to read "K = constant, 1.74×10^{-7} * * * *".

15. On page 23519, column one, § 61.246; paragraph (e)(1) is revised as follows: "(1) A list of identification numbers for equipment (except welded fittings) subject to the requirements of this subpart."

16. On page 23519, column three, § 61.247; a note is added to paragraph (b)(4) as follows:

"[Note.—Compliance with the requirements of § 61.10(c) is not required for revisions documented under this paragraph.]."

[FR Doc. 84-25172 Filed 10-1-84; 8:45 am]

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Federal Register / Vol. 49, No. 212 / Wednesday, October 31, 1984 / Rules and Regulations

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL 2676-5]

National Emission Standards for Hazardous Air Pollutants; Amendments to Standard for Benzene Equipment Leaks

Correction

In FR Doc. 84-25172 beginning on page 38946 in the issue of Tuesday, October 2, 1984, make the following correction: In the third column, third line from the bottom "1.74×10^{7}" should read "1.74×10^{-7}".

BILLING CODE 1505-01-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-4-FRL-2711-5]

Standards of Performance for New Stationary Sources; National Emissions Standards for Hazardous Air Pollutants; Relinquishment of Authority to Tennessee; Delegation of Authority to Mississippi

AGENCY: Environmental Protection Agency.

ACTION: Delegation of Authority.

SUMMARY: On March 21, 1983, the State of Tennessee requested that EPA relinquish to the State the authority to implement and enforce EPA's New Source Performance Standards (NSPS) for three additional categories of air pollution sources (listed under "**SUPPLEMENTARY INFORMATION**"). The State of Mississippi requested a delegation of authority for the implementation and enforcement of 12 additional categories of air pollution sources under the NSPS program and one additional category under the National Emission Standards for Hazardous Air Pollutants (NESHAPS) program on May 14, 1984.

Since EPA's review of pertinent state laws and rules and regulations showed them to be adequate for the implementation and enforcement of these Federal standards, the agency has made the delegations as requested.

DATE: The effective date of the relinquishment of authority to Tennessee is June 30, 1983, and of the delegation of authority to Mississippi is June 13, 1984.

ADDRESSES: Copies of the requests for delegation of authority and EPA's letters of delegation are available for public inspection at EPA's Region IV office, 345 Courtland Street, NE, Atlanta, Ga 30365.

All reports required pursuant to the newly delegated standards (listed below) should be submitted to the following addresses:

In Tennessee: Mr. Harold E. Hodges, P.E., Director, Division of Air Pollution Control, Tennessee Department of Health and Environment, 150 9th Avenue North, Nashville, Tennessee 37203

In Mississippi: Mr. Dwight K. Wylie, Chief, Bureau of Pollution Control, Mississippi Department of Natural Resources, P.O. Box 10385, Jackson, Mississippi 39209

FOR FURTHER INFORMATION CONTACT: Walter Bishop at (404) 881-3286.

SUPPLEMENTARY INFORMATION: Section 301, in conjunction with Sections 101, 110, and 111 of the Clean Air Act, authorizes EPA to relinquish authority to implement and enforce the Standards of Performance for New Stationary Sources (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAPS).

On April 11, 1980, EPA relinquished to Tennessee the authority to implement and enforce the NSPS. The Tennessee Division of Air Pollution Control requested a relinquishment of authority on March 21, 1983, for the following recently promulgated NSPS contained in 40 CFR Part 60:

Subpart Ka: Storage Vessels for Petroleum Liquids constructed after May 18, 1978

Subpart DD: Grain Elevators

Subpart GG: Stationary Gas Turbines

After a thorough review of the request and information submitted, the Regional Administrator determined that such a relinquishment was appropriate for these source categories with the conditions set forth in the original relinquishment letter of April 11, 1980, and granted the State's request in a letter dated June 30, 1983. Tennessee sources subject to the requirements of Subparts Ka, DD and GG of 40 CFR Part 60 will now be under the jurisdiction of the State of Tennessee.

On November 30, 1981, EPA delegated to the Mississippi Department of Natural Resources the authority for implementation and enforcement of the NSPS and NESHAPS. Mississippi requested a delegation of authority on May 11, 1984 for the following recently promulgated NSPS contained in 40 CFR Part 60:

Subpart T: Phosphate Fertilizer Industry: Wet Process Phosphoric Acid Plants

Subpart U: Phosphate Fertilizer Industry: Superphosphoric Acid Plants

Subpart V: Phosphate Fertilizer Industry: Diammonium Phosphate Plants

Subpart W: Phosphate Fertilizer Industry: Triple Superphosphate Plants

Subpart HH: Lime Manufacturing Plants

Subpart LL: Metallic Mineral Processing Plants

Subpart QQ: Graphic Arts Industry: Publication Rotogravure Printing

Subpart RR: Pressure Sensitive Tape and Label Surface Coating Operations.

Subpart VV: Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry.

Subpart WW: Beverage Can Surface Coating Industry

Subpart XX: Bulk Gasoline Terminals

Subpart HHH: Synthetic Fiber Production Facilities

Mississippi also requested a delegation of authority for Subpart M: Asbestos of the NESHAPS contained in 40 CFR Part 61. After a thorough review of the request and information submitted, the Regional Administrator determined that such a delegation was appropriate for these source categories, with the conditions set forth in the original delegation letter of November 30, 1981, and granted the State's request in a letter dated June 13, 1984. Mississippi sources subject to the requirements of Subparts T, U, V, W, HH, LL, QQ, RR, VV, WW, XX, and HHH of 40 CFR Part 60, and Subpart M of 40 CFR Part 61 will now be under the jurisdiction of the State of Mississippi.

(Sec. 101, 110, 111, and 301 of the Clean Air Act (42 U.S.C. 7401, 7410, 7411, and 7601))

Dated: October 25, 1984.

John A. Little,

Acting Regional Administrator.

[FR Doc. 84-29715 Filed 11-7-84; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[EPA Docket Nos. AM701WV and 702WV; A-3-FRL-2712-41]

Performance Standards for New Stationary Sources and National Emission Standards for Hazardous Air Pollutants; Delegation of Authority to the State of West Virginia

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: This notice Amends 40 CFR 60.4 and 40 CFR 61.04 to reflect delegation to the State of West Virginia for authority to implement and enforce New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) respectively, under the Clean Air Act.

EFFECTIVE DATE: December 14, 1984.

FOR FURTHER INFORMATION CONTACT: Michael Giuranna, U.S. Environmental Protection Agency, Region III, Curtis Building, 6th & Walnut Streets, Philadelphia, PA 19106 (215) 597-9189.

SUPPLEMENTARY INFORMATION: .

I. Background

On June 13, 1984, Don R. Richardson, Chairman, West Virginia Air Pollution Control Commission, requested delegation on authority to implement and enforce existing regulations for New Source Performance Standards (NSPS), under section 111(c) of the Clean Air Act (CAA), and National Emission Standards for Hazardous Air Pollutants (NESHAPS) under section 112(d) of the Clean Air Act.

The request was reviewed and, on July 24, 1984 a letter was sent to Don R. Richardson stating that delegation of authority for the NSPS and NESHAPS in West Virginia is approved subject to the conditions set forth in that letter as follows:

Certified mail

Return Receipt Requested

Mr. Don R. Richardson, Chairman,
West Virginia Air Pollution Control Commission, 1558 Washington Street, East Charleston, West Virginia 25311

Re: Delegation of authority for New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants pursuant to Sections 111(c) and 112(d) of the Clean Air Act, as amended.

Dear Mr. Richardson: This is in response to a letter of June 13, 1984, to Thomas P. Eichler, Regional Administrator, requesting delegation of authority for implementation and enforcement of existing New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS) in West Virginia.

We have reviewed the pertinent laws and regulations governing the control of air pollution in West Virginia and have determined that they provide an adequate and effective procedure for implementation and enforcement of the NSPS and NESHAPS regulations by the Air Pollution Control Commission (the Commission).

Therefore, we hereby delegate authority to the Commission, as follows:

The Commission is delegated and shall have authority for all sources located in the State of West Virginia subject to the Standards of Performance for New Stationary Sources, with the exception of Glass Manufacturing Plants (subpart CC), and all categories of National Emission Standards for Hazardous Air Pollutants, presently promulgated, or subject to any standards promulgated in the future in 40 CFR Parts 60 and 61.

This delegation is based upon the following conditions:

1. Quarterly reports will be submitted to EPA by the Commission and should include the following:

A. For New Source Performance Standards:

(i) Sources determined to be applicable during that quarter;

(ii) applicable sources which started operation during that quarter or which started operation prior to that quarter which have not been previously reported;

(iii) the compliance status of the above: including the summary sheet from compliance test(s); and

(iv) any legal actions which pertain to these sources.

B. For National Emission Standards for Hazardous Air Pollutants:

(i) NESHAPS sources granted a permit to construct;

(ii) NESHAPS sources inspected during that quarter and their compliance status [except under § 61.22 (d) and (e)];

(iii) the requirements of A.i), A.ii), and A.iv) above.

2. Enforcement of the NSPS and NESHAPS regulations in the State of West Virginia will be the primary responsibility of the Commission. Where the Commission determines that such enforcement is not feasible and so notifies EPA, or where the Commission acts in a manner inconsistent with the terms of this delegation, EPA will exercise its concurrent enforcement authority, pursuant to Section 113 of the Clean Air Act, as amended, with respect to sources within the State of West Virginia subject to NSPS and NESHAPS regulations.

3. Acceptance of these delegations does not commit the State of West Virginia to request or accept delegation of future standards and requirements. A new request for delegation will be required for any additional standards not included in the State's request of June 13, 1984.

4. The West Virginia Air Pollution Control Commission will at no time grant a waiver of compliance under the NESHAPS regulations.

5. The Commission will not grant a variance for compliance with the applicable NSPS regulations if such variance delays compliance with the Federal Standards (Part 60). Should the Commission grant such a variance, EPA will consider the source receiving the variance to be in violation of the applicable Federal regulations and may initiate enforcement action against the source pursuant to Section 113 of the Clean Air Act. The granting of such variances by the Commission shall also constitute grounds for revocation of delegation by EPA.

6. The Commission and EPA will develop a system of communication sufficient to guarantee that each office is always fully informed regarding the interpretation of applicable regulations. In instances where there is a conflict between a Commission interpretation and a Federal interpretation of applicable regulations, the Federal interpretation must be applied if it is more stringent than that of the Commission.

7. If at any time there is a conflict between a Commission regulation and a Federal regulation, 40 CFR Part 60 or 61, the Federal regulation must be applied if it is more stringent than that of the Commission. If the Commission does not have the authority to enforce the more stringent Federal regulation, this portion of the delegation may be revoked.

8. The Commission will utilize the methods in 40 CFR Parts 60 and 61 in performing source tests pursuant to these regulations.

9. If the Director of the Air Management Division determines that a Commission program for enforcing or implementing the NSPS or NESHAPS regulations is inadequate, or is not being effectively carried out, this delegation may be revoked in whole or in part. Any such revocation shall be effective as of the date specified in a Notice of Revocation to the Commission.

A notice announcing this delegation will be published in the *Federal Register* in the near future. The notice will state, among other things, that effective immediately, all reports required pursuant to the above-referenced NSPS or NESHAPS regulations by sources located in the State of West Virginia should be submitted to the Commission in addition to EPA Region III. Any original reports which have been or may be received by EPA Region III will be promptly transmitted to the Commission.

Since this delegation is effective immediately, there is no requirement that the Commission notify EPA of its acceptance. Unless EPA receives from the Commission written notice of objections within ten (10) days of receipt of this letter, the Air Pollution Control Commission will be deemed to have accepted all of the terms of the delegation.

Sincerely,

W. Ray Cunningham,

Director, Air Management Division.

Therefore, pursuant to the authority delegated by the Administrator, the Air Management Division Director notified Don R. Richardson that authority to implement and enforce New Source Performance Standards and National Emission Standards for Hazardous Air Pollutants was delegated to the West Virginia Air Pollution Control Commission. Part 60, Performance Standards for New Stationary Sources, is delegated with the condition that the WVAPCC submit to EPA any excess emission reports, as defined in 40 CFR 60.7(c).

II. Regulations Affected by This Action

EPA is today amending 40 CFR 60.4 and 61.04 to reflect the delegation discussed above. The amended § 60.4 and § 61.04 which state the address of the West Virginia Air Pollution Control Commission (to which all reports, requests, applications, and communications to the Administrator regarding this subpart must be addressed) is set forth below.

The Administrator finds good cause to make this rulemaking effective immediately without prior public notice since it is an administrative change and not one of substantive content. No additional substantive burdens are imposed on the parties affected.

This rulemaking is effective immediately, and is issued under the authority of sections 110 and 301 of the Clean Air Act, as amended.

The Office of Management and Budget has exempted this action from Executive Order 12291.

List of Subjects

40 CFR Part 60

Air pollution control, Aluminum, Ammonium sulfate plants, Cement industry, Coal, Copper, Electric power plants, Glass and glass products, Grains, Intergovernmental relations, Iron, Lead, Metals, Motor vehicles, Nitric acid plants, Paper and paper products industry, Petroleum, Phosphate, Sewage disposal, Steel, Sulfuric acid plants, Waste treatment and disposal, Zinc.

40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

(42 U.S.C. 7401 *et seq.*)

Dated: October 17, 1984.

Thomas P. Eichler,

Regional Administrator.

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Part 61 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

In § 61.04, Paragraph (b) is amended by adding subparagraph (XX) to read as follows:

§ 61.04 Address.

* * * * *

(b) * * *

(XX) State of West Virginia: Air Pollution Control Commission, 1558 Washington Street, East, Charleston, West Virginia 25311.

[FR Doc. 84-29399 Filed 12-13-84, 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 60 and 61

[A-4-FRL-2705-4]

Standards of Performance for New Stationary Sources National Emission Standards For Hazardous Air Pollutants; Delegation of Authority to the State of Florida

AGENCY: Environmental Protection Agency.

ACTION: Delegation of authority.

SUMMARY: Sections 111(c) and 112(d) of the Clean Air Act permit EPA to delegate to a state the authority to implement and enforce the standards set out in 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS), and in 40 CFR Part 61, National Emission Standards for Hazardous Air Pollutants (NESHAP). On June 11, 1984, the State of Florida asked EPA to delegate to it authority for the implementation and enforcement of the NESHAP for asbestos, Subpart M, except for § 61.156. On September 28, 1984, the State requested the authority for the implementation and enforcement of § 61.156, and on August 23, 1984, for four additional categories of NSPS: Subparts QQ, RR, VV, & XX. Since EPA's review of pertinent State laws and rules and regulations showed them to be adequate for the implementation and enforcement of these Federal standards, the Agency has made the delegations as requested.

EFFECTIVE DATE: The effective date of the delegation of authority is November 7, 1984.

ADDRESSES: Copies of the requests for delegation of authority and EPA's letter of delegation are available for public inspection at EPA's Region IV office, 345 Courtland Street, NE, Atlanta, GA 30365.

All reports required pursuant to the newly delegated standards (listed below) should be submitted to the following address: Mr. Steve Smallwood, Chief, Bureau of Air Quality Management, Florida Department of Environmental Regulation, Twin Towers Office Building, 2600 Blair Stone Road, Tallahassee, Florida 32301.

FOR FURTHER INFORMATION CONTACT: James Wilburn (404) 881-3785.

SUPPLEMENTARY INFORMATION: Section 301, in conjunction with sections 101, 110, and 111 of the Clean Air Act, authorizes EPA to delegate authority to implement and enforce the Standards of Performance for New Stationary Sources (NSPS) and the National Emission Standards for Hazardous Air Pollutants (NESHAP).

On June 10, 1982, EPA initially delegated the authority for implementation and enforcement of the NESHAP to the State of Florida. On April 5, 1984, EPA revised the NESHAP for asbestos. On June 11, 1984, the State of Florida requested a delegation of authority to implement and enforce the applicable NESHAP for asbestos, codified as 40 CFR Part 61, Subpart M, except for § 61.156, Active Waste Disposal Sites. On September 28, 1984, Florida requested a delegation of authority to implement and enforce § 61.156.

Upon review, EPA acknowledged the fact that the Agency had delegated complete authority for implementation and enforcement of the asbestos NESHAP to the State of Florida in the past; however, some question had arisen as to the legal authority of the State of Florida to carry out that delgation. Consequently, let it be noted that EPA has delegated full authority to implement and enforce Subpart M of 40 CFR Part 61.

On August 23, 1984, Florida requested a delegation of authority for the following recently promulgated NSPS contained in 40 CFR Part 60:

Subpart QQ: Graphic Arts Industry: Publication Rotogravure Printing
Subpart RR: Pressure Sensitive Tape and Label Surface Coating Operations
Subpart VV: Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry
Subpart XX: Bulk Gasoline Terminals

After a thorough review of the request, the Regional Administrator determined that such a delegation was appropriate for these source categories with the conditions set forth in the original delegation letter of June 10, 1982, and granted the State's request in a letter dated November 7, 1984. Florida sources subject to the requirements of Subpart M of 40 CFR Part 61, and Subparts QQ, RR, VV, and XX of 40 CFR Part 60 will now be under the jurisdiction of the State of Florida.

(Secs. 101, 110, 111, and 301 of the Clean Air Act (42 U.S.C. 7401, 7410, 7411, and 7601))

Dated: December 14, 1984.

John A Little,

Deputy for Acting Regional Administrator.

[FR Doc. 84-33746 Filed 12-28-84; 8:45 am]

BILLING CODE 6560-50-M

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ENVIRONMENTAL PROTECTION AGENCY

■

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

GENERAL PROVISIONS

SUBPART A

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2539-3]

National Emission Standards for Hazardous Air Pollutants; Amendments to General Provisions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed Amendments.

SUMMARY: This proposal would amend the General Provisions for national emission standards for hazardous air pollutants to: (1) Eliminate repetition in Part 61; (2) add procedures and criteria for determining if proposed changes to a source constitute modification; and (3) add procedures and criteria for permitting the use of alternative means of emission limitation that the Administrator finds to be equivalent to any design, equipment, work practice, or operational standard for purposes of compliance with that standard. In addition, the proposal would simplify the language of the General Provisions.

A public hearing will be held to provide interested persons an opportunity for oral presentations of data, views, or arguments concerning the proposed standards.

DATES: *Comments.* Comments must be received on or before August 20, 1984.

Public Hearing. If anyone contacts EPA requesting to speak at a public hearing by June 27, 1984, a public hearing will be held on July 24, 1984 beginning at 10:00 a.m. Persons interested in attending the hearing should call Ms. Shelby Journigan at (919) 541-5578 to verify that a hearing will occur.

Request to Speak at Hearing. Persons wishing to present oral testimony must contact EPA by June 27, 1984.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), Attention: Docket Number, A-81-12, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

Public Hearing. If anyone contacts EPA requesting a public hearing, it will be held at EPA's Office of Administration Auditorium, Research Triangle Park, North Carolina. Persons interested in attending the hearing should call Ms. Shelby Journigan at (919) 541-5578 to verify that a hearing will occur. Persons wishing to present oral testimony should notify Ms. Journigan, Standards Development Branch (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

Docket. Docket No. A-81-12 containing supporting information used in developing the proposed amendments is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Gilbert H. Wood, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone number (919) 541-5578.

SUPPLEMENTARY INFORMATION: Under the authority of section 112 of the Clear Air Act, EPA has been promulgating national standards for the emissions of hazardous air pollutants from existing and new stationary sources. All of the standards are contained in Part 61 of 40 CFR, each constituting a subpart. Subpart A, the first subpart of Part 61, comprises general provisions which apply to all of the standards in the subsequent subparts.

Presently, many provisions that apply to all the standards and would be applicable to future standards in Part 61 are in each standard's subpart. Incorporating these provisions into the subpart of the General Provisions would eliminate the need to repeat them in the subparts of future standards. An owner or operator of a source who wants information on the general requirements for sources emitting hazardous pollutants would find it in Subpart A. An owner or operator could then focus on the requirements that are specific to a source category and particular hazardous pollutant in each subpart thereafter. The majority of the provisions which are proposed to be incorporated into Subpart A from other subparts relate to emission testing, emission monitoring, and recordkeeping. This proposal would not remove these provisions from the subparts of the standards that are presently in Part 61 in order to avoid unnecessary amendments to these standards. Instead, these provisions could be removed from each standard during its next review.

The proposed amendments to the General Provisions of Part 61 would also provide criteria and procedures for determining whether proposed changes to a source would constitute modification. These amendments would help clarify EPA's implementation of modification as it is defined in the Clean Air Act and in the present General Provisions of Part 61 for owners or operators who propose to make changes to a source which may result in increased emissions.

In addition, the proposed amendments would add procedures that would be followed when any person requests that the Administrator permit the use of an alternative design, piece of equipment, work practice or operation to one specified by a standard. As provided by the Clean Air Act, the Administrator may permit the use of an alternative method of controlling emissions if, after notice and opportunity for a public hearing, he determines that the alternative method is equivalent, in terms of reducing emissions, to that specified in the applicable standard.

The proposal would also add to the General Provisions the list of air pollutants which have been designated as being hazardous pursuant to section 112 of the Clean Air Act. This would make it accessible to the public and remove uncertainty that the public may have as to the status of a particular pollutant between listing of the pollutant and promulgation of emission standards for that pollutant.

The proposed amendments would simplify Part 61 by eliminating the concept of a method of emission testing that is equivalent to a reference method specified in a standard, meaning that it has a consistent and quantitative relationship to the appropriate reference method. Each test method approved by the Administrator which is not a reference method would be classified as an alternative method, meaning it is adequate for determining compliance but does not necessarily have a consistent and quantitative relationship to the appropriate reference method.

The proposed amendments would also simplify the wording and punctuation in Subpart A.

Discussion of Amendments

The following discussion is organized by the headings of the sections of Part 61 which would be amended by this proposal. The sections are discussed in the order in which they appear in the proposed regulation.

List of Hazardous Air Pollutants

This notice proposes to add to 40 CFR 61.01 a list of those air pollutants which have been designated as hazardous air pollutants pursuant to section 112 of the Clean Air Act. Section 112 provides for the listing of pollutants which, in the judgment of the Administrators, cause or contribute to air pollution which may reasonably be anticipated to result in an

increase in mortality or an increase in serious irreversible, or incapacitating reversible illness. After a substance is listed as a hazardous air pollutant, EPA promulgates emission standards for the substance. EPA has, to date, listed seven substances (inorganic arsenic, asbestos, benzene, beryllium, mercury, radionuclides, and vinyl chloride) as hazardous air pollutants.

Emission standards for hazardous air pollutants promulgated under section 112 of the Clean Air Act are currently codified in 40 CFR Part 61. However, the pollutants designated as hazardous, although initially published in the **Federal Register**, are not codified in the Code of Federal Regulations. The potential exists for considerable uncertainty in the public sector as to the status of a specific pollutant with respect to section 112 during the period between listing and promulgation of emission standards for that pollutant.

In an effort to remove this uncertainty and to provide for expanded public accessibility to the list of air pollutants designated as hazardous, EPA is proposing to add to 40 CFR Part 61 the list of pollutants designated as hazardous pursuant to section 112. The list, in addition to identifying the hazardous air pollutants, will include a reference to the **Federal Register** in which the listing decision was originally published. This is expected to further facilitate public accessibility to the information relevant to the list of hazardous air pollutants. EPA is soliciting comments on this approach as well as any alternative approaches to codification of the list of hazardous air pollutants. The decisions to list these substances as hazardous air pollutants is not at question. The comments submitted in response to the amendment proposed today should be limited to the content and format of the codified list and should not address the basis for listing of the sevens substances as hazardous air pollutants.

Definitions

This proposal would amend three definitions presently in 40 CFR 61.02, would delete two definitions, and would add three new definitions.

The definition of "Act" would be amended by updating the citation to the United States Code (42 U.S.C. 7401 et seq.).

The definition of "standard" would be clarified to include design, equipment, work practice, and operational standards or combination thereof. This amendment stems from section 112(e) of the Clean Air Act which states that the Administrator may promulgate "a design, equipment, work practice, or operational standard, or combination thereof" when "it is not feasible to prescribe or enforce an emission standard." As a result of this amendment, general provisions that apply to emission standards would also be applicable to design, equipment, work practice or operational standards.

The definition of "modification" would be removed from Section 61.02 because the proposed § 61.15 of 40 CFR would define modification and describe the criteria and procedures for determining if a change to a source is a modification.

The term "equivalent method" would be removed from Part 61. In addition, the definition of "alternative method" would be amended by removing the reference to "equivalent method." In the present regulations, an equivalent method is a test method which has a consistent and quantitative relationship to the appropriate reference method contained in Appendix B of Part 61. An alternative method differs from an equivalent method in that, although it is adequate to determine compliance with an applicable standard in specific cases, it does not necessarily have a consistent and quantitative relationship to the reference method. No determinations on the equivalency of a test method have ever been made under NESHAP. It is unlikely that many determinations would be requested because development of sufficient data to demonstrate equivalency could be extremely difficult and yet the final analysis of the data could result in a determination that the method is not equivalent to the applicable reference method. A more reasonable approach would be to eliminate the concept of an equivalent method and to define all methods which are not reference methods but which may be used to determine compliance as alternative methods. Under the proposed definition, as under the definition in the present regulations, an alternative method could be approved either for a specific site or for all facilities, in which case it would be added to Appendix B of Part 61 and referenced in the appropriate standard. The Administrator would have the same authority that is presently in Part 61 to withdraw his approval of the alternative method, and require the use of a reference method.

Three new definitions would be added to § 61.02. A definition of "capital expenditure" would be added as a result of a proposed revision to an exemption to modification which is described in the discussion of modification which follows in this preamble. A definition of "run" would be added to clarify its usage as applied to emission testing. "Monitoring system" would be defined to specify the functions that the system for monitoring the emissions or related process parameters would be expected to perform.

Address

Section 112(d) of the Act directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce the standards in Part 61. The present § 61.04 of 40 CFR states that all information required to be submitted to EPA under the standards in Part 61 must also be submitted to the appropriate State agency. The proposal would revise the section to state that EPA may permit the information to be submitted to the State agency only instead of to the State agency and to the EPA.

Application for Approval of Construction or Modification

Section 61.07 of 40 CFR would be revised to specify some information which is needed in the application for approval of modification. For construction and modification, the criterion for approval is that the new source will be able to meet the applicable standard. The proposed revisions would clarify the type of information the Administrator needs to evaluate an application. The application for approval of construction requires technical information describing the proposed nature, size, design, operating design capacity, method of operation of the source, and calculations of emissions estimates. The application for approval of modification would include some additional information, such as the precise nature of the proposed changes to the source, the productive capacities of the source before and after the changes, and calculations of estimates of emissions before and after the changes.

Notification of Startup

This proposal would add a paragraph to § 61.09 of 40 CFR which would state that the owner or operator may satisfy the requirements of this section by submitting to the Administrator a copy of a notification of startup sent to a State or local agency if the notification contains all the information as the one required by this section. The proposed provision is intended to clarify that owners or operators do not have to prepare two separate, but similar, notifications.

Source Reporting and Request for Waiver of Compliance

This proposal would amend § 61.10 of 40 CFR by substituting the word "change" for the word "modification" when preceded by the word "process" throughout paragraph (b) of the section. In this paragraph, the word "modification" is not used as defined in the proposed § 61.15; the word "change" would be substituted to avoid possible misinterpretation.

Compliance with Standards and Maintenance Requirements

The proposal would add a new section to Subpart A of 40 CFR Part 61 which would be § 61.12. It would be added to clarify the basis for determining compliance with a standard and the responsibilities of an owner or operator to maintain and operate the source using good practice for air pollution control. The basis for the operation and maintenance requirements in § 61.12(c) is sections 302(k) and 112(e)(1) of the Clean Air Act. Compliance with numerical emission limits would be determined by emission tests or as otherwise specified in the applicable standard; compliance with design, equipment, work practice or operational standards would be determined as specified in the applicable standard.

The proposed section would also provide the owner or operator of a source with the opportunity to obtain permission to use alternative equipment or procedures to comply with a design, equipment, work practice, or operational standard. The authority for these provisions is section 112(e)(3) of the Clean Air Act, which states that the Administrator shall permit the use of an alternative means of controlling emissions for compliance with a design, equipment, work practice or operational standard if, after notice and opportunity for public hearing, any person establishes to the Administrator's satisfaction that the alternative means will achieve a reduction in emissions at least equivalent to that achieved under the applicable standard. The section would outline the steps that would be followed in granting such permission. Any person may submit a written application requesting such permission. Unless the subpart for the applicable standard specified otherwise, the application would include proposed test plans, or the results of testing or monitoring. In addition, it would include descriptions of procedures followed and pertinent conditions during testing or monitoring. Any permission granted would be published in the Federal Register after notice and opportunity for public hearing.

Emission Tests and Waiver of Emission Tests

This proposal would combine the sections in the present Subpart A of 40 CFR Part 61 which relate to emission tests (§ 61.12) and waiver of emission tests (§ 61.13) into one section, which would be § 61.13. In addition, parts of the present section on source tests and analytical methods (§ 61.14) would be included in the proposed § 61.13. The reason for proposing their combination is that the contents of the sections are closely related and combining them would leave more numerical designations available for appropriately locating new sections.

The proposed amendments would incorporate several requirements for emission tests which are presently located only in the subparts of the standards into this section in the General Provisions to eliminate the need to repeat them in the subparts of future standards. The first of these requirements would be that the owner or operator of each existing source or each new source which started up before the effective date of the standard test emissions within 90 days after the effective date, and the owner or operator of each new source which started up after the effective date test emissions within 90 days after the startup date. The second would be that the owner or operator notify the Administrator of the date of the emission test at least 30 days before the test to allow the Administrator an opportunity to have an observer present during the test. The third would require that the emissions be determined within 30 days after each emission test and reported to the Administrator. This requirement would be to ensure that the test data is analyzed and results are reported in a timely manner. The fourth would require that records of emission test results and other data needed to determine emissions be kept at the source for at least 2 years and made available, upon request, for inspection by the Administrator.

This proposal would also add to this section two provisions for emission testing that are not in each of the standards. One would state the Administrator's authority to require an owner or operator to conduct an emission test at any time, as authorized by section 114 of the Clean Air Act. The other provision would require that the emission test be conducted under conditions specified by the Administrator. The Administrator will base his specifications on the design and operating characteristics of the source.

The provisions under the proposed paragraph (h) of this section, which relate to the use of alternative methods for testing emissions, are in § 61.14(c) of the present General Provisions and § 61.67(g) of the vinyl chloride standard in 40 CFR Part 61. They would be amended to include requirements for the date by which requests to use alternative methods during the initial emission tests are due to the Administrator. The purpose of these requirements is to ensure that the Administrator has ample time to evaluate the alternative method and notify the owner or operator of his evaluation before the deadline for conducting the initial emission test.

Source Test and Analytical Methods

The subpart of the General Provisions of 40 CFR Part 61 originally applied only to national emission standards for asbestos, beryllium and mercury. These were the only emission standards for hazardous air pollutants which had been promulgated. Reference test methods and alternative test methods required in § 61.14 of the General Provisions, titled "Source Test and Analytical Methods," are specific to beryllium and mercury. With the addition of standards for vinyl chloride and future regulations under this part, the provisions of this section are no longer appropriate to the General Provisions. Consequently, this proposal would delete this section from Subpart A and redesignate the provisions to the subparts of the applicable standards.

Monitoring Requirements

This proposal would add a section on monitoring of emissions, to be designated § 61.14, to the subpart of the General Provisions in 40 CFR Part 61. This section would apply only to standards in which monitoring is required. Monitoring is required in the vinyl chloride standard and monitoring requirements are anticipated to be in future regulations. Because hazardous air pollutants and processes causing their emissions vary widely, monitoring systems may vary widely. The system may measure emissions or other process parameters, or may observe conditions which indicate the control of air pollution; measurements or observations may be gathered and recorded by equipment or manually. Consequently, a monitoring system would be broadly defined as the system required by an applicable regulation used to sample, to analyze, and to provide a record of emissions or process parameters.

The section would state that the owner or operator shall operate the monitoring system as specified in the applicable standard and would outline the type of information that the Administrator would use to determine whether acceptable operation and maintenance procedures are in use. An owner or operator may be required to evaluate the performance of the monitoring system and report the results to the Administrator. The evaluation would help to determine the effectiveness and limits of the system at a particular source. The proposed section would require that records of monitoring data, monitoring system calibration checks, and the occurrence of malfunctions of the monitoring system be maintained at the source for at least 2 years and made available, upon request, for inspection by the Administrator. The owner or operator of a source would be allowed the flexibility to use alternative monitoring procedurs that are approved by the Administrator on a case-by-case basis.

Modification

Section 112 of the Clean Air Act defines a new source as a stationary source, the construction or modification of which commenced after the date of the proposal of a standard that would be applicable to the source. Sections 112 and 111 then define modification as a physical or operational change to a stationary source which results in an increase in emissions. The present Subpart A of Part 61 of 40 CFR repeats the definition of modification as it is found in section 112 of the Act and describes some changes which, by themselves, are not considered modification by the Administrator. However, it does not describe the criteria by which the Administrator will determine whether a proposed change constitutes a modification or describe the data needed by the Administrator to make a determination. Detailed criteria and procedures for determining modification have not been needed because few requests for determination and approval of modification are expected under the standards that are presently in Part 61. In these standards, new and existing sources are subject to the same emission limits. The only difference in the standards for new and existing sources is the time by which a source must comply with the standard. An existing source may request a waiver of compliance for up to 2 years after the effective date of the standard if it is unable to comply within 90 days after the effective date. New sources are not eligible for waivers. Consequently, at present, modification mainly affects existing sources operating under a waiver of compliance. If one is modified, it becomes a new source and must comply with the standard upon startup after the physical or operational change. However, consideration is given to setting separate standards for new and existing sources during the standard-setting process. This proposal would add a new Section 61.15 to Subpart A that would clarify the criteria and procedures to be used by an owner or operator of a source and the Administrator in determining whether a physical or operational change constitutes modification.

The proposed procedures are largely drawn from those for modification as it applies to new source performance standards, which comprise Part 60 of 40 CFR. The Congressional authorities for new source performance standards (section 111 of the Clean Air Act) and for national emission standards for hazardous air pollutants (section 112 of the Clean Air Act) have strong similarities. In both sections, modification has the same definition and the same basic intent—to require a stationary source which has increased the amount of its emissions as a result of a physical or operational change to meet the emission standards for new sources. Therefore, the Administrator would generally use the same criteria for determining modification for sources subject to Part 61 as were proposed and promulgated for Part 60.

The amount of emissions from a source would be determined by the rate of emissions to the atmosphere, expressed in kg/hour, as it is in Part 60. The emission rate would be determined by emission factors. If the use of emission factors does not demonstrate to the satisfaction of the Administrator that the emission rate will clearly increase or not increase as a result of the change to the source, the emission rate would be determined by material balances, continuous monitoring data, or manual emission tests. If manual emission tests are used to determine the emission rate, the Student's t test in Appendix C of Part 60 would be used to statistically analyze whether the emission rate was greater after the change than before.

The proposed section on modification would list several physical or operational changes which, by themselves, would not be considered modifications by the Administrator. Several of these clarify the Administrator's intent to not include as modifications changes that are within normal fluctuations in the operation of the source. Three are presently in Part 61 under the definition of modifications in § 61.02; they are (1) routine maintenance, repair, and replacement of components of the source, (2) increase in the hours of operation of the source, and (3) an increase in the production rate if it does not exceed the operating design capacity of the source. The term "operating design capacity" is difficult to define, and for some industries the design capacity bears little relationship to the actual operating capacity of the source. Therefore, the Agency proposes to make the exemption for production rate increases less vague by using capital expenditure as a criterion instead of operating design capacity. An increase in the production rate without a capital expenditure would not be considered a modification. The proposed exemption does not change the intent of the present exemption. If the increase in production rate is within the normal fluctuation or operating design capacity of the source, it is unlikely that a significant expenditure of capital would be needed to achieve the increase. Conversely, if the source is being changed to increase its production rate beyond what it is presently designed to operate at, a significant expenditure of capital would likely be necessary. The proposed revision is consistent with the revision to the same exemption to modification in Part 60 that was made in 40 FR 58416 for similar reasons.

This proposal would add two new exemptions to modification. The Administrator would not consider either a relocation or change in ownership of a stationary source, by itself, a physical or operational change and consequently would not determine either to be a modification. This exemption would not be a change in the Administrator's present policy of determining modification. Neither relocation nor change in ownership, by itself, would increase emissions. Consequently, even without the exemption, neither would be considered a modification. The exemption was added to Part 60 to clarify the policy after owners of sources questioned whether such changes would be modifications; it would be included here for the same reason. The second new exemption would be the conversion of a source to coal if the conversion is required for the energy considerations specified in section 111(a)(8) of the Clean Air Act. This exemption is required by law for national emission standards for hazardous air pollutants as well as for new source performance standards because section 112(a) of the Act states

that modification shall have the same meaning as in section 111(a) of the Act.

One exemption to modification in Part 60 would not be included in the modification provisions for Part 61. In Part 60, an increase in emission caused only by the use of an alternative fuel or raw material is exempted from modification if, before the effective date of the standard, the existing facility was designed to accommodate that alternative fuel or raw material. If, as a result of using a different fuel or raw material, a source begins to emit a hazardous pollutant which it had not previously emitted, it may be reasonable to require the source to control the emissions to the extent required for new sources.

State Authority

This proposal would amend the section on state authority, which is presently § 61.16 of 40 CFR and would be redesignated as § 61.17. The amendments would delete the phrase "other than a stationary source owned or operated by the United States" from paragraph (a)(2). The amendment stems from the amendment to section 118(a) of the Clean Air Act enacted in 1977 by Pub. L. 95-95.

Miscellaneous Amendments

Several sections in Subpart A of 40 CFR Part 61 would be redesignated as the result of the proposed addition of several new sections and an interest in grouping the sections logically.

This proposal would amend several sections for wording and punctuation. The wording changes would simplify and clarify the text. For example, "under" would be used instead of "pursuant to," "before" instead of "prior to," "to determine" instead of "to make a determination," and "applies" instead of "is applicable to." Redundant phrases such as "pursuant to the provisions of this part" would be deleted. The appearance of this phrase throughout the General Provisions is redundant because the applicability of the entire subpart is defined in § 61.01. Punctuation corrections would primarily involve the use of colons and dashes in introductory sentences and would follow the "U.S. Government Printing Office Style Manual."

Public Hearing

In accordance with section 307(d)(5) of the Clean Air Act, a public hearing will be held, if requested, to discuss the proposed amendments. Persons wishing to make oral presentations should contact EPA at the address given in the Addresses section of this preamble. Oral presentations will be limited to 15 minutes each.

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by EPA in the development of this proposed rulemaking. The principal purposes of the docket are (1) to allow members of the public and industries involves to identify and locate documents so they can intelligently and effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review.

Miscellaneous

Major Rule Determination

Under Executive Order 12291, EPA is required to judge whether a regulation is a "Major rule" and therefore subject to certain requirements of the Order. The Agency has determined that this regulation would result in none of the adverse econimic effects set forth in Section 1 of the Order as grounds for finding the regulation to be a "major rule." In fact, this action would impose no new regulatory requirements for owners or operators of sources to which a standard under Part 61 is applicable. The Agency has therefore concluded that this regulation is not a "major rule" under Executive Order 12291.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments for OMB to EPA and any EPA response to these comments are included in Docket Number A-81-12.

Paperwork Reduction Act

The Office of Management and Budget (OMB) has approved the information collection requirements contained in this proposed rule under the provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. *et. seq.* and has assigned the following OMB control numbers: 2060-0248 (Application for approval of construction or modification), 2060-0249 (Notification of startup), 2060-0250 (Waiver of Compliance).

Comments on these requirements should be submitted to the Office of Information and Regulatory Affairs of OMB, marked "Attention: Desk Officer for EPA." The final rule will respond to any OMB or public comments on the information collection requirements.

Regulatory Flexibility Analysis Certification

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that the proposed amendments to Part 61 will not, if promulgated, have a significant economic impact on a substantial number of small entities. The amendments will not add any new regulatory requirements to Part 61. Consequently, they will not add significant costs to compliance with national emission standards for hazardous air pollutants.

List of Subjects in 49 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride.

Dated: May 23, 1984.

William D. Ruckelshaus,

Administrator.

It is proposed to amend 40 CFR Part 61 as follows:

1. The table of contents is amended by revising the table of contents for Subpart A and the authority citation to read as follows:

PART 61—NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

Subpart A—General Provisions

Sec.
61.01 List of hazardous air pollutants and applicability of Part 61.
61.02 Definitions.
61.03 Units and abbreviations.
61.04 Address.
61.05 Prohibited activities.
61.06 Determination of construction or modification.
61.07 Application for approval of construction or modification.
61.08 Approval of construction or modification.
61.09 Notification of startup.
61.10 Source reporting and request for waiver of compliance.
61.11 Waiver of compliance.
61.12 Compliance with standards and maintenance requirements.
61.13 Emission tests and waiver of emission tests.
61.14 Monitoring requirements.
61.15 Modification.
61.16 Availability of information.
61.17 State authority.
61.18 Incorporations by reference.
61.19 Circumvention.

* * * * *

Authority: Sec. 112, 301(a), Clean Air Act as amended (42 U.S.C. 7412, 7601(a)), and additional authority as noted.

2. Section 61.01 is revised to read as follows:

§ 6101 List of hazardous air pollutants and applicability of Part 61.

(a) The following list presents the substances that, pursuant to section 112 of the Act, have been designated as hazardous air pollutants.

The Federal Register citations and dates refer to the publication in which the listing decision was originally published:

Asbestos (36 FR 5931; March 31, 1971)
Benzene (42 FR 29332; June 8, 1977)
Beryllium (36 FR 5931; March 31, 1971)
Inorganic Arsenic (45 FR 37886; June 5, 1980)
Mercury (36 FR 5931; March 31, 1971)
Radionuclides (44 FR 76738; December 27, 1979)
Vinyl Chloride (40 FR 59532; December 24, 1975)

(b) This part applies to the owner or operator of any stationary source for which a standard is prescribed under this part.

3. Section 61.02 is amended by removing the definition of "equivalent method" and "modification"; by correcting the definition of "Act"; by revising the definitions for "alternative method" and "standard"; and by adding definitions of "capital expenditure", "monitoring system", and "run". The revised and new definitions will read as follows:

§ 61.002 Definitions.

* * * * *

"Act" means the Clean Air Act (42 U.S.C. 7401 et seq.).

"Alternative method" means any method of sampling and analyzing for an air pollutant which is not a reference method but which has been demonstrated to the Administrator's satisfaction to produce, in specific cases, results adequate for this determination of compliance.

* * * * *

"Capital expenditure" means an expenditure for a physical or operational change to a stationary source which exceeds the product of the applicable "annual asset guideline repair allowance percentage" specified in the latest edition of Internal Revenue Service (IRS) Publication 534 and the stationary source's basis, as defined by section 1012 of the Internal Revenue Code. However, the total expenditure for a physical or operational change to a stationary source must not be reduced by any "excluded additions" as defined in IRS Publication 534.

* * * * *

"Monitoring system" means any system, required under the monitoring sections in applicable subparts, used to sample and condition (if applicable), to analyze, and to provide a record of emissions or process parameters.

"Run" means the net period of time during which an emission sample is collected. Unless otherwise specified, a run may be either intermittent or continuous within the limits of good engineering practice.

"Standard" means a national emission standard including a design, equipment, work practice or operational standard for a hazardous air pollutant proposed or promulgated under this part.

* * * * *

4. Section 61.04 is amended by revising paragraph (b) introductory text to read as follow:

§ 61.04 Address.

* * * * *

(b) Section 112(d) directs the Administrator to delegate to each State, when appropriate, the authority to implement and enforce national emission standards for hazardous air pollutants for stationary sources located in such State. If the authority to implement and enforce a standard under this part has been delegated to a State, all information required to be submitted to EPA under paragraph (a) of this section shall also be submitted to the appropriate State agency (provided, that each specific delegation may exempt sources from a certain Federal or State reporting requirement). EPA may permit all or some of the information to be submitted to be appropriate State agency only, instead of to EPA and the State agency. The appropriate mailing address for those States whose delegation request has been approved is as follows:

* * * * *

5. Section 61.05 is amended by revising paragraphs (a), (b), and (c) to read as follows:

§ 61.05 Prohibited activities.

(a) After the effective date of any standard, no owner or operator shall construct or modify any stationary source subject to the standard without first obtaining written approval from the Administrator in accordance with this subpart, except under an exemption granted by the President under section 112 (c)(2) of the Act. Sources, the construction or modification of which commenced after the publication date of the standards proposed to be applicable to the sources, are subject to this prohibition.

(b) After the effective date of any standard, no owner or operator shall operate a new stationary source subject to that standard in violation of the standard, except under an exemption granted by the President under section 112(c)(2) of the Act.

(c) Ninety days after the effective date of any standard, no owner or operator shall operate any existing source subject to that standards in violation of the standard, except under a waiver granted by the Administrator under this part or under an exemption granted by the President under section 112(c)(2) of the Act.

* * * * *

6. Section 61.06 is amended by revising the text to read as follows:

§ 61.06 Determination of construction or modification.

An owner or operator may submit to the Administrator a written application for a determination of whether actions intended to be taken by the owner or operator constitute construction or modification of a source subject to a standard or the commencement thereof. The Administrator will notify the owner or operator of his determination within 30 days after receiving sufficient information to evaluate the application.

7. In § 61.07 paragraphs (a) and (b) are revised and paragraph (c) is added to read as follows:

§ 61.07 Application for approval of construction or modification.

(a) The owner or operator shall submit to the Administrator an application for approval of the construction of any new source or modification of any existing source. The application shall be submitted before the construction or modification is planned to commence, or within 30 days after the effective date if the construction or modification had commenced before the effective date and initial startup has not occurred. A separate application shall be submitted for each stationary source.

(b) Each application for approval of construction shall include—

(1) The name and address of the applicant;

(2) The location or proposed location of the source; and

(3) Technical information describing the proposed nature, size, design, operating design capacity, and method of operation of the source, including a description of any equipment to be used for control of emissions. Such technical information shall include calculations of emission estimates in sufficient detail to permit assessment of the validity of the calculations.

(c) Each application for approval of modification shall include, in addition to the information required in paragraph (b) of this section,—

(1) The precise nature of the proposed changes;

(2) The productive capacity of the source before and after the changes are completed; and

(3) Calculations of estimates of emissions before and after the changes are completed, in sufficient detail to permit assessment of the validity of the calculations.

8. Section 61.08 is revised to read as follows:

§ 61.08 Approval of construction or modification.

(a) The Administrator will notify the owner or operator of approval or intention to deny approval of construction or modification within 60 days after receipt of sufficient information to evaluate an application under § 61.07.

(b) If the Administrator determines that a stationary source for which an application under § 61.07 was submitted will not cause emissions in violation of a standard if properly operated, he will approved the construction or modification.

(c) Before denying any application for approval of construction or modification, the Administrator will notify the applicant of the Administrator's intention to issue the denial with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the applicant to present, within such time limit as the Administrator shall specify, additional information or arguments to the Administrator before final action on the application.

(d) A final determination to deny any application for approval will be in writing and will specify the grounds on which the denial is based. The final determination will be made within 60 days of presentation of additional information or arguments, or 60 days after the final date specified for presentation if no presentation is made.

(e) Neither the submission of an application for approval nor the Administrator's approval of construction or modification shall—

(1) Relieve an owner or operator of legal responsibility for compliance with any applicable provisions of this part or of any other applicable Federal, State, or local requirement; nor

(2) Prevent the Administrator from implementing or enforcing this part or taking any other action under the Act.

9. Section 61.09 is revised to read as follows:

§ 61.09 Notification of startup.

(a) The owner or operator of each stationary source which has an initial startup after the effective date of a standard shall furnish the Administrator with written notification as follows:

(1) A notification of the anticipated date of initial startup of the source not more than 60 days nor less than 30 days before that date.

(2) A notification of the actual date of initial startup of the source within 15 days after that date.

(b) If any State or local agency requires a notice which contains all the information required in the notification in paragraph (a) of this section, sending the Administrator a copy of that notification will satisfy paragraph (a) of this section.

(Section 114, Clean Air Act as amended (42 U.S.C. 7414))

10. Section 61.10(a)(4), (6) and (7), introductory paragraph (b), (b)(2)(i) and (iii), (c) and (d) are revised to read as follows:

§ 61.10 Source reporting and request for waiver of compliance.

(a) The owner or operator of each existing source or each new source which had an initial startup before the effective date shall provide the following information in writing to the Administrator within 90 days after the effective date:

* * * * *

(4) A brief description of the nature, size, design, and method of operation of the stationary source including the operating design capacity of the source. Identify each point of emission for each hazardous pollutant.

* * * * *

(6) A description of the existing control equipment for each emission point including—

(i) Each control device for each hazardous pollutant; and

(ii) Estimated control efficiency (percent) for each control device.

(7) A statement by the owner or operator of the source as to whether the source can comply with the standards within 90 days after the effective date.

(b) The owner or operator of an existing source unable to comply with an applicable standard may request a waiver of compliance with that standard for a period not exceeding 2 years after the effective date. Any request shall be in writing and shall include the following information:

* * * * *

(2) A compliance schedule, including the date each step toward compliance will be reached. The list shall include as a minimum the following dates:

(i) Date by which contracts for emission control systems or process changes for emission control will be awarded, or date by which orders will be issued for the purchase of component parts to accomplish control or process changes;

* * * * *

(iii) Date by which onsite construction or installation of emission control equipment or process change is to be completed; and

* * * * *

(c) Any change in the information provided under paragraph (a) of this section shall be provided to the Administrator within 30 days after the change. However, if any change will result from modification of the source, § 61.07 and § 61.08 apply.

(d) A possible format for reporting under this section is included as Appendix A of this part. Advice on reporting the status of compliance may be obtained from the Administrator.

(Section 114, Clean Air Act as amended (42 U.S.C. 7414))

11. Section 61.11 is revised to read as follows:

§ 61.11 Waiver of compliance.

(a) Based on the information provided in any request under § 61.10, or other information, the Administrator may grant a waiver of compliance with a standard for a period not exceeding 2 years after the effective date of the standard.

(b) The waiver will be in writing and will—

(1) Identify the stationary source covered;

(2) Specify the termination date of the waiver;

(3) Specify dates by which steps toward compliance are to be taken; and

(4) Specify any additional conditions which the Administrator determines necessary to assure installation of the necessary controls within the waiver period and to assure protection of the health of persons during the waiver period.

(c) The Administrator may terminate the waiver at an earlier date than specified if any specification under paragraphs (b)(3) and (b)(4) of this section are not met.

(d) Before denying any request for a waiver, the Administrator will notify the owner or operator making the request of the Administrator's intention to issue the denial, together with—

(1) Notice of the information and findings on which the intended denial is based; and

(2) Notice of opportunity for the owner or operator to present, within the time limit the Administrator specifies, additional information or arguments to the Administrator before final action on the request.

(e) A final determination to deny any request for a waiver will be in writing and will set forth the specific grounds on which the denial is based. The final determination will be made within 60

days after presentation of additional information or argument; or within 60 days after the final date specified for the presentation if no presentation is made.

(f) The granting of a waiver under this section shall not abrogate the Administrator's authority under Section 114 of the Act.

12. Section 61.12 is revised to read as follows:

§ 61.12 Compliance with standards and maintenance requirements.

(a) Compliance with numerical emission limits shall be determined by emission tests established in § 61.13 or as otherwise specified in an individual subpart.

(b) Compliance with design, equipment, work practice or operational standards shall be determined as specified in an individual subpart.

(c) The owner or operator of each stationary source shall maintain and operate the source, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source.

(d)(1) If, in the Administrator's judgment, an alternative means of emission limitation will achieve a reduction in emissions of a pollutant from a source at least equivalent to the reduction in emissions of that pollutant from that source achieved under any design, equipment, work practice or operational standard, the Administrator will publish in the Federal Register a notice permitting the use of the alternative means for purposes of compliance with the standard. The notice will restrict the permission to the source(s) or category(ies) of sources on which the alternative means will achieve equivalent emission reductions. The notice may condition permission on requirements related to the operation and maintenance of the alternative means.

(2) Any notice under paragraph 1 shall be published only after notice and an opportunity for a hearing.

(3) Any person seeking permission under this subsection shall, unless otherwise specified in the applicable subpart, submit a proposed test plan or the results of testing and monitoring, and description of the procedures followed in testing or monitoring, and a description of pertinent conditions during testing or monitoring.

13. In § 61.13, "emission tests" is added to the heading and the section is revised to read as follows:

§ 61.13 Emission test and waiver of emission tests.

(a) If required to do emission testing by an applicable subpart and unless a waiver of emission testing is obtained under this section, the owner or operator shall test emissions from the source—

(1) Within 90 days after the effective date, for an existing source or a new source which has an initial startup date before the effective date; or

(2) Within 90 days after initial startup, for a new source which has an initial startup date after the effective date.

(b) The Administrator may require an owner or operator to test emissions from the source at any other time under Section 114 of the Act.

(c) The owner or operator shall notify the Administrator of the emission test at least 30 days before the emission test to allow the Administrator the opportunity to have an observer present during the test.

(d) The owner or operator of each new source and, at the request of the Administrator, the owner or operator of each existing source shall provide emission testing facilities as follows:

(1) Sampling ports adequate for test methods applicable to each source.

(2) Safe sampling platform(s).

(3) Safe access to sampling platform(s).

(4) Utilities for sampling and testing equipment.

(5) Any other facilities that the Administrator needs to safely and properly test a source.

(e) Each emission test shall be conducted under such conditions as the Administrator shall specify based on design and operational characteristics of the source.

(f) Unless otherwise specified in an applicable subpart, samples shall be analyzed and emissions determined within 30 days after each emission test has been completed. The owner or operator shall report the determinations of the emission test to the Administrator by a registered letter sent before the close of business on the 31st day following the completion of the emission test.

(g) The owner or operator shall retain at the source and make available, upon request, for inspection by the Administrator, for a minimum of 2 years, records of emission test results and other data needed to determine emissions.

(h)(1) Emission tests shall be conducted as set forth in this section, the applicable subpart and Appendix B unless the Administrator—

(i) Approves the use of an alternative method, the results of which he has determined to be adequate for indicating whether a specific source is in compliance; or

(ii) Waives the requirement for emission testing because the owner or operator of a source has demonstrated by other means to the Administrator's satisfaction that the source is in compliance with the standard.

(2) If the Administrator finds reasonable grounds to dispute the results obtained by an alternative method, he may require the use of a reference method. If the results of the reference and alternative methods do not agree, the results obtained by the reference method prevail, and the Administrator will notify the owner or operator that approval of the method previously considered to be alternative is withdrawn.

(3) For an existing source, any request for use of an alternative method during the initial emission test shall be submitted to the Administrator within 30 days after the effective date, unless a waiver of compliance has been granted under § 61.11.

(4) For a new source, any request for use of an alternative method during the initial emission test shall be submitted to the Administrator no later than with the notification of anticipated startup required under § 61.09.

(i)(1) Emission tests may be waived upon written application to the Administrator if, in his judgment, the source is meeting the standard, or the source is being operated under a waiver of compliance, or the owner or operator has requested a waiver of compliance and the Administrator is still considering that request.

(2) If application for waiver of the emission test is made, the application shall accompany the information required by § 61.10 or the notification of startup required by § 61.09, whichever is applicable. A possible format is contained in Appendix A to this part.

(3) Approval of any waiver granted under this section shall not abrogate the Administrator's authority under the Act or in any way prohibit the Administrator from later cancelling the waiver. The cancellation will be made only after notice is given to the owner or operator of the source.

(Sec. 114, Clean Air Act as amended (42 U.S.C. 7414))

14. Section 61.14 is revised to read as follows:

§ 61.14 Monitoring requirements.

(a) Unless otherwise specified, this section applies to each monitoring system required under each subpart which requires monitoring.

(b) Each owner or operator shall maintain and operate each monitoring system as specified in the applicable subpart and in a manner consistent with good air pollution control practice for minimizing emissions. Any unavoidable breakdown or malfunction of the monitoring system should be repaired or adjusted as soon as practicable after its occurrence. The Administrator's determination of whether acceptable operating and maintenance procedures are being used will be based on information which may include, but not be limited to, review of operating and maintenance procedures, manufacturer recommendations and specifications, and inspection of the monitoring system.

(c) When required by the applicable subpart, and at any other time the Administrator may require, the owner or operator of a source being monitored shall conduct a performance evaluation of the monitoring system and furnish the Administrator with a copy of a written report of the results within 60 days of the evaluation. The performance evaluation shall be conducted according to the applicable specifications and procedures described in the applicable subpart. The owner or operator of the source shall furnish the Administrator with written notification of the date of the performance evaluation at least 30 days before the evaluation is to begin.

(d) When the effluents from a single source, or from two or more sources subject to the same emission standards, are combined before being released to the atmosphere, the owner or operator shall install a monitoring system on each effluent or on the combined effluent. If two or more sources are not subject to the same emission standards, the owner or operator shall install a separate monitoring system on each effluent, unless otherwise specified. If the applicable standard is a mass emission standard and the effluent from one source is released to the atmosphere through more than one point, the owner or operator shall install a monitoring system at each emission point unless the installation of fewer systems is approved by the Administrator.

(e) The owner or operator of each monitoring system shall reduce the monitoring data as specified in each applicable subpart. Monitoring data recorded during periods of unavoidable monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in any data average.

(f) The owner or operator shall maintain records of monitoring data, monitoring system calibration checks, and the occurrence and duration of any period during which the monitoring system is malfunctioning or inoperative. These records shall be maintained at the source for a minimum of 2 years and made available, upon request, for inspection by the Administrator.

(g) After receipt and consideration of a written application, the Administrator may approve alternatives to any monitoring procedures or requirements of this part.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

§ 61.15 [Redesignated as § 61.16]

15. Section 61.15 is redesignated as § 61.16.

16. A new § 61.15 is added as follows:

§ 61.15 Modification

(a) Except as provided under paragraphs (d) and (e) of this section, any physical or operational change to a stationary source which results in an increase in the rate of emission to the atmosphere of a hazardous pollutant to which a standard applies shall be considered a modification.

(b) Upon modification, an existing source shall become a new source for each hazardous pollutant for which the rate of emission to the atmosphere increases and to which a standard applies.

(c) Emission rate shall be expressed as kg/hr of any hazardous pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine the emission rate:

(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors," EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where use of emission factors demonstrates that the emission rate will clearly increase or clearly not increase as a result of the physical or operational change.

(2) Material balances, monitoring data, or manual emission tests in cases where use of emission factors, as referenced in paragraph (c)(1) of this section, does not demonstrate to the Administrator's satisfaction that the emission rate will clearly increase or clearly not increase as a result of the physical or operational change, or where an interested person demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator using emission factors. When the emission rate is based on results from manual emission tests or monitoring data, the procedures specified in Appendix C of 40 CFR Part 60 shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator. At least three test runs must be conducted before and at least three after the physical or operational change. If the Administrator approves, the results of the emission tests required in § 61.13(a) may be used for the test runs to be conducted before the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum degree feasible for all test runs.

(d) The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category.

(2) An increase in production rate of a stationary source, if that increase can be accomplished without a capital expenditure on the stationary source.

(3) An increase in the hours of operation.

(4) Any conversion to coal that meets the requirements specified in section 111(a)(8) of the Act.

(5) The relocation or change in ownership of a stationary source.

17. Section 61.16 is redesignated as § 61.17 and is revised to read as follows:

§ 61.17 State authority.

(a) This part shall not be construed to preclude any State or political subdivision thereof from—

(1) Adopting and enforcing any emission limiting regulation applicable to a stationary source, provided that such emission limiting regulation is not less stringent than the standards prescribed under this part; or

(2) Requiring the owner or operator of a stationary source to obtain permits, licenses, or approvals prior to initiating construction, modification, or operation of the source.

(Sec. 116, Clean Air Act as amended (42 U.S.C. 7416))

18. Section 61.17 is redesignated as § 61.19 and the words "subject to the provisions of this part" are removed from the first sentence.

19. In § 61.33, introductory paragraph (a) is revised to read as follows:

§ 61.33 Stack sampling.

(a) Unless a waiver of emission testing is obtained under § 61.13, each owner or operator required to comply with § 61.32(a) shall test emissions from the source according to Method 104 of Appendix B to this part. Method 103 of Appendix B to this part is approved by the Administrator as an alternative method for sources subject to § 61.32(a). The emission test shall be performed—

* * * * *

20. In § 61.44, paragraph (a) is revised to read as follows:

§ 61.44 Stack sampling.

(a) Sources subject to § 61.42(b) shall be continuously sampled, during release of combustion products from the tank, according to Method 104 of Appendix B to this part. Method 103 of Appendix B to this part is approved by the Administrator as an alternative method for sources subject to § 61.42(b).

* * * * *

21. In § 61.53 an introductory paragraph is added to read as follows:

§ 61.53 Stack sampling.

Testing under this section shall be done according to Method 101 or Method 102, whichever is applicable.

* * * * *

§ 61.65 [Amended]

22. Section 61.65 is amended by removing the words "equivalent or" throughout paragraphs (b)(8) (i) and (c).

23. In § 61.67, paragraph (g) is revised by removing references to equivalent methods to read as follows:

§ 61.67 Emission tests.

* * * * *

(g) Unless otherwise specified, the owner or operator shall use Test Methods in Appendix B to this part for each test as required by paragraphs (g)(1), (g)(2), (g)(3), (g)(4), and (g)(5) of this section, unless an alternative method has been approved by the Administrator. If the Administrator finds reasonable grounds to dispute the results obtained by an alternative method, he may require the use of a reference method. If the results of the reference and alternative methods do not agree, the results obtained by the reference method prevail, and the Administrator may notify the owner or operator that approval of the method previously considered to be alternative is withdrawn.

* * * * *

§ 61.68 [Amended]

24. Section 61.68 is amended by removing the words "equivalent or" throughout paragraph (b).

§ 61.70 [Amended]

25. Section 61.70 is amended by removing the words "equivalent or" throughout paragraph (c).

Appendix A [Amended]

26. In Appendix A, paragraph (II)(B) is amended by replacing the words "of beryllium or mercury pollutants" with the words "subject to emission testing."

Appendix B [Amended]

27. In Method 103 of Appendix B, paragraph 1.2 is amended by removing the words "as specified under the provisions of § 61.14 of the regulations."

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BILLING CODE 6560-50-M

40 CFR Part 61

[AD-FRL 2694-2a]

National Emission Standards for Hazardous Air Pollutants; Standards for Radon-222 Emissions From Underground Uranium Mines

AGENCY: Environmental Protection Agency (EPA).

ACTION: Advance notice of proposed rulemaking.

SUMMARY: This notice announces the Agency's intent, under Section 112 of the Clean Air Act, as amended, to start a program to consider a standard based on bulkheading or related techniques to control radon emissions from underground uranium mines. This standard could be an emission standard, or a design, equipment, work practice, or operational standard, or a combination thereof. The Agency requests interested parties to submit information and comments relative to controlling these emissions.

DATES: Information received by April 30, 1985 will be of maximum value.

ADDRESS: Comments must be submitted (in duplicate, if possible) to: Central Docket Section (LE-130) Attention: Docket No. A-79-11, Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: James M. Hardin, (703) 557-8977, Environmental Standards Branch, Criteria and Standards Division (ANR-460), Office of Radiation Programs, Environmental Protection Agency, Washington, D.C. 20460.

SUPPLEMENTARY INFORMATION: This Advance Notice of Proposed Rulemaking (ANPR) serves to inform interested parties that the Agency is considering a rulemaking related to the design and type of equipment, work practices, operational procedures, or to emission standards based on these techniques, to control the radon-222 emissions from underground uranium mines. As of January 1983, there were 139 of these mines located in Arizona, Colorado, New Mexico, Utah, and Wyoming. These mines have a production rate of 6,200 tons of U_3O_8 and account for about 46% of the total production of U_3O_8 in the United States.

The Agency proposed a standard under section 112 of the Clean Air Act in April of 1983 for underground uranium mines that would limit the annual radon-222 concentration in air due to emissions from an underground mine to 0.2 pCi/l above background in any unrestricted area. The principal method to meet this standard was considered to be control of land around the mine, since at the time, the Agency believed that no emission reduction measures were practical.

In EPA's most recent evaluation of the risks due to radon-222 emissions from underground uranium mines, the estimated lifetime risk of fatal cancer to nearby individuals ranges from one in one thousand to one in one hundred. The potential exists for an even higher risk in some situations (up to one in ten) for individuals living very close to several horizontal vents or in areas influenced by multiple mine emissions. The fatal cancer risk to the total population from radon-222 emissions from all underground uranium mines is five fatal cancers per year. The Agency considers these risks to be significant and believes action is needed to protect individuals living near underground mines and other populations.

However, analysis of the likely reduction in health risks afforded by the proposed standard showed that, while risks to nearby individuals were reduced by a factor of about ten, the risks to the total population were only negligibly reduced. The lack of population risk reduction was due to the fact that radon releases would not be reduced, they would only be more widely dispersed.

The Agency decided to withdraw its proposed standard for underground uranium mines based on its conclusion that the proposed standard was not authorized by the Clean Air Act and that the limited reduction in population risk would not meet the full intent of section 112 to provide adequate public health protection.

Because radon-222 is a noble gas and the volume of air discharged through mine vents is very large, there is no practical method to remove radon-222 from the mine exhaust air. Adsorption onto activated charcoal is the most widely used method for removing noble gases from a low volume air stream. However, application of this method to the removal of radon-222 from mine ventilation air at the volumes of air that must be treated would require large, complex, unproven systems which would be extremely costly.

Since proposal, EPA has received additional information indicating that work practices, such as bulkheading, are more feasible and cost-effective than originally thought. The Agency has decided to begin development of standards based on bulkheading or similar techniques to control radon releases from underground uranium mines. Interested parties are requested to submit information and comments on the following issues:

(1) Measured or estimated radon-222 releases from underground mines;

(2) Applicable standards for reducing radon emissions, including such practices as bulkheading, sealants, mine pressurization, and backfilling;

(3) Methods of procedures to predict releases of radon-222 without controls and with controls, such as bulkheading, sealants, mine pressurization, and backfilling;

(4) Effectiveness, feasibility and costs of controls;

(5) Methods of determining compliance with design, equipment, work practice, or operational type standards;

(6) Estimates of impacts on nearby individuals and populations due to radon-222 emissions before and after control;

(7) Extent of radon-222 controls now practiced by the industry, including such methods as bulkheading, sealants, mine pressurization, and backfilling; and

(8) Effect on the industry if controls are required.

Dated: October 23, 1984.

William D. Ruckelshaus,

Administrator.

[FR Doc. 84-28439 Filed 10-28-84; 2:13 pm]

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40 CFR Part 61

[AD FRL 2694-2b]

National Emission Standards for Hazardous Air Pollutants; Standards for Radon-222 Emissions from Licensed Uranium Mills

AGENCY: Environmental Protection Agency (EPA).

ACTION: Advance notice of proposed rule making.

SUMMARY: This notice announces the Agency's intent, under section 112 of the Clean Air Act, as amended, to consider development of standards to control radon-222 emissions from licensed uranium mills. The Agency requests interested parties to submit information and comments relative to controlling these emissions.

DATES: Information received by April 30, 1985 will be of maximum value.

ADDRESS: Comments must be submitted (in duplicate, if possible) to: Central Docket Section (LE-130) Attention: Docket No. A-79-11, Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: James M. Hardin, (703) 557-8977, Environmental Standards Branch, Criteria and Standards Division (ANR-460), Office of Radiation Programs, Environmental Protection Agency, Washington, D.C. 20460.

SUPPLEMENTARY INFORMATION: This Advance Notice of Proposed Rulemaking (ANPR) serves to inform interested parties that the Agency is considering emission standards under the Clean Air Act for licensed uranium ore processing facilities. As of January 1983, there were 27 licensed uranium mills located in Colorado, New Mexico, South Dakota, Texas, Utah, Washington, and Wyoming. These mills have produced a total of over 150 million metric tons of tailings which contain radioactive elements from the uranium decay chain, including radium-226 which decays to radon-222. The latter is a radioactive gas which is emitted from the piles to the ambient air.

EPA issued standards under the Uranium Mill Tailings Radiation Control Act (UMTRCA) (40 CFR Part 192 Subparts D and E) for the management of tailings at locations that are licensed by the Nuclear Regulatory Commission (NRC) or the States under Title II of the UMTRCA. These standards do not specifically limit radon-222 emissions until after closure of the facility. When the UMTRCA standards were promulgated, the Agency stated that it would issue an ANPR for consideration of control of radon emissions from uranium tailings piles during the operational period of a uranium mill. This notice fulfills that commitment.

The Agency issued Environmental Radiation Protection Standards for Nuclear Power Operations (42 FR 2858, January 13, 1977). These standards (40 CFR Part 190) limit the total individual radiation dose caused by emissions from facilities that comprise the uranium fuel cycle, including licensed uranium mills. At the time 40 CFR Part 190 was promulgated, there existed considerable uncertainty about the public health impact of existing levels of radon-222 in the atmosphere, as well as uncertainty about the best method for management of new man-made sources of the gas. The Agency exempted radon-222 from control under 40 CFR Part 190 since at that time the problems associated with radon emissions were considered sufficiently different from those of other radioactive materials associated with the fuel cycle to warrant separate consideration.

Subsequently, standards were proposed under the Clean Air Act (48 FR 15076, April 6, 1983) for NRC licensees, but uranium fuel cycle facilities, which included operating uranium mills, were excluded because these sources are subject to EPA's 40 CFR Part 190 standard that provided protection equivalent to that of the Clean Air Act. It was noted during the comment period for the Clean Air Act standards that radon-222 emitted from operating uranium mills and their actively used tailings piles are not subject to any current or proposed EPA standards, and that there may be significant risks associated with resulting radon-222 emission.

The Agency is particularly interested in receiving information on the following issues:

(1) Radon-222 emissions from these facilities;

(2) Applicable control options and strategies, including work practices;

(3) Feasibility and cost of control options and strategies;

(4) Local and regional impacts due to emissions of radon-222 from active uranium mills;

(5) Methods of determining compliance with a work practice type of standard; and

(6) Effect on the industry if controls are required.

Dated: October 23, 1984.

William D. Ruckelshaus,

Administrator.

[FR Doc. 84-28440 Filed 10-26-84; 2:14 am]

ENVIRONMENTAL PROTECTION AGENCY

■

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

MERCURY

SUBPART E

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2676-6]

National Emission Standards for Hazardous Air Pollutants Review and Proposed Revision of the Standards for Mercury From Mercury-Cell Chlor-Alkali Plants, Sludge Incineration and Drying Plants, and Mercury Ore Processing Facilities

AGENCY: Environmental Protection Agency (EPA).

ACTION: Review and proposed rule.

SUMMARY: The current mercury national emission standards for hazardous air pollutants (NESHAP) implement section 112 of the Clean Air Act and are based on the Administrator's earlier determination that mercury is a hazardous air pollutant. This determination was based on the finding that previously unregulated mercury emissions might cause or contribute to an increase in serious irreversible, or incapacitating reversible, illness. The intent of the standards is to protect the public health with an ample margin of safety.

A review of the mercury NESHAP (40 CFR 61.5, Subpart E) has been completed to determine if changes to the existing standards are needed or if any additional source categories should be included. The NESHAP limit mercury emissions from mercury-cell chlor-alkali plants, sludge drying and incineration plants, and mercury ore processing facilities. This notice summarizes information gathered during the review, proposes the addition of monitoring and reporting requirements to the standard for mercury-cell chlor-alkali plants, and proposes to allow the owner or operator of any affected facility 15 days to verify the validity of source test data prior to reporting the results to the Administrator.

A public hearing will be held, if requested, to provide interested persons an opportunity for oral presentation of data, views, or arguments concerning the proposed revisions to the standard.

DATES: *Comments.* Comments must be received on or before March 13, 1985.

Public Hearing. If anyone contacts the EPA requesting to speak at a public hearing by January 16, 1985, a public hearing will be held on February 13, 1985 beginning at 10:00 a.m. Persons interested in attending the hearing should call Mrs. Shelby Journigan at (919) 541-5578 to verify that a hearing will occur.

Request To Speak at Hearing. Persons wishing to present oral testimony must contact the EPA by January 16, 1985.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), Attention: Docket No. A-82-41, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460

Public Hearing. If anyone contacts the EPA requesting to speak at a public hearing, it will be held at the Environmental Research Center Auditorium, corner of Highway 54 and Alexander Drive, Research Triangle Park, North Carolina. Persons wishing to present oral testimony should notify Mrs. Shelby Journigan, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

Review Documents. The document summarizing emissions information gathered during the review of the standards may be obtained from the EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Review of National Emission Standards for Mercury," EPA-450/3-84-014.

The document summarizing current information on the potential health effects associated with mercury exposures may also be obtained from the EPA Library. Refer to "Mercury Health Effects Update," EPA-600/8-84-019F.

Docket. Docket No. A-82-41, containing supporting information used in developing the proposed standards, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460. A reasonable free may be charged for copying.

FOR FURTHER INFORMATION CONTACT: *On policy issues contact:* Ms. Dianne Byrne or Mr. Gil Wood, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

On technical issues contact: Dr. James Crowder, Industrial Studies Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5601.

SUPPLEMENTARY INFORMATION:

Background

On March 31, 1971 (36 FR 5931), the EPA listed mercury as a hazardous air pollutant under section 112 of the Clean Air Act. The NESHAP for mercury were proposed on December 7, 1971 (36 FR 23239). Comments received during two public hearings and a public comment period were considered, and the NESHAP were promulgated on April 6, 1973 (38 FR 8826). Initially, the standards included emission limits for only two sources, mercury-cell chlor-alkali plants and mercury ore processing facilities. These were the only sources that the EPA reasonably expected to have the air emission potential to adversely affect human health. Mercury emissions were limited to 2,300 grams per 24-hour period for each source. As a result of a May 7, 1973, petition to the EPA by the Environmental Defense Fund, the EPA agreed to investigate the need to regulate mercury emissions from sludge drying and incineration facilities. The investigation showed that mercury could be emitted in such a way as to endanger human health from several facilities if they were to carry out plans to significantly expand their capacity. Thus, the inclusion of these sources in the NESHAP was proposed on October 25, 1974 (39 FR 38064), and promulgated on October 14, 1975 (40 FR 48302). Emission limits for sludge drying and incineration plants were set at 3,200 grams per 24-hour period.

A revised authority citation to the amended Clean Air Act was published on March 3, 1978 (43 FR 8799). Minor revisions to Reference Test Methods 101 and 102, "Determination of Particulate and Gaseous Mercury Emissions from Chlor-Alkali Plants-Air Streams" and "Determination of Particulate and Gaseous Mercury Emission from Chlor-Alkali Plants-Hydrogen Streams," respectively, to allow the use of alternative sampling and analysis equipment were proposed on October 15, 1980 (45 FR 68514), and promulgated on June 8, 1982 (47 FR 24704). The addition of Reference Test Method 101A, "Determination of Particulate and Gaseous Mercury Emissions from Sewage Sludge Incinerators" was proposed and promulgated on the same dates as the revised Reference Test Methods 101 and 102.

The emission standards for mercury were developed with the intention of regulating those sources that have the potential to emit mercury in a manner that could cause the mercury ambient concentration, averaged over 30 days, to exceed 1.0 microgram per cubic meter

(g/m^3). This concentration is a guideline developed by the EPA at the time of the initial proposed rulemaking to protect human health with an ample margin of safety from the adverse health effects of inhaled mercury, taking into consideration the expected levels of ingested mercury. A detailed discussion of the development of the 1.0 g/m^3 guideline is presented in the health effects document referred to earlier under *Review Documents*. Inhalation and ingestion and mercury compounds cause central nervous system and renal damage. The effects depend on the dose and include tremors and gingivitis as well as a form of poisoning involving a number of nonspecific neurological and physiological symptoms, e.g., memory loss, delusions, and hallucinations. An EPA review of the mercury health effects studies indicates that there is no evidence that current standards are not amply protective of human health from the inhalation of mercury vapor or from other airborne mercury exposures, and revision of the current 1.0 g/m^3 guideline, based on available data, is not warranted. In making this determination, the EPA would like to note that the 1.0 ug/m^3 guideline was based on the public health effects of inhaled mercury, taking into consideration dietary contributions to total body burden of mercury. It did not account for any indirect exposures to mercury. The final health effects review document, however, states that the deposition of airborne mercury emissions can lead to increased concentrations of mercury in the edible fish of local lakes and rivers. It also states that recent studies suggest that mercury levels in more remote lakes can be affected as well through the long-distance transport and deposition of mercury on water and land, as the runoff from land transfers mercury to water.

EPA believes that the 1.0 ug/m^3 guideline, which takes into account average ingestion levels of mercury, is amply protective because of conservative assumptions made in the development of the guideline. However, because the effects of indirect exposures have not been definitively quantified, EPA requests comments on this issue. Should new information become available to allow for quantification of these effects, the Agency will reevaluate the adequacy of the mercury standards. The final health effects review is included in the docket as item II-A-13.

The findings of the review of the national emission standards for mercury are presented in the following sections of this notice. The first section discusses the compliance and enforcement experiences of the regulated source categories and assesses the need to revise the NESHAP for these sources. The second section discusses the emission potential of unregulated sources of mercury emissions and the need to regulate these sources.

Findings

Unregulated (via NESHAP) Source Categories

The mercury emissions potential of coal-fired power plants and nonferrous smelters was investigated by the EPA under the original rulemaking. These sources were not included in the original standard because it was found that mercury emissions from these sources, even assuming restrictive dispersion conditions and uncontrolled emissions, were not expected to cause the ambient concentration guideline to be exceeded. A recent study of mercury emissions from power plants supports this conclusion.

Battery manufacturing, secondary mercury recovery using retort furnances or vacuum distillation, geothermal power plants, peat-to-methanol plants, mercury vapor lamp manufacturing, industrial instrument manufacturing, paint manufacturing, manufacture of mercurials, laboratory use of mercury, use of amalgams in dentistry, and solid waste incenerators also emit mercury to the air. Based on published information about the use of mercury by these sources and the probable magnitude of their air emissions, only battery manufacturing and secondary mercury recovery were considered as candidates for inclusion in the standard. Details regarding these sources are provided in the review document.

Battery Manufacturing. Mercury in the form of zinc (Zn) amalgam, mercuric oxide (H_gO), mercuric chloride (H_gCl_2), or mercurous chloride ($H_{g2}Cl_2$) is a component of most primary batteries and some storage batteries. Because of the amount of mercury involved, mercuric oxide battery (commonly called mercury battery) and alkaline-manganese battery manufacturing would have the greatest potential for mercury emissions. Thus, these two sources were analyzed first to determine if the ambient mercury concentration guideline would be exceeded.

Five mercuric oxide battery manufacturing plants are currently in operation. Estimated daily mercury emissions provided by industry range from about 5 to 454 grams (g) (0.01 to 1 pound [1b/d]) for these plants. Short-term ambient mercury vapor levels (averaged over 6 to 9 hours) greater than 1 $\mu g/m^3$ have been measured in the vicinity of emission sources and at points on the perimeter of the plant having the highest mercury emission level. Atmospheric dispersion modeling assuming maximum production capacity, was performed for this facility to provide an indication of the expected ambient mercury concentrations over a 30-day averaging period. The results of the dispersion modeling indicated a maximum 30-day average mercury concentration of 0.18 $\mu g/m^3$, a level significantly lower than the 1 $\mu g/m^3$ (30-day average) used as a health effects guideline. As would be expected, the modeling results are different from the short-term measurements primarily because the 30-day averaging time includes meteorological conditions representative of the entire averaging period and is, therefore, less likely to reflect only the effects of specific short-term meteorological conditions. As such, the modeling results are judged to be more representative of the 30-day average ambient levels than are the short-term monitoring results.

A large alkaline-maganese battery manufacturing plant may use about 910 kilograms per day (kg/d) (2,000 lb/d) of mercury for zinc amalgamation. Mercury emission estimates ranging from <100 g/d (<0.2 lb/d) to about 800 g/d (1.8 lb/d) were reported by industry for the seven plant in the U.S. Atmospheric dispersion modeling, assuming maximum production capacity, was performed for the facility with the highest mercury emission level. The modeling results indicated a maximum 30-day average mercury concentration of 0.17 $\mu g/m^3$, a level significantly lower than the 1 $\mu g/m^3$ (30-day average) set as a health effects guideline.

Thus, extending the standard to include battery manufacturing is not warranted at this time because dispersion modeling data indicate that the level of mercury emitted would not cause the ambient concentration guideline to be exceeded.

Secondary Recovery. Mercury is recovered from such sources as batteries, thermometers, and sludges by vacuum distillation or by condensing vaporized mercury in retorts. Of these, retorts have the potential for higher mercury emissions. Mercury is emitted from the vapor stream remaining after condensation and from the retort chamber during loading and unloading operations.

Two companies and one battery manufacturer operate mercury recovery retorts processing between 64,000 and 159,000 kg/yr (140,000 and 350,000 lb/yr) of scrap. Several chlor-alkali companies

operate small mercury recovery retorts on-site. Mercury emission estimates from two facilities and test data from a third indicate that daily emissions range from <1 to 840 g (0.002 to 1.85 lb). (The highest emission level was from the facility with test data.) The highest emission level (840 g/d) is similar to the highest level measured for alkaline-manganese battery manufacturing plants (800 g/d). As with battery manufacturing, the 30-day average ambient concentration would not be expected to exceed the health effects guideline.

Thus, extending the standard to include secondary recovery facilities is not warranted at this time because the data indicate that the level of mercury emitted would not cause the ambient concentration guideline to be exceeded.

Regulated Source Categories

Mercury Ore Processing. The 24 mercury ore processing facilities in operation when the standard was promulgated have closed, primarily because of the decline in mercury prices from 1969 to 1978. While prices have increased since 1978, they are still below those reached in 1969.

One facility that uses high grade ore and improved ore processing technology was constructed in 1975 and is capable of producing over 690 megagrams per year (Mg/yr)) 1.5 million pounds per year [lb/yr]) of mercury. The new facility has demonstrated compliance with the standard by using control technology (a venturi and impinger tower, and a wet scrubber) designed to remove sulfur dioxide and particulates. An emission level of 816 grams per day (g/d) (1.8 pounds per day [lb/d]), less than one-half the limit of the standard, was measured by Reference Method 101 in 1981 when the facility was operating at the maximum capacity allowed under its permit.

No new or reopened facilties are expected unless mercury prices increase significantly. No enforcement problems with the standard were noted by either EPA region or State personnel.

Sludge Drying and Incineration. Approximately 9 sludge dryers at 5 plants and 280 sludge incinerators at 170 plants process wastewater treatment plant sludges and are subject to the standard. There have been 38 incineration plants constructed since the standard was proposed. Half of these have a dry solids burning capacity greater than 45 Mg/d (50 tons/d). Only 16 percent of those plants constructed prior to 1974 were this large. All facilities have demonstrated compliance with the standard; the highest mercury emission level for the existing plants is less than one-half the NESHAP emission limit. No enforcement problems with the standard have been encountered or are expected because the mercury content of sludge is generally to low to cause the emission limit to be exceeded in the sizes of incinerators in use today.

The EPA projected in 1974, however, that mercury could be emitted in such a way as to endanger human health from several facilities if they significantly expanded their capacity. These expansions have not occurred, but the possiblity for future expansions or construction of new large facilities exists in heavily populated areas such as the New York-New Jersey metropolitan area. Theoretically, if all of the municipal sludges from this area were to be incinerated in a small number of incinerators, there could be facilities sufficiently large to have uncontrolled mercury emissions in excess of the standard. An EPA sludge task force is studying the environmental consequences of several hypothetical situations in which all electrical generating plants in the area would be coal-fired and all municipal sludges would be either incinerated in several large facilities, buried in sanitary landfills, or disposed in the ocean. The findings of the task force will provide preliminary indications of the most environmentally acceptable disposal method considering the combined impacts on air, land, and water. If warranted, the mercury NESHAP emission limit for sewage sludge incinerators would be studied to determine the reasonableness of alternative controls.

Mercury-Cell Chlor-Alkali Process. The total U.S. installed chlorine capacity using mercury-cell technology dropped from 25 percent in 1973 to 19 percent in 1982. Twenty-four chlor-alkali plants using the mercury-cell process are currently subject to the national emission standard. No new mercury-cell chlor-alkali plants have been built since promulgation of the standard, and it is probable that no new chlor-alkali plants of this type will be constructed in the U.S. in the future. This trend is due to the availability of alternative technologies, such as the membrane cell and diaphragm cell technology, that do not use mercury and that consume less energy. Growth is expected in the number of facilities using these alternative technologies.

According to enforcement agencies and the industry, all mercury-cell chlor-alkali plants are presently in compliance with the standard. To demonstrate compliance with the cell room provisions of the standard, all facilities have elected to follow prescribed housekeeping practices instead of testing cell room emissions.

Combined mercury emissions from the hydrogen and end-box ventilation streams and the cell room are limited to 2,300 g/d (5.0 lb/d) by the national emission standard. Emissions from the cell room are assumed to be 1,300 g/d (2.8 lb/d) when housekeeping practices are followed. Thus, combined emissions from the hydrogen and end-box ventilation streams must be maintained at no more than 1,000 g/d (2.2 lb/d) when compliance is demonstrated by following approved housekeeping practices (e.g., maintaining floors in good condition and promptly cleaning mercury spills).

Control systems used for the hydrogen gas and end-box ventilation systems include: Coolers, wet scrubbers, carbon adsorbers and molecular sieves. Compliance tests conducted since 1973 show mercury emission measurements on the hydrogen stream ranging from 1 to 891 g/d (0.002 to 2.0 lb/d). Emission data near the low end of this range were generally measured on hydrogen streams controlled by molecular sieve of carbon absorption control systems. Other control systems include coolers and chemical absorption systems. Mercury emission data for the end-box ventilation stream ranged from 1 to 428 g/d (0.002 to 0.94 lb/d).

State and EPA regional personnel contacted in this study stated that monitoring and reporting requirements, which are not now included in the NESHAP, would aid enforcement significantly. The most recent compliance tests indicate that all facilities were in compliance with the standard at the time of the test; however, several facilities control emissions to just below the emission limits to minimize compliance costs. Because continued attainment of the standards is dependent on proper operation and maintenance of the control and process equipment, the monitoring of control system performance and conditions contributing to mercury emissions is important to ensure that the emission limits are not being exceeded. The Chlorine Institute, a trade associaton representing the mercury-cell chlor-alkali industry, has concurred with the adoption of suitable, simple, and effective mechanisms to assure compliance with the hydrogen and end-box emission limits and cell room housekeeping rules. These include combinations of monitoring of specific parameters, recording, and reporting.

Ideally, monitoring requirements would require the continuous and precise measurements of the amount of

mercury being emitted. However, in the case of mercury emissions from the mercury-cell chlor-alkai industry, a single test by Reference Method 101 or 102 costs approximately $12,000, and continuous mercury emission monitors are not adequately demonstrated. Parameters that could be monitored to indicate the performance of various control devices include the temperature of gas streams for cooling systems; the liquid flow rate, pH, concentration of available chlorine and inlet gas temperature for chemical absorption systems; the liquid flow rate and exit gas temperature for water scrubbers; the regeneration temperature of molecular sieves; and the inlet temperature of carbon absorbers. The exit gas temperature for uncontrolled systems would indicate the maximum amount of mercury in the stream.

Alternative Monitoring Requirements That Were Considered

Five alternatives for monitoring requirements for the hydrogen and end-box ventilation streams of mercury-cell chlor-alkali plants were considered. These were: (1) Continuous instrument monitoring of mercury emissions; (2) no routine monitoring, but periodic emission tests by the EPA reference test methods; (3) continous, or hourly, monitoring of control device and/or process parameters followed by reporting of periods when the parameters fall outside ranges specified in the NESHAP; (4) hourly monitoring of control device and/or process parameters, followed by a simplified sampling procedure (i.e., non-reference method) when the monitored parameters fall outside limits established on a plant-by-plant basis; and (5) periodic monitoring of emissions by a simplified sampling procedure.

The first alternative was judged to be insufficiently demonstrated and too costly, and the second alternative was judged to be too monitoring of control device and/or process parameters followed by reporting of periods when parameters fall outside a specified range (the third alternative.) They stated that parameters such as temperature could exceed the ranges suggested by the Agency at some facilities, while those facilities' emissions could be well below the limit of the standard, negating the need for reports. At a meeting with members of the Chlorine Institute on February 28, 1984 (Docket A-82-41, Item II-E-153), some representatives proposed that the periodic monitoring of control device and/or process parameters, which is already done to varying degrees by all plants, be coupled with a simplied sampling procedure to determine mercury emissions when the level of the monitored parameter falls outside an established limit. They recommended that these limits be established separately for each plant and used to develop a plant-specific compliance assurance plan. Industry representatives further proposed, as another alternative, that simplified sampling be done on a quarterly basis (the fifth alternative) instead of routine monitoring of parameters.

The EPA investigated the Chlorine Institute members' suggestion of conducting a simplified sampling procedure (i.e., non-reference method) as an alternative to monitoring control device or process parameters or as a means of indicating whether excess emissions may have occurred during periods when monitored parameters have fallen outside established limits. The Agency is not aware of any simplified sampling method that has been sufficiently demonstrated to accurately represent the mercury concentration in the stack. The reference test methods include, and any acceptable alternative method would also have to include, rigorous procedures for ensuring that the sampling train is properly prepared prior to sampling and that the collected mercury vapors accurately represent the mercury concentration in the stack. In addition, sampling periods shorter than the minimum periods required for each of the three reference method runs (2 hours each) may not collect an amount of mercury sufficient for accurate analysis. Thus, the Agency knows of no demonstrated emission monitoring method applicable to all affected facilities that can be proposed as an optional method. Consequently, the fourth and fifth monitoring alternatives were rejected. However, as an alternative to hourly parameter monitoring, the EPA will consider for approval, on a case-by-case basis, alternative demonstrated emission monitoring methods that would provide for complete collection and accurate analysis of mercury. Use of such an emission monitoring method would be required on a routine basis. The frequency of use would be partially determined by the accuracy of the method and the complexity of the collection procedures.

In considering the third monitoring alternative, the Agency agreed with the Chlorine Institute members' statement that certain process or control device parameters, such as temperature, could be exceeded on some occasions without affecting the compliance status of the facility. This is most likely to happen in cases where the established limit of the parameter to be monitored (temperature, for example) is equivalent to the level measured during a performance test which demonstrated compliance and which was conducted under optimal operating conditions. For example, if the performance test were conducted in the winter at a facility where water at ambient temperature is used to cool exit gas streams, the temperature recorded during the test could be relatively low. If an equivalent temperature served as the limit not to be exceeded and the temperature of the facility's cooling water were 30° to 50°F higher during the summer, the facility could be required to report the temperature exceedance, but the emissions could be below the emission limit. The Agency also agreed that the upper limit of the parameter could be different for each plant.

Proposed Revisions

To incorporate the industry's suggestion of tailoring the monitoring requirements to reflect plant-by-plant differences, and to provide parameter limits that would be a better indicator of operation and maintenance and of potential excess emissions, the Agency is proposing that the owner/operator of each affected facility be allowed to establish the maximum parameter limits (or, in the case of chemical absorption systems, the minimum liquid flow rate and available chlorine) based on the levels that would be expected to occur when the facility was operating under the upper, or worst-case, range of conditions that are reasonably expected to occur, given proper operation and maintenance of the facility. Consequently, these limits would be established during a performance test that demonstrated compliance and that was conducted when the facility was operating at the upper range of operating conditions that could reasonably be expected to occur. Because the limits would reflect the upper range of operating conditions, failure to maintain the parameters within the limits would be a better indication of improper operation and maintenance, and the potential for excess emissions, than would failure to maintain the parameters within limits established under optimal operating conditions.

For the reasons just described, this proposal would require the owner or operator of each mercury-cell chlor-alkali plant to conduct an initial performance test of the hydrogen and end-box ventilation streams by Reference Method 101 or 102. The tests

may be performed under the upper range of operating conditions (other than conditions of malfunctions) that can reasonably be expected to occur on a routine basis.

While the reference method test is being conducted, the owner or operator of each mercury-cell chlor-alkali plant would be required to monitor and record, at least once every 15 minutes, the following process and/or control device parameters for each stream, depending on the control system used: The temperature of gas discharged to the atmosphere from uncontrolled streams; the outlet temperature of the gas stream from the final (i.e., the farthest downstream) cooling system where no control devices other than coolers and demisters are used; the outlet temperature of the gas stream from the final cooling system where the cooling system is followed by a mercury removal device such as a molecular sieve or carbon adsorber; concentration of available chlorine, pH, liquid flow rate and inlet gas temperature for chlorinated brine scrubbers and hypochlorite scrubbers; the liquid flow rate and exit gas temperature for water scrubbers; the regeneration temperature for molecular sieves; and the inlet temperature for carbon adsorption systems. The recorded values of these monitored parameters would be averaged over the performance test period (a minimum of 6 hours) to establish the plant-specific limits.

Subsequent to this performance test, the owner or operator each mercury-cell chlor-alkali plant would be required to monitor and record, hourly, the same process and/or control device parameters that were monitored during the test. The hourly monitoring frequency is based on the Agency's belief that control system failures could result in excedances of the emission limits if they are not noted and repaired within several hours. Information received from industry (Docket item II-E-154) indicates that, in some cases, the time required to repair or replace portions of the hydrogen stream control system, such as a chiller or upstream compressor, could typically be 2-3 hours. The limits of the standards could be exceeded within this time period, depending on such factors as plant capacity (tons per day of chlorine production), cooler temperature, and end-box emissions levels. Monitoring parameter less frequently than hourly would be expected to increase the risk of excess emissions occurring before control systems are repaired. Many plant owners or operators continuously monitor process or control device parameters; others monitor on either an hourly or bihourly basis. The Agency invites comments on the appropriateness of hourly monitoring and requests that such comments be accompanied by data supporting any alternate interval that is suggested.

If the hourly value of a monitored parameter of either the hydrogen or end-box ventilation stream exceeds (or, in the case of chemical absorption systems where liquid flow rate and available chlorine are monitored, falls below) for a period of 24 consecutive hours, the value of that same parameter established during the performance test, the owner/operator would be required to report within 10 days the failure to maintain parameters within the established limits. The 24-hour period is believed to be sufficient time for an owner/operator to repair most conditions expected to cause the parameters to fall outside the limits.

Semi-annual reports documenting all hourly instances in which monitored parameters fall outside the established limits shall also be submitted to the Administrator. These reports would be for the purpose of notifying enforcement agencies that monitored parameters have fallen outside the limits and, therefore, that there has been a potential for excess emissions to occur. Enforcement agencies, after reviewing the reports and evaluating the nature of the failure to remain within the limits, may require a performance test to determine if the facility is exceeding the standards.

Each owner or operator of a chlor-alkali plant that uses housekeeping practices to comply with the standard for cell room ventilation systems would be required to maintain daily records of all leaks or spills of mercury in the cell room. The records shall indicate the location of the leak or spill, the time and date it was detected, immediate steps taken to minimize mercury emissions (i.e., containing a leak under water), the ultimate corrective action, and the time and date of the ultimate corrective action. These leaks and spills are not expected to occur frequently at well-operated and -maintained plants.

Because the documentation of mercury leaks and spills will be available to enforcement personnel, the owner or operator of each mercury-cell chlor-alkali plant will be encouraged to conduct proper operation and maintenance. Requiring reports of mercury leaks and spills is not being proposed because it would not encourage proper operation and maintenance beyond the program described above. Excess emission reports are not being required for housekeeping practices because the practices are not structured in a way that excesses can be defined. Although leaks of hydrogen gas can contain relatively high concentrations of mercury, it is standard operating practice to promptly repair these leaks because of the explosive nature of hydrogen. The EPA believes that because these leaks would be promptly repaired, the reporting of hydrogen leaks is not necessary and is, therefore, not being proposed. Reporting leaks and spills of brine, wash-water, or caustic is not being proposed because these media would not be expected to contain significant quantities of mercury.

The results of all monitoring and recordkeeping for mercury-cell chlor-alkali plants would be retained at the source and made available for inspection by the Administrator for a minimum of 2 years.

The addition of monitoring, recordkeeping, and reporting requirements for mercury-cell chlor-alkali industry will benefit the environment through encouraging plants to adopt best operating practices for operating and maintaining process equipment and control devices. There would be no energy impacts as a result of this addition. There will be an average yearly cost to each chlor-alkali plant during the first three years the proposed revisions are in effect of approximately $9,000 associated with the monitoring, recordkeeping, and reporting requirements and the initial performance test. This cost is judged to be reasonable in light of the resulting more efficient use of enforcement resources.

This proposal would also allow the owner or operator of an affected chlor-alkali plant, mercury ore processing facility, or sludge incinerator and drying plant 15 days to verify the validity of source test data prior to reporting these results to the Administrator. Currently, owners or operators of affected facilities are required to submit these data before the close of business of the next day after the data are available. The proposed change would provide the owner or operator a reasonable amount of time to determine the validity of the data. Extending the time limit for the submission of test data should have no environment, economic, or energy impacts.

Owners and operators of facilities covered by these standards should note that nonfederally permitted releases of hazardous substances might be covered by requirements developed under the Comprehensive Environmental

Response, Compensation, and Liability Act of 1980 (See 48 FR 23552, May 25, 1983).

Impacts of Reporting and Recordkeeping Requirements

The EPA believes that the proposed reporting and recordkeeping requirements for the chlor-alkali industry are necessary to assist the Agency in enforcing the standard after the initial compliance determination.

The information collection requirements associated with the rule which this notice proposes to amend (40 CFR 61.55) have been cleared previously by OMB under control number 2000-0243. The changes to the information requirements proposed in this notice have been submitted previously by OMB under control number 2000-0243. The changes to the information requirements proposed in this notice have been submitted to OMB for review under the Paperwork Reduction Act of 1980 U.S.C. 3501 *et seq.* Comments on these information collection requirements should be submitted to the Office of Information and Regulatory Affairs of OMB—marked Attention: Desk Officer for EPA. The final rule package will respond to any OMB or public comments on the information collection requirements.

The average annual burden on mercury-cell chlor-alkali plants to comply with the reporting and recordkeeping requirements of the proposed standards over the first 3 years after the effective date is estimated to be about 9,200 person-hours, based on 24 respondents.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 (RFA) requires that differential impacts of Federal regulations upon small entities be identified and analyzed. The RFA states that an analysis is required if a substantial number of small entities will experience significant impacts. Both measures, substantial numbers of small entities and significant impacts, must be met to require an analysis. If either measure is not met, then no analysis is required. Twenty percent or more of the small businesses in an affected industry is considered a substantial number. The EPA definition of significant impacts involves three tests, as follows: One, costs of production rise 5 percent or more, assuming costs are not passed on to consumers; or two, annualized investment costs are not passed on to consumers; or two, annualized investment costs for pollution control are greater than 20 percent of total capital spending; or three, costs as a percent of sales for small entities are 10 percent greater than costs as a percent of sales for large entities.

The additional monitoring, recordkeeping, and reporting requirements being proposed would affect only mercury-cell chlor-alkali plants. The small Business Administration (SBA) definition of a small business for Standard Industrial Classification (SIC) Code 2812, Chlor-Alkali Production, is 1,000 employees. The 24 chlor-alkali plants using the mercury-cell process are owned by 10 companies. All 10 have more than 1,000 employees. Therefore, none of the 10 companies meets the SBA definition of a small business, and thus no regulatory flexibility analysis is required.

Public Hearing

A public hearing will be held, if requested, to discuss the proposed revisions to the standard for mercury-cell chlor-alkali plants, sludge incineration and drying plants, and mercury ore processing in accordance with sections 112(b)(B) and 307(d)(5) of the Clean Air Act. If a hearing is requested, persons wishing to make oral presentations on the proposed revisions to the standards should contact the EPA at the address given in the **ADDRESSES** section of this preamble. Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement before, during, or within 30 days after the hearing. Written statements should be addressed to the Central Docket Section address given in the **ADDRESSES** section of this preamble and should refer to docket number A-82-41.

A verbatim transcript of any hearing and written statements will be available for public inspection and copying during normal working hours at EPA's Central Docket Section in Washington, D.C. (see **ADDRESSES** section of this preamble).

Docket

The docket is an organized and complete file of all the information submitted to, or otherwise considered by, the EPA in the development of this proposed rulemaking. The principal purposes of the docket are: (1) To allow interested parties to readily identify and locate documents so that they can effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review.

Miscellaneous

In accordance with section 117 of the Act, publication of this proposal was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator will welcome comments on all aspects of the proposed amendments.

This regulation will be reviewed 5 years from the date of promulgation. This review will include an assessment of such factors as the need for integration with other programs, enforceability, improvements in emission control technology and health data, and reporting requirements.

Under Executive Order 12291, the EPA must judge whether a regulation is "major" and therefore subject to the requirement of a regulatory impact analysis. This regulation is not major because it will not have an annual effect on the economy of $100 million or more, result in a major increase in costs or prices, or have significant adverse effects on competition, employment, investment, productivity, or innovations.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule, if promulgated, will not have a significant economic impact on a substantial number of small entities because no small entities are affected.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride.

Dated: December 19, 1984.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

It is proposed to revise 40 CFR 61.53-61.55 to read as follows:

§ 61.53 [Amended]

1. In § 61.53, paragraphs (a)(4), (b)(4), and (d)(5) are all revised to read exactly as follows:

All samples shall be analyzed and mercury emissions shall be determined within 30 days after the stack test. Each determination shall be reported to the Administrator by a registered letter dispatched within 15 calendar days following the date such determination is completed.

2. In § 61.53, paragraph (c)(4) is revised to read as follows:

An owner or operator may carry out approved design, maintenance, and housekeeping practices. A list of approved practices is provided in Appendix A of "Review of National Emission Standards for Mercury," EPA-450/3-84-014.

3. In § 61.54, paragraph (f) is revised to read as follows:

All sludge samples shall be analyzed for mercury content within 30 days after

the sludge sample is collected. Each determination shall be reported to the Administrator by a registered letter dispatched within 15 calendar days following the date such determination is completed.

4. In § 61.55, the title and paragraph (a) are revised to read as follows:

§ 61.55 Monitoring of emissions and operations.

(a) Wastewater treatment plant sludge incineration and drying plants. All the sources for which mercury emissions exceed 1,600 g per 24-hour period, demonstrated either by stack sampling according to § 61.53 or sludge sampling according to § 61.54, shall monitor mercury emissions at intervals of at least one per year by use of Method 105 of Appendix B or the procedures specified in § 61.53(d) (2) and (4). The results of monitoring shall be reported and retained according to § 61.53(d) (5) and (6) or § 61.54 (f) and (g).

5. In § 61.55, paragraphs (b) and (c) are added to read as follows:

(b) Mercury cell chlor-alkali plants—hydrogen and end-box ventilation gas streams.

(1) The owner or operator of an affected facility shall, within 1 year of the date of promulgation of these amendments, perform a mercury emission test on the hydrogen stream by Reference Method 102 and on the end-box stream by Reference Method 101.

(2) During tests specified in paragraph (b)(1) of this section, the following control device parameters shall be monitored, by devices certified by the manufacturer to be accurate within 10 percent, and manually or automatically recorded at least once every 15 minutes:

(i) The exit gas temperature from uncontrolled streams;

(ii) The outlet temperature of the gas stream for the final (i.e., the farthest downstream) cooling system where no control devices other than coolers and demisters are used;

(iii) The outlet temperature of the gas stream from the final cooling system where the cooling system is followed by a molecular sieve or carbon adsorber;

(iv) Concentration of available chlorine, pH, liquid flow rate, and inlet gas temperature of chlorinated brine scubbers and hypochlorite scrubbers;

(v) The liquid flow rate and exit gas temperature for water scrubbers;

(vi) The regeneration temperature of molecular sieves; and

(vii) The inlet gas temperature of carbon adsorption systems.

(viii) The recorded parameters shall be averaged over the test period (a minimum of 6 hours) to provide an average number.

(3) Subsequent to the monitoring and recording specified in paragraph (b)(2) of this section, the owner or operator of an affected facility shall monitor, by devices certified by the manufacturer to be accurate within 10 percent, and manually or automatically record at least once per hour the same parameters specified in paragraph (b)(2) of this section.

(4) When the hourly value of a monitored parameter exceeds, or, in the case of liquid flow rate and available chlorine, falls below, the value of that same parameter determined in paragraph (b)(2) of this section for 24 consecutive hours, the Administrator is to be notified within the next 10 days.

(5) Semiannual reports shall be submitted to the Administrator indicating (i) the time and date on which the hourly value of each monitored control device or process parameter fell outside the value of that same parameter determined under § 61.55(b)(2); and (ii) the corrective action taken, and the time and date of the corrective action.

(c) Mercury cell chlor-alkali plants—cell room ventilation system.

(1) Stationary sources using mercury chlor-alkali cells determining cell room emissions in accordance with § 6.53(c)(4) shall maintain daily records of any leaks or spills of mercury. The records shall indicate the location, time, and date the leaks or spills occurred, immediate step taken to minimize mercury emissions, steps taken to correct the problems, and the time and date corrective steps were taken.

(2) The results of monitoring shall be recorded, retained at the source, and made available for inspection by the Administrator for a minimum of 2 years.

(Approved by the Office of Management and Budget under Control Number 2000-0243)

[FR Doc. 84-33468 Filed 12-24-84; 8:45 am]
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ENVIRONMENTAL PROTECTION AGENCY

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NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

BENZENE EMISSIONS FROM COKE BY-PRODUCT RECOVERY PLANTS

SUBPART L

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2538-3]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Benzene Emissions From Coke By-Product Recovery Plants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed Rule and Notice of Public Hearing.

SUMMARY: The proposed standard would limit benzene emissions from new and existing sources in coke by-product recovery plants. The proposed standard implements section 112 of the Clean Air Act and is based on the Administrator's determination of June 8, 1977 (42 FR 29332) that benzene is a hazardous air pollutant. The intent of the standard is to protect the public health with an ample margin of safety.

A public hearing will be held to provide interested persons an opportunity for oral presentation of data, views, or arguments concerning the proposed standard for coke by-product recovery plants.

DATES: *Comments.* Comments must be received on or before August 21, 1984.

Public Hearing. If anyone contacts EPA requesting to speak at a public hearing by June 27, 1984, a public hearing will be held on July 25, 1984, beginning at 10:00 a.m. Persons interested in attending the hearing should call Ms. Shelby Journigan at (919) 541-5578 to verify that a hearing will occur.

Requests to Speak at Hearing. Persons wishing to present oral testimony must contact EPA by June 27, 1984.

ADDRESSES: *Comments.* Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), Attention: Docket Number A-79-16, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460.

Public Hearing. If anyone contacts EPA requesting a public hearing, the public hearing will be held at the Office of Administration Auditorium, Research Triangle Park, N.C. Persons interested in attending the hearing should call Ms. Shelby Journigan at (919) 541-5578 to verify that a hearing will occur.

Persons wishing to present oral testimony should notify Ms. Shelby Journigan, Standards Development Branch (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5578.

Background Information Document. The background information document (BID) for the proposed standards may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Benzene Emissions from Coke By-Product Recovery Plants—Background Information for Proposed Standards" (EPA-450/3-83-016a).

Docket. Docket A-79-16, containing supporting information used in developing the proposed standards, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Dr. James U. Crowder, (919) 541-5601, concerning technical aspects of the industry and control technologies, and Mr. Gilbert H. Wood, (919) 541-5578, concerning regulatory decisions and the standard. The address for both parties is Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

SUPPLEMENTARY INFORMATION:

Introduction

Benzene was listed as a hazardous air pollutant under section 112 of the Clean Air Act on June 8, 1977 (42 FR 29332). Section 112 defines a "hazardous air pollutant" as one which, in the judgment of the Administrator, "causes or contributes to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness." In EPA's judgment, benzene emissions from coke by-product recovery plants pose significant health risks to exposed populations and warrant Federal regulatory action under section 112.

Coke by-product recovery plants are currently largely uncontrolled, and use of the technology selected as the basis for the proposed standards would substantially reduce benzene emissions and associated health risks. The level of control selected as the basis for the proposed standards would result in fuel savings and increased produce recovery. As a result, the net nationwide annualized cost of the proposed standards would actually be a savings. [In general, even though the purchase of air pollution control equipment may result in a net savings, affected sources do not necessarily purchase that equipment voluntarily because they may be able to attain a higher rate of return on their investment if given the opportunity to invest elsewhere.]

This preamble first summarizes the proposed standard for coke by-product recovery plants and the impacts of the standard. It then explains the rationale for each of the decisions made in selecting the proposed standard. These decisions include the selection of the source category, the selection of emission points, the selection of the level of the standard, the selection of the format of the standard, and the selection of the specific requirements themselves. Administrative considerations, including Executive Order 12291 and the Regulatory Flexibility Act, are discussed at the end of the preamble.

Summary of Proposed Standards

The proposed standard would reduce benzene emissions from several emission sources at each coke by-product recovery plant through a combination of emission standards, equipment, work practice, and operational requirements, depending on the source to be controlled. Both new and existing sources would be subject to the provisions of the proposed standard. Alternative standards are also proposed for several emission sources, as are procedures for permitting the use of alternative means of emission limitation under section 112(e)(3) of the Act.

An equipment standard is proposed for the control of emissions from each tar decanter, tar intercepting sump, flushing-liquor circulation tank, tar storage tank, tar dewatering tank, light oil condenser, light-oil decanter, wash-oil decanter, and wash-oil circulation tank. The proposed standard would require that each affected source be totally enclosed with emissions ducted to the gas collection system, gas distribution system, or other enclosed point in the by-product recovery process. Unless otherwise specified, pressure relief devices, vacuum relief devices, access hatches, and sampling ports would be the only openings allowed on each source. The proposed standard would require that each access hatch and sampling port be equipped with a gasket and a cover or lid that is kept in a closed position when not in actual use.

This proposed equipment standard could be achieved with the use of a gas blanketing system. A gas blanketing system is a closed system operated at positive pressure and is generally

composed of piping, connections, and flow-inducing devices (if necessary) that transport emissions from the enclosed source back to the coke-oven battery gas holder, the collecting main, or another point in the by-product recovery process. Depending on the source to be controlled, dirty or clean coke-oven gas, nitrogen, or natural gas can be used as the gas blanket.

To ensure that the control equipment for each source is being properly operated and maintained, the proposed standard would require a semiannual inspection of the connections and seals on each gas blanketing system for leaks, using EPA Reference Method 21 (40 CFR Part 60, Appendix A). An organic chemical concentration of more than 500 ppm by volume above a background concentration would indicate the presence of a leak. The proposed standard would also require a semiannual visual inspection of each source and the piping of the control system for visible defects such as gaps or tears. The proposed standard would require that a first attempt at repair of each leak or visible defect be made within 5 days of detection, with repair within 15 days. The owner or operator would be required to record the results of the inspections for each source, and include the results in a semiannual report.

Proper maintenance of the system will help ensure the proper operation of the system. To this end, the proposed regulation would require an annual maintenance inspection for abnormalities such as pluggages, sticking valves, and clogged or improperly operating condensate traps. A first attempt at repair must be made within 5 days, with any necessary repairs made within 15 days of the inspection. If a system blockage occurs, the proposed regulation would require the owner or operator to conduct an inspection and make any necessary repairs immediately upon detection. The proposed standard would require that information regarding the annual inspection or repairs made to correct a system blockage also be included in the semiannual report.

The proposed standard would require the use of a control device designed and operated to achieve a 90-percent benzene emission reduction for storage tanks containing light oil (including benzene-toluene-xylene mixtures), refined benzene, or excess ammonia-liquor. This proposed design standard can be achieved with the use of a wash-oil scrubber, a gas blanketing system, or any other control system that is designed and operated to achieve at least a 90-percent emission reduction.

The proposed regulation also would require that each affected storage tank be totally enclosed and sealed with emissions vented to the wash-oil scrubber (or other control device or system providing an equivalent emission reduction). Pressure relief devices, vacuum relief devices, access hatches, and sampling ports would be the only openings allowed on each tank. Each access hatch and sampling port must be equipped with a gasket and a cover or lid that is kept in a closed position when not in actual use. The semiannual inspection and repair of leaks in the seals and ductwork, and the annual maintenance inspection and repair program (including recordkeeping and reporting requirements) proposed for gas blanketed sources also would apply to these tanks and the vents to the control device. Monitoring of parameters related to the operation of the control device (such as wash-oil pressure and flowrate, and exit gas temperature for the wash-oil scrubber) also are included to ensure the proper operation and maintenance of any control device used to achieve compliance.

An equipment standard is proposed for the control of benzene emissions from each light-oil sump. The proposed standard requires that the surface area of each light-oil sump be completely enclosed so as to provide a closed system for the containment of emissions This standard can be achieved with the installation of a tightly fitting permanent or removable cover, coupled with the use of a gasket material applied to the rim of the sump cover. The proposed standard would allow the use of an access hatch and a vent in the sump cover. However, any access hatch must be equipped with a gasket and cover or lid, and any vent must be equipped with a water leg seal, pressure relief device, or vacuum relief device. The proposed standard would also require the semiannual inspection of the seals for leaks. An organic chemical concentration of over 500 ppm, as measured by Reference Method 21, would indicate the presence of a leak. A first attempt at repair of any leak or visible defect would be required within 5 days of detection, with repair within 15 days. The results of the inspection would be reported semiannually. The proposed standard would not allow venting of steam or gases from other points in the coke by-product process to the light-oil sump.

The proposed standard would allow no emissions from the processing of naphthalene separated from the water of a direct-water final cooler. This emission limit could be achieved by a process modification involving the absorption of naphthalene in tar, wash oil, or an alternative medium (other than water). For example, a mixer-settler could be added to the direct-water final cooler, or the direct-water final cooler could be replaced by a tar-bottom or wash-oil final cooler system. If a mixer/settler were used to remove napthalene from the final cooler aqueous effluent, the proposed standard would require that the mixer-settler be totally enclosed with emissions ducted to the gas collection system, gas distribution system or other enclosed point in the by-product recovery process. This requirement could be achieved by controlling emissions from the mixer settler with a gas blanketing system. Unless otherwise specified, pressure relief devices, vacuum relief devices, access hatches, and sampling ports would be the only openings allowed on the mixer settler. Again, the proposed standard would require that each access hatch and sampling port be equipped with a gasket and a cover or lid that is kept in a closed position when not in actual use.

The proposed standard would also apply to leaks (i.e., fugitive emissions) from new and existing pieces of equipment in benzene service, including pumps, valves, exhausters, pressure relief devices, sampling connections, and open-ended lines. Pumps, valves, pressure relief devices, sampling connections, and open-ended lines in benzene service are those components that contact or contain materials having a benzene concentration of at least 10 percent by weight. Exhausters that contact or contain materials having a benzene concentration of at least 1 percent benzene by weight are also in benzene service.

The proposed standard would require that all pumps in benzene service be monitored monthly for the detection of vapor leaks. A weekly visual inspection for liquid leaks would also be required. The proposed standard would require that any pump with an organic chemical concentration at or above 10,000 ppm, as measured by Reference Method 21, be repaired with 15 days after detection of a leak, except when repair would require a process unit shutdown. An initial attempt to repair such a leak would have to be made within 5 days after the leak was detected. "Repair" means that the measured concentration is below 10,000 ppm.

Quarterly monitoring for leaks from each exhauster in benzene service also would be required. If an organic

chemical concentration at or above 10,000 ppm were detected, as measured by Reference Method 21, the proposed standard would require a first attempt at repair within 5 days, with repair of the leak within 15 days from the date the leak was detected.

The proposed standard provides three types of alternatives to the leak detection and repair requirements for pumps and exhausters. An owner or operator may use 'leakless" equipment such as magnetically coupled or diaphragm pumps to achieve a "no detectable emissions" limit (i.e., 500 ppm above a background concentration, as measured by Reference Method 21). However, an annual performance test using instrument monitoring would be required to verify the "no detectable emissions" status of each pump and exhauster. Or, pumps and exhausters can be equipped with enclosed seal areas vented to a control device designed and operated to achieve a 95-percent benzene control efficiency.

A third alternative would exempt pumps equipped with dual mechanical seals with a barrier fluid between the two seals and exhausters equipped with seals with a barrier fluid system from the leak detection and repair requirements, except for the weekly visual inspection for liquid leaks from pumps. However, emissions from the barrier fluid reservior must be vented to a control device designed and operated to achieve a 95-percent benzene control efficiency, the barrier fluid must be purged and added to the process stream. or the pressure of the barrier fluid must be maintained at a level above the pressure in the pump or exhauster stuffing box. A pressure or level indicator to detect any failure of the seal system or the barrier fluid system would be required, with the indicator checked daily or equipped with an alarm to signal failure of the system.

Under the proposed standard, valves in benzene service would be subject to requirements similar to those for pumps in benzene service. All valves in benzene service would be monitored monthly for the detection of leaks. If an organic chemical concentration at or above 10,000 ppm is detected, as measured by Reference Method 21, the proposed standard would require that the valve be repaired within 15 days. Again, a first attempt to repair the valve so that the measured concentration is below 10,000 ppm would be required within 5 days after the leak was detected. However, those valves that are found not to be leaking for 2 successive months could be monitored at quarterly intervals until a leak is detected, at which time monthly monitoring would again be required.

The proposed standard would also provide alternatives to the required leak detection and repair programs for valves in benzene service. First, the owner or operator could elect to meet a performance level where less than 2 percent of all valves could be found leaking. Second, the owner or operator could follow a skip-period leak detection and repair program also based on a performance level of 2 percent. And finally, an owner or operator may use "leakless" valves such as sealed-bellows valves, for which monitoring would not be required. The proposed standard require that these "leakless" valves achieve a "no detectable emission" limit (i.e., 500 ppm above a background concentration, as measured by Reference Method 21). A performance test would also be required on an annual basis to verify the "no detectable emissions" status of each valve.

The proposed standard would also specify a "no detectable emissions" limit (i.e., less than 500 ppm above a background concentration, as measured by Reference Method 21), for pressure relief devices in benzene service. This emission limit could be achieved by equipping pressure relief devices with a rupture disc. The proposed emission limit would not apply to discharges during overpressure releases; however, the proposed standard would require that emissions from each pressure relief device be returned to a state of "no detectable emissions" (500 ppm or less) within 5 days after a discharge. Alternatively, an owner or operator could elect to vent emissions through a closed system to a control device designed and operated to achieve a 95-percent benzene control efficiency or greater, such as a flare.

Closed-purge sampling would be required by the proposed standard. The standard would require that material purged from sampling connections be returned to the process or collected in a closed disposal system. In-situ sampling would be exempted from the closed purge sampling requirements. The proposed standard would also require open-ended lines to be sealed with a cap, blind flange, plug, or second valve. An operational standard for open-ended lines would also require that the cap or other device be removed or opened only when the open-ended line is placed into service.

The proposed standard would also apply to pressure relief devices in liquid service, flanges, and other connectors. The proposed standard would not require a formal leak detection and repair program. However, instrument monitoring must be performed within 5 days if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method. If an instrument reading of 10,000 ppm is measured by Reference Method 21, the proposed standard would require a first attempt at repair within 5 days, with repair of the leak within 15 days from the date the leak was detected.

Compliance with the proposed standards would be assessed through plant inspection and the review of records and reports that would document implementation of the requirements. On a semiannual basis, the owner or operator would report the number of leaks detected and the number of leaks not repaired during the 6-month period. Also, if any add-on control devices were used, the owner or operator would report semiannually any occurrences when parameters monitored exceed or drop below the design specifications. The owner or operator would also submit a signed statement in each semiannual report, indicating whether provisions of the standard had been met for the 6-month period. Recordkeeping and reporting requirements for alternative standards are also included in the proposed regulation.

Under the proposed standard, compliance would be required within 90 days of the effective date for existing sources and at startup for a new source. A waiver of compliance for an existing source could be approved by the Administrator for no more than 2 years from the date of promulgation under 40 CFR Part 61. Emission testing would be required only for equipment subject to the no detectable emissions standards or the alternative performance standard for valves. However, the proposed standard would require the following information for each plant to be included in the source report required by § 61.10 of the General Provisions: (1) A description of the control equipment used to achieve compliance for each source; and (2) the date of installation of the control equipment for each source, as certified by the owner or operator.

Summary of Environmental, Health, Energy, and Economic Impacts

The estimated environmental, health, energy, and economic impacts of the proposed standard were based initially on a data base composed of 55 coke by-product recovery plants. Information received recently from the industry and the U.S. Department of Energy indicate that 13 of these plants have closed

permanently during the past 2 years. Consequently, the impacts have been revised to reflect these closures. This preamble presents the revised impacts based on 42 plants. The impacts and associated calculations in the BID will be revised following proposal of the recommended standards.

Implementation of the proposed standard would reduce nationwide benzene emissions from the 42 operating coke by-product recovery plants from their current level of about 24,100 Mg/yr to about 2,700 Mg/yr, an 89-percent reduction. Total uncontrolled nationwide emissions of benzene and other volatile organic compounds also would be reduced from their current estimated level of 160,000 Mg/yr to about 35,000 Mg/yr, a 78-percent reduction.

As a result of this benzene emission reduction, the proposed standard would reduce the estimated maximum lifetime risk for the most exposed population from about 6.4×10^{-3} at current controls to about 3.0×10^{-4}. The reduction also would decrease the estimated annual leukemia incidence from about 2.2 cases per year at current controls to about 0.19 case per year. Due to the assumptions that were made in calculating the maximum lifetime risk and leukemia incidence numbers, there is uncertainty associated with the risk and incidence numbers presented here and elsewhere in this preamble. Although EPA acknowledges this uncertainty, the Agency believes that these estimates represent plausible, if not conservative, approximations of the potential cancer risks. The major uncertainties and assumptions in the estimation of health risks as well as alternative methods of presenting risk information are further described in a following section entitled, "Quantitative Health Risk Assessment."

Implementation of the proposed standards is not expected to result in any unreasonably adverse water pollution, solid waste, noise, or energy impacts. Actually, a slight net reduction of the benzene contained in process wastewater could be expected with the use of the gas blanketing system. A nominal increase in electrical energy or steam requirements could occur if gas blanketing piping were heated to prevent vapors from condensing or freezing in vent lines. However, the cost of this energy requirement would be largely offset by the recovery of benzene contained in the coke oven gases, which otherwise would have been discharged to the atmosphere.

The control required by the proposed standard would result in fuel savings and increased product recovery. As a result, the net nationwide annualized cost of the standard would actually be a savings. The national capital cost associated with the proposed standards is estimated at about $23.8 million over baseline costs (1982 dollars). A savings in nationwide annualized costs would be achieved by the proposed standard as a result of light-oil recovery credits. [In general, even though the purchase of air pollution control equipment may result in a net savings, affected sources do not necessarily purchase that equipment voluntarily because they may be able to attain a higher rate of return if given the opportunity to invest elsewhere.] The price of foundry coke could increase by as much as $0.24/Mg, an increase of less than 1 percent from the baseline price, while the price of furnace coke would increase by less than $0.02/Mg (1982 dollars) as a result of the proposed standard. An economic analysis indicates that the industry trend is to pass through some increases in costs to consumers.

Background Information on Health Effects of Benzene

On June 8, 1977, the Administrator announced his decision to list benzene as a hazardous air pollutant under section 112 of the Clean Air Act (42 FR 29332). A public hearing was held on August 21, 1980, to discuss the listing. Supplementary background information regarding the listing may be obtained from the maleic anhydride Docket Number OAQPS 79-3, Part I, and from the EPA document, "Response to Public Comments on EPA's Listing of Benzene Under Section 112" (EPA-450/5-82-003).

Quantitative Health Risk Assessment

The listing of benzene as a hazardous air pollutant under section 112 requires that EPA publish emission standards which provide an "ample margin of safety" to protect the public health. However, neither the language nor the legislative history of section 112 reveals any specific Congressional intent as to how to apply the phrase "ample margin of safety" to protect the public health from poliutants like benzene.

In some cases, scientific evidence indicates that a given chemical is hazardous at high levels of exposure but has not effect below a certain level. However, for most carcinogenic chemicals, including benzene, thresholds below which there is no cancer risk have not been established. There is some reason to believe that such thresholds may not exist for many carcinogens. For such substances, EPA and other Federal agencies have taken the position that any level of exposure may pose some risk of adverse effects, with the risk increasing as the exposure increases.

Since a specific environmental carcinogen is likely to be responsible for at most a small fraction of a community's overall cancer incidence and since the general population is exposed to a complex mix of potentially toxic agents, it is virtually impossible with current scientific techniques to directly link actual human cancers with ambient air exposure to chemicals such as benzene. Consequently, EPA relies on mathematical modeling techniques to estimate human health risks. These techniques—"quantitative risk assessment"— are used to assess the risk of adverse health effects from exposure to benzene in the ambient environment by mathematically extrapolating effects found at the higher occupational exposure levels to the lower concentration levels characteristic of human exposure in the vicinity of industrial sources of benzene.

EPA's approach to risk assessment for suspected carcinogens may be divided into several steps. The first is a qualitative evaluation of the evidence to determine whether a substance should be considered a human carcinogen for regulatory purposes. As described earlier, this was done in the case of benzene before the chemical was listed as a hazardous air pollutant in 1977. The next stage is quantitative: how large is the risk of cancer at various levels of exposure? The result of this examination is a dose-response relationship from which a "unit risk factor" is derived. The unit risk factor represents the cancer risk for an individual exposed to a unit concentration (e.g., 1 $\mu g/m^3$) for a lifetime.

The third stage of the risk assessment is to estimate how many people are exposed to the substance, and at what levels. Exposure estimates are combined with the unit risk factor to obtain estimates of the risk posed by air emissions of the pollutant, in this case benzene.

The estimated carcinogenic risks posed by benzene emissions are characterized by two ways: As the predicted annual incidence of leukemia (expressed as cases per year), and as the lifetime risk of leukemia for individuals exposed to the highest predicted annual average ambient benzene concentrations (expressed as a probability). "Annual incidence" represents the aggregate risk for the population residing within a specified distance of emitting sources. "Maximum lifetime risk" represents the probability of contracting leukemia for those individuals assumed to be exposed for a

lifetime to the highest average benzene concentrations predicted to occur in the ambient air in the vicinity of emitting sources.

The health risk estimated for benzene source categories are comprised of three components noted above: the unit risk factor,* based on a dose-response function derived from epidemiological data; the exposed population, estimated from census data; and the benzene ambient concentrations, derived from dispersion modeling of emissions.

EPA has extrapolated the leukemia risks identified for occupationally exposed populations (generally healthy, white males) to the general population for whom susceptibility to a carcinogenic insult could differ. The presence of more or less susceptible subgroups within the general population would result in an occupationally-derived risk factor that may underestimate or overestimate actual risks. To the extent that there are more susceptible subgroups within the general population, the maximum individual lifetime risks may be underestimated.

On the other hand, general population exposures to benzene are much lower than those experienced by the exposed workers in the occupational studies, often by several orders of magnitude. In relating the occupational experience to the general population, EPA has applied a linear, non-threshold model that assumes that the leukemia response is linearly related to benzene dose even at very low levels of exposure. There are biological data supporting this approach, particularly for carcinogens. However, there are also data which suggest that, for some toxic chemicals, dose/response curves are not linear, with response decreasing faster than dose at low levels of exposure. At such levels, the nonlinear models tend to produce smaller risk factors than the linear model. The data for benzene do not conclusively support either hypothesis. EPA has elected to use the linear model for benzene because this model is generally considered to be conservative compared to the non-linear alternatives. This choice may result in an overestimate of the actual leukemia risks.

EPA estimates ambient benzene concentrations in the vicinity of emitting sources through the use of atmospheric dispersion models. EPA believes that its ambient dispersion modeling provides a reasonable estimate of the maximum ambient levels of benzene to which the public could be exposed. The models accept emission estimates, plant parameters, and meteorology as inputs and predict ambient concentrations at specified locations, conditional upon certain assumptions. For exemple, emissions and plant parameters often must be estimated rather than measure, particularly in determining the magnitude of fugitive emissions and where there are large numbers of sources. This can lead to overestimates or underestimates of exposure. Similarly, meteorological data often are not available at the plant site but only from distant weather stations that may not be representative of the meteorology of the plant vicinity.

EPA's dispersion models normally assume that the terrain in the vicinity of the sources is flat. For sources located in complex terrain, this assumption would tend to underestimate the maximum annual concentration although estimates of aggregate population exposure would be less affected.

On the other hand, maximum individual lifetime risk estimates are based on two important exposure assumptions that may overestimate the risk for people living around a source emitting benzene. The first assumption is that the dose to the most exposed individual is equal to the predicted outdoor ambient concentration; the second assumption is that the exposed individual stays in the same place for 70 years and is continuously exposed. Implicit in the second assumption is the notion that the source emits at the same level for these 70 years.

We recognize that these assumptions are simplifications. People rarely live in the same place for 70 years: some move out and some move in. Nor do plants operate continuously for 70 years using the same equipment.

The estimation of risk for partial lifetime exposure can, as a first approximation, be assumed to be proportional to the fraction of a lifetime that a person has been exposed to pollution from the particular source. For example, the risk for 1 year can be approximated as 1/70 of the lifetime risk; the risk for 7 years of exposure might be 7/70 of the lifetime risk. Similarly, if the lifetime risk from a benzene source is 1 in 1,000, someone with a 7-year exposure would be able to roughly estimate his risk from a source as about 1 in 10,000.

It must be recognized, however, that this is an approximation, because the risk for some pollutants may be higher or lower when people are exposed at different times in their lives, since the risk of developing certain cancers may be partly related to the age at which a person is exposed to a carcinogen. In addition, it is worth noting that this age sensitivity may be different for different chemicals. At this time, we have no information as to whether this is true for benzene.

The assumptions necessary to estimate benzene health risks and the underlying uncertainties have led some commenters on EPA's proposed rules to suggest that the risk estimates are inappropriate for use in regulatory decision making. Although EPA acknowledges the potential for error in such estimates, the Agency has concluded that both the unit risk factor for benzene and the evaluation of public exposure represent plausible, if conservative, estimates of acutal conditions. Combining these quantities to produce estimates of the leukemia risks to exposed populations implies that the risk estimates obtained are also conservative in nature: that is, the actual leukemia risks from benzene exposure are not likely to be higher than those estimated. In this context, EPA believes that such estimates of the health hazard can and should play an important role in the regulation of hazardous pollutants.

EPA has received numerous public comments on most of the steps in the analytic process described above as a result of the announcement of the listing of benzene as a hazardous air pollutant and the intent to regulate a number of source categories. The full response to those comments is in the EPA document "Response to Public Comments on EPA's Listing of Benzene Under Section 112" (EPA-450/5-82-003). EPA is presently inclined to continue to use the major features of the risk-assessment process described above, and in particular to adhere to the no-threshold assumption and the linear model.

Arguments have been advanced that in addition to the conservative nature of the model used, the assumptions made by EPA (Carcinogen Assessment Group [CAG]) in the derivation of a unit leukemia risk factor for benzene represented "serious misinterpretations" of the underlying epidemiological evidence. Among the specific criticisms are: CAG (1) inappropriately included in its evaluation of the Infante et al. study two cases of leukemia from outside the cohort, inappropriately excluded a population of workers that had been exposed to benzene, and improperly assumed that exposure levels were comparable with prevailing

*For benzene, the unit risk factor constitutes a point estimate of the human leukemia risk, expressed as the geometric mean of the risk factors derived from three epidemiological studies. Where animal data form the basis for the derivation of a risk factor, EPA may apply statistical tests (e.g., 95 percent confidence limits) to the resulting factor to obtain a "plausible upper bound" estimate of the unit risk

occupational standards: (2) accepted, in the Aksoy et al. studies, an unreasonable undercount of the background leukemia incidence in rural Turkey, made a false adjustment of age, and under-estimated the exposure duration; and (3) included the Ott et al. study in the analysis despite a lack of statistical significance.

EPA has reexamined and reevaluated each of the three studies. In summary, EPA concluded that one case of leukemia was inappropriately included from the Infante et al. study in computing the original unit risk factor. Additionally, EPA reaffirmed its decision to exclude dry-side workers from that study in developing the risk factor. The Agency agrees that the Aksoy et al. study was adjusted improperly for age; however, the exposures and durations of exposures are still considered reasonable estimates. The Ott et al. study was not eliminated from the risk assessment because the findings meet the test of statistical significance and because it provides the best documented exposure data available from the three epidemiological studies.

Based on these findings, the unit risk factor (the probability of an individual contracting leukemia after a lifetime of exposure to a benzene concentration of one part benzene per million parts air) was recalculated. The revised estimate resulted in a reduction of about 7 percent from the original estimate of the geometric mean, from a probability of leukemia of 0.024/ppm to a probability of leukemia of 0.022/ppm.

Selection of Coke By-Product Recovery Plants for Regulation

Nationwide benzene emissions from sources considered for regulation at coke by-product recovery plants are estimated at 24,100 Mg/yr. Dispersion modeling was used to estimate the benzene concentrations to which people within 20 kilometers of coke by-product plants are exposed as a result of the benzene emissions from these plants. Several million people (at least 15 to 20 million) live within 20 kilometers of the 42 existing by-product recovery plants. As a result of exposure to these benzene concentrations, the maximum lifetime risk of the most exposed population is estimated at 6.4×10^{-3}. The maximum lifetime risk is the estimated probability that the people who are exposed continuously for 70 years to the highest maximum annual average ambient benzene concentration estimated to result from benzene emissions from coke by-product recovery plants will contract leukemia as a result of exposure to these emissions. In addition, the leukemia incidence is estimated at 2.2 cases per year within this population as a result of exposure to benzene emissions from these plants.

Although the maximum lifetime risk estimates apply to only a few people under particular conditions, EPA has calculated the lifetime risk for all individuals living within 20 kilometers of coke by-product recovery plants. The following table (Table 1) presents EPA's estimate of the distribution of people at different predicted risk levels living around these sources. For each risk range in the first column, the second column indicates the number of people living within the 20 kilometer (12.5 miles) radius estimated to be exposed to benzene at levels that would produce those risks.

TABLE 1. POPULATIONS AT RISK

Risk (Probability) of Leukemia from Lifetime (70 years) Exposure	Number of People Exposed Within 20 km (12.5 miles) of Sources[a]
Greater than 1×10^{-2} (Greater than 1 in 100)	0
$1 \times 10^{-2} - 1 \times 10^{-3}$ (1 in 100 to 1 in 1,000)	3,200
$1 \times 10^{-3} - 1 \times 10^{-4}$ (1 in 1,000 to 1 in 10,000)	101,000
$1 \times 10^{-4} - 1 \times 10^{-5}$ (1 in 10,000 to 1 in 100,000)	2,212,000
$1 \times 10^{-5} - 1 \times 10^{-6}$ (1 in 100,000 to 1 in 1,000,000)	17,991,000
$1 \times 10^{-6} - 1 \times 10^{-7}$ (1 in 1,000,000 to 1 in 10,000,000)	10,214,000
$1 \times 10^{-7} - 1 \times 10^{-8}$ (1 in 10,000,000 to 1 in 100,000,000)	442,000

[a] The values for the number of people were calculated on a plant-by-plant basis and summed. Because some people are located within 20 km of more than one plant, the actual number of people exposed will be somewhat less than presented in this table.

Controls are available for reducing the benzene emissions at these plants (see section entitled, "Selection of Control Technologies"). The application of these controls also would reduce uncontrolled emissions of volatile organic compounds and potentially toxic pollutants other than benzene.

Based on the documented evidence that benzene is a leukemogen, the magnitude of benzene emissions from coke by-product recovery plants, the estimated ambient concentrations due to these emissions, the resulting estimated maximum individual risks and estimated incidence of leukemia in the exposed population, the potential reductions in these health risks achievable through available control techniques, and consideration of the uncertainties associated with these quantitative risk estimates, the Administrator finds that benzene emissions from coke by-product recovery plants pose a significant risk of cancer and warrent Federal regulation under section 112.

Selection of Emission Points

Numerous benzene emission sources are present at each coke by-product plant. During 1979 and 1980, a survey of seven representative coke by-product plants was conducted to identify the sources that emit benzene and for which controls were potentially available. Visual observations were made and grab samples were obtained during the source sampling survey, which was followed by an emission testing program. Because of the numerous benzene emission sources throughout the plants, engineering judgment (coupled with site-specific production rates and process information provided by the plants), the results of sample analysis, and the results of emission

testing were used to estimate the emissions.

More than 20 emission sources were identified in the source sampling survey. The emission sources considered for regulation are listed in Table 2, as are the estimated uncontrolled industry-wide benzene emissions and the estimated uncontrolled benzene emissions from a medium-sized plant producing 4,000 Mg of coke per day. Further information regarding the development of the emission factors used to estimate uncontrolled emissions is provided in Chapter 3 of the BID. Following is a brief description of typical coke by-producty recovery processes and the associated emission points considered for regulation under the proposed standard.

TABLE 2. UNCONTROLLED BENZENE EMISSIONS FROM COKE BY-PRODUCT RECOVERY PLANT EMISSION SOURCES

Emission source	Uncontrolled industry-wide emissions (Mg/yr)	Emissions from a medium-sized plant (Mg/yr)[a]
Tar decanter	3,560	108
Tar-intercepting sump	4,380	133
Flushing-liquor circulation tank	417	13
Tar dewatering tanks	874	29
Tar storage tanks	556	17
Excess-ammonia liquor storage tanks	417	13
Direct-water final cooler cooling tower	5,500	390[b]
Naphthalene separation and processing	2,180	156[b]
Tar-bottom final cooler cooling tower	696	100[b]
Wash-oil decanter	143	5.5
Wash-oil circulation tank	143	5.5
Light-oil condenser and light-oil decanter vent	3,200	125
Light-oil sump	632	22
Benzene storage tanks	71	8.5[c]
Benzene-mixture (BTX) storage tanks	23	8.5
Light-oil storage tanks	276	9
Pumps	463	16[d]
Valves	312	11[d]
Pressure relief devices	209	7[d]
Exhausters	25	4[d]
Sampling connections	41	1.4[d]
Open-ended lines	14	0.3[d]

[a] Uncontrolled benzene emissions, a medium-sized plant producing 4,000 Mg of coke per day.
[b] An actual plant would have either a direct-water final cooler or a tar-bottom final cooler. Naphthalene processing would be found only at a plant with a direct-water final cooler.
[c] This emission source would only occur at a plant which practices benzene refining.
[d] Uncontrolled emissions estimate for a plant that does not practice benzene refining.

In the coke by-product recovery process, the various components of the gases emitted from the coke oven battery are separated and recovered to obtain products such as crude tar, naphthalene, light oils, benzene-mixtures, and refined benzene. In the crude tar separation operation, the initial condensation of the tar contained in the coke oven gases occurs by direct contact with flushing liquor in the collecting and suction mains. Approximately 80 percent of the tar is separated from the gas in the mains and is flushed to a rar decanter (also known as a flushing liquor decanter). The remaining light tar and condensate (approximately 20 percent) is forwarded to the tar-intercepting sump for the separation or light oils and wastewater. The flushing liquor that separates from the tar in the tar decanter is then transferred to the flushing-liquor circulation tank, which cools the flushing liquor and recirculates it to the gas mains. In many plants, the coal tar is not refined on site but is sold to tar refiners. A common requirement is that the tar contain no more than 2 percent water. For this reasons the water content of the tar may be futher reduced by a tar-dewatering (dehydration) process. The crude tar recovered during the tar separation process is then stored in heated storage tanks pending further use or sale.

Depending on the plant design, tar recovered during the separation process may also undergo refining to produce coal tar pitch. Like other tar products, pitch is stored in vented storage vessels. Benzene emissions from pitch storage tanks were not evident during emission testing because this pollutant is driven off with the lighter fractions. In addition, this process is practiced at few by-product plants. For these reasons, pitch storage tanks and pitch prilling operations (the refining of pitch to produce extruded pencils or beads) were not considered for regulation under the proposed standards.

The ammonia produced in a coke oven is approximately 0.2 percent of the weight of the coal fed to the ovens. Flushing liquor sprayed into the collecting mains absorbs some of the ammonia, and water condensed in the primary cooler absorbs an additional amount. Although aqueous ammonia solutions are decanted from the tar in a variety of processing vessels, the excess ammonia-liquor storage tank was the only benzene emmission source identified in ammonia recovery or ammonia wastewater processing facilities.

Before light oils are recovered from the coke oven gas, the temperature of the gas is cooled from approximately 60° C to about 25° C by a final cooler. As the gas is cooled, some of the water and most of the naphthalene in the gas are condensed into the cooling medium. Both water and naphthalene are removed from the gas to prevent problems downstream. The three types of final coolers currently used by the industry are: (1) Direct-water, (2) tar-bottom, and (3) wash-oil final coolers.

Available data indicate that 19 plants use a direct-water final cooler. When a direct-water final cooler is used. The condensed naphthalene in the final cooler must be periodically removed from the hot well of the final cooler to prevent clogging of tubes, vents, or meters. Benzene emissions result when crude naphthalene is removed from the hot well of the direct-water final cooler and transported in open troughs, refined by melting or steam drying, or stored while it is hot for convenience in handling. After separation of the naphthalene, the water is cooled in an inducted-draft cooling tower and recirculated to the final cooler. The water contains benzene, which is released to the atmosphere when the water is cooled against air in an open

cooling tower. At plants using a direct-water final cooler, the final-cooler cooling tower is usually the largest source of benzene emissions.

An estimated 12 plants use a tar-bottom final cooler. In this system, the cooling medium (water) is passed through a pool of tar in the bottom of the final cooler. Naphthalene in the water dissolves in the tar and the tar is recirculated to tar storage tanks, sold as a final product, or refined. As in a direct-water final cooler, the final cooler water is cooled in a cooling tower and recirculated to the final cooler. Although use of a tar-bottom final cooler eliminates naphthalene processing and the resultant benzene emissions, the tar may become saturated with benzene. Thus, benzene may still be contained in the final cooler water and released when the water is cooled against air in the final-cooler cooling tower.

A wash-oil final cooler uses petroleum wash oil as the cooling medium rather than water or tar. Naphthalene dissolves in the wash oil, which is indirectly cooled with heat exchangers and recirculated to the final cooler. This system is used by four plants. Benzene emissions from naphthalene processing and from the final-cooler cooling tower are virtually eliminated with the use of a wash-oil final cooler system. However, benzene from the wash oil may still be emitted form the wash-oil decanter and the wash-oil circulation tank associated with the wash-oil final-cooler system. Wash-oil decanters and wash-oil circulation tanks may also occur in the light-oil recovery operation.

Light oil is a clear, yellow-brown oil composed primarily of benzene, toluene, xylene, solvent naphtha, and numerous minor constituents that boil between 0°C and 200°C. Light oil is recovered from the coke oven gas in a scrubber in which wash oil absorbs the light oil from the gas. The benzolized wash oil (wash-oil and light-oil mixture) leaving the scrubber is separated by steam stripping, and the wash oil is cooled and recycled to the scrubber. The stripped vapors may be partially condensed in a light-oil condenser, while those that remain noncondensible may be forwarded to a light-oil decanter (rectifier) that separates the recovered light oil into intermediate and secondary fractions. The overhead, consisting of benzene, toluene, and xylene (BTX) is then forwarded to a water-cooled condenser.

Benzene emission sources in the light-oil recovery operation include wash-oil decanters, wash-oil circulation tanks, light-oil condensers, light-oil decanters (or common vents for light-oil condensers and light-oil decanters), storage tanks containing light oil (including BTX) or refined benzene, and light-oil sumps. The wastewater forwarded to the light-oil sump (from which light oil may be recovered by distillation) may also emit benzene, which is entrained or dissolved in the water.

Sources of benzene fugitive emissions at coke by-product recovery plants also include leaking pumps, valves, exhausters pressure relief devices, sampling connections, flanges, and open-ended lines. In the by-product recovery process, benzene is present in numerous process streams and final products. The streams are usually moved throughout the process unit by pumps through pipes, with the volume of flow regulated by values. Exhausters, generally located in the tar separation sector of the plant, serve to move the coke oven gas in the collecting main. Benzene emissions from these sources at coke by-product recovery plants are specifically exempted from proposed EPA benzene fugitive emission standards (46 FR 1165, January 5, 1981).

Selection of Control Technologies

Many options are available for the control of benzene emissions from coke by-product recovery plants. Implementation of any of the control options would also reduce volatile organic compound (VOC) emissions. Control techniques that are effective in reducing or eliminating emissions include source enclosure used in conjunction with a gas blanketing system, source enclosure alone, wash-oil scrubbers, process modifications, leak detection and repair programs, and equipment for certain fugitive emission sources. Further information regarding these and other control techniques is provided in Chapter 4 of the BID.

Gas blanketing. Gas blanketing has been demonstrated at by-product recovery plants as an effective control technique for reducing VOC emissions, such as benzene, from process vessels and product storage tanks. This control technique can be applied to tar decanters, flushing-liquor circulation tanks, tar-intercepting sumps, tar dewatering tanks, light-oil condensers, light-oil decanters (or the common vent for a light-oil condenser and a light-oil decanter), wash-oil decanters, wash-oil circulation tanks, and storage tanks holding tar, excess-ammonia liquor, light oil, benzene mixtures, and refined benzene.

The basic principles of gas blanketing require sealing all the openings on a vessel or tank, supplying a constant pressure gas blanket with coke-oven gas, nitrogen or natural gas, and providing for the recovery or destruction of displaced vapor emissions. Depending on the source to be controlled, displaced vapors from the enclosed source can be transported through a piping system to the collecting main, to the gas holder, or to another point in the by-product recovery process where the benzene will be recovered or destroyed. With source enclosure, the control efficiency of the blanketing system approaches 100 percent. However, deterioration of piping or sealing materials can occasionally result in leaks, thus reducing the overall control efficiency to as low as 98 percent.

With gas blanketing from the collecting main, a vapor recovery system is in place in the form of the by-product recovery process, which removes organics from the raw coke oven gas. One advantage of gas blanketing from the collecting main is the recovery of benzene and other organic material. At a medium-sized by-product plant producing 4,000 Mg of coke per day, benzene losses are estimated as high as 4 percent of the total benzene generated in the process Depending upon the design of the system and the source to be controlled, much of this estimated process loss can be recovered by venting emissions to the collecting main.

For gas blanketing from the collecting main to work safely and effectively, each emission source must be enclosed to accept a slight, positive pressure without leaks to the atmosphere. For most vessels associated with crude tar produciton, enclosure would require closing atmospheric vent lines and connecting the tank's vent line to the gas blanketing line. However, tar decanters may require further modifications before a gas blanket can be applied. Tar decanter tops usually have a rectangular surface where the liquid is either exposed to the atmosphere or partially covered with concrete slabs set on steel support beams. At many plants, the decanter top must be removed, a water seal and metal cover installed, and gasket material added to provide a tight seal for the metal cover. A water seal suspended from the decanter roof near the sludge discharge chute would allow the major portion of the liquid surface to be blanketed at a small positive pressure, while allowing the remaining portion of the liquid surface (estimated at about 13 percent) to be opened to the atmosphere so as to provide clearance for a sludge conveyor. Because a portion of the liquid surface must remain open to the atmosphere, the benzene control efficiency of gas blanketing for

this source is lower than for other sources, but is estimated to be at least 95 percent.

Potential condensation of naphthalene or other tar components in the piping system and freezing of water vapor in the coke oven gas can be reduced or eliminated by steam tracing the affected line, controlling the temperature with electrical heating tape, or by a combination of both methods. Drip points can also be installed so that any condensate can be drained from the blanketing line. Three-way lubricated plug valves can also be provided to avoid sticking due to tar deposits and to isolate individual vessels during gauging or sampling operations. Although this equipment may not be necessary for each plant and would not be specifically required for any gas blanketing system, equipment costs for these items are included in the estimated system costs described in Chapter 8 of the BID because this equipment is considered a useful and reasonable part of gas blanketing systems.

Gas blanketing from the collecting main has been successfully demonstrated at one by-product plant for the control of emissions from two tar decanters and a flushing liquor circulation tank. At this plant, the gas blanketing line was connected to the offtake main upstream of the Askania regulatory (butterfly control valve). The blanketing pressure was typically controlled at 6 mm of water with a range of 4 to 8 mm of water. The decanter roofs were enclosed up to the sludge conveyor with steel plate and sealed with gasket material. Access hatches on both sources were covered and sealed; a vertical manifold of small valves was also installed to allow the operator to determine the level of tar and flushing liquor in the decanters. Three-way valves, atmospheric vents, and steam-out connectors for line cleaning were also installed. All lines were stream traced and insulated. No safety problems were reported by plant personnel operating the positive pressure portion of the system at this plant.

Engineering analyses indicate that no technical, safety, or operating problem would preclude the use of gas blanketing from the collecting main for the control of tar-intercepting sumps, tar storage tanks (including dewatering tanks), and excess ammonia-liquor storage tanks. These sources are generally in proximity and, like the tar decanter and flushing-liquor circulation tank, are all associated with the crude tar and ammonia liquor recovery operations practiced in the initial steps of the by-product recovery process. The proximity of the sources allows the use of a common large header to supply coke oven gas from the collecting main; smaller diameter piping can then connect the individual vent lines to the header. Because the liquid contents of these tanks result from water contact with the raw coke oven gas, coupled with the subsequent separation of tar and flushing liquor, no contamination problems are expected from a raw coke oven gas blanket. In addition, these sources can accept the low positive pressure (6 to 10 mm water) of the coke oven gas from the collecting main without danger of rupture.

With gas blanketing from the gas holder, a vapor destruction system is in place because the clean oven gas is burned to underfire the coke ovens and to recover the fuel value. One advantage of blanketing with clean coke oven gas from the gas holder is the elimination of oxidation reactions between oxygen in the air and organic materials in the vessels. These reactions often result in a sludge that may pose fouling and plugging problems in lines and process equipment. In addition, oxygen infiltration can cause tank vapors to reach the explosive limits of vapor when tanks are periodically emptied or when significant cooling takes place. Applying a positive pressure blanket would eliminate oxygen infiltration and maintain the vapor space in the tank above its upper explosive limit.

Gas blanketing with clean coke oven gas has been demonstrated for the control of emissions from sources associated with light-oil recovery, including the light-oil condenser, light-oil decanter, light-oil storage tank, wash-oil decanter, and wash-oil circulation tank. Again, the proximity of these sources allows the use of a common large header to supply coke oven gas from the gas holder; smaller branches of piping can then connect the individual vent lines to the header. For most vessels in the light-oil plant, source enclosure would require closing all vents to the atmosphere and connecting the tank's vent line to the gas blanketing line. Horizontal tanks in the light-oil plant may require some minor modifications to withstand a pressure of 36 to 46 cm (14 to 18 in) of water. As previously discussed, heat tracing and insulation can be used to avoid condensation, accumulation, and plugging in the lines. Steam-out connections can also be used for line cleaning, and three-way lubricated plug valves can be provided so that an individual line or vessel can be isolated for maintenance or sampling.

Gas blanketing with clean coke oven gas from the gas holder has been demonstrated for these sources at three by-product plants. At one plant, undesulfurized coke oven gas from the gas holder is used to control wash-oil decanters and wash-oil circulation tanks. At this plant, a header line is connected to the coke oven gas line exiting the wash-oil scrubbers. The tanks are connected with a line that runs from the header pipe. Isolating valves and steam-out connections are provided. However, none of the lines are heated or insulated. Although no pressure relief valves or controllers are used, water u-seals are placed in the lines to remove condensate and to protect the system from excessive pressure.

At a second plant, desulfurized gas from the battery underfire system is used to blanket the wash-oil decanters, wash-oil circulation tanks, light-oil decanters, and light-oil condensers. In a separate plant at the same location, an undesulfurized gas blanket is applied to light-oil decanters and wash-oil circulation tanks. All lines are steam traced and insultated.

At a third plant, undesulfurized coke oven gas from the gas holder was used to blanket the wash-oil decanter and circulation tank, two light-oil storage tanks, three light-oil condensers, and two light-oil decanters. Each emision source was equipped with three-way valves, flame arrestors, steam-out connections, steam tracing, and insulation. No major modifications or repairs were required to pressurize the emission sources.

Plant personnel have reported no safety problems with gas blanketing systems for emission sources in light-oil recovery operations. In addition, only routine operating problems, such as sticking valves, have been experienced. These difficulties can be avoided with good operation and maintenance practices.

It is the EPA conclusion that no safety or operating problems would preclude the application of gas blanketing to benzene storage tanks. For this source, however, coke oven gas is not recommended as the blanketing medium because of the possibility of contamination from components in the coke oven gas. However, nitrogen or natural gas can be used as a substitute. Emissions could be routed to the coke oven gas main and burned in the gas combustion system, or emissions may be routed to the gas main before light-oil removal and recovered in the wash-oil scrubbing operation. As with other sources, the benzene storage tanks must

be enclosed to accept a postive pressure gas blanket without leakage. In addition, heat-traced and insulated lines would be needed for winter operations due to the freezing temperature of benzene (42° F).

Wash-oil scrubbers. A wash-oil scrubber can be used to absorb benzene and other organics from vented emissions. Engineering analysis shows that application of a properly designed and operated wash-oil scrubber can attain a control efficiency for benzene of 90 percent. Although wash-oil scrubbers are less effective than gas blanketing, they were considered by the EPA because, in some cases, they could be less costly.

Wash-oil scrubber technology is already used in the coke by-product recovery industry to recover the light oil from the coke oven process gas stream. Light oil is a mixture composed primarily of benzene (60 to 85 percent) that also has toluene (6 to 17 percent), xylene (1 to 7 percent), solvent naphtha (0.5 to 3 percent), and other minor constitutents. The coke oven enters the scrubber from the bottom where it is contacted by wash oil flowing from the top of the scrubber, countercurrent to the gas flow. The wash oil is a petroleum straw oil with a boiling point over 200° C (392° F), has a high absorptive capacity for light oil, and does not react with the gas. After passing through the scrubber, the benzolized wash oil (wash-oil and light-oil mixture) is steam stripped in a wash-oil still to separate the light oil from the wash oil. The devenzolized wash oil is then cooled and recirculated back to the wash-oil scrubber. The absorption of the light oil by the wash oil is highly dependent on temperature; the absorption decreases as temperature increases. For this reason, the coke oven gas is cooled from about 60° C (140° F) to about 15–30° C (59–86° F) before it enters the scrubber. The temperature of the wash oil as it enters the scrubber is about 17.32° C (63–90° F); it is generally a few degrees hotter than the gas to prevent water condensation and emulsification problems. The wash-oil scrubber recovers about 90 percent of the light oil from the coke oven gas.

A wash-oil scrubber used to remove benzene from vented emissions would be of similar design, but scaled-down from the wash-oil scrubber used in the light-oil recovery process. Emission sources vented to the wash-oil scrubber must be enclosed so that vapors displaced from the sources due to working and breathing losses could not go anywhere except to the scrubber. The scrubber design analyzed by the EPA has no fan continuously venting the vapors to the scrubber. In the scrubber analyzed by the EPA, emissions would enter the bottom of an unpacked scrubbing chamber and contact a spray of wash oil from the top of the scrubbing chamber. The wash oil would be a slipstream taken from the wash-oil used in light oil recovery. The scrubber operating temperatures (e.g., the temperature of the gas leaving the scrubber) would be about 30° C (86° F), which is similar to the temperatures in the scrubber used in the light oil recovery process. The benzolized wash oil would be routed to the light-oil recovery plant, where the benzene would be recovered in the wash-oil still and the debenzolized wash oil would be cooled before being recirculated to the wash-oil scrubber. The engineering analysis shows that the scrubber can achieve 90 percent control efficiency for benzene. More details on specific design parameters are described later in this section.

A wash-oil scrubber was used as a control device at one plant (that is no longer operating) in the coke industry. As discussed below the design and operation of this scrubber differed significantly from a wash-oil scrubber that would achieve 90 percent control of benzene emissions. The scrubber was a portion of a large organic emission control project which principally consisted of installation of by-product recovery and control devices instead of flaring the coke oven gas. The wash-oil scrubber was applied to emissions vented from a tar storage tank, a tar dewatering tank, an excess ammonia-liquor storage tank, and an ammonia-liquor sump. Access manways on the storage tanks were covered and sealed. The sump was enclosed with a metal cover and gasket. Vent lines from each enclosed vessel carried emissions to a single scrubber. A slipstream of the wash oil used in the light-oil recovery process was diverted to the wash-oil scrubber. The benzolized wash oil from the scrubber was then routed to the wash-oil still in the light-oil recovery unit, where it was debenzolized and recirculated back to the wash-oil scrubber. As noted above, the wash-oil scrubber was part of a larger project to control total organic emissions rather than benzene emissions alone. The plant operator stated that the scrubber had never been tested and no records were available of estimates of the control efficiency. In addition, the plant is no longer operating. Therefore, no test data or company estimates of the design control efficiency are available. However, the EPA has concluded that this particular wash-oil scrubber system would not control benzene emissions. The main reason is that the temperatures of both the wash oil and the gas were significantly hotter than the temperatures (about 30° 86° F) characteristic of the gas and wash oil in EPA's scrubber design that achieves 90 percent control and in the scrubbers in the light oil recovery units. The wash-oil spray in the scrubber at this plant was a slipstream from the wash oil leaving the stripper, before it was cooled. Therefore, its temperature was 110° C (230° F), which is higher than the boiling point of benzene (80° C or 176° F). In addition, during the tar dewatering process, in which the tar is steam-heated to drive off water, the gas entering the scrubber without precooling would probably be around 100° C (212° F). At these temperatures for the wash oil and gas, the absorption of benzene by the wash oil would be negligible. Therefore, the EPA did not consider the design of the wash-oil scrubber at this particular plant for application as a benzene control device. This application demonstrates the enclosure and venting of sources to a wash-oil scrubber, and the compatibility of the wash-oil scrubber with the light-oil recovery system. However, to control benzene emissions, the wash oil and the gas would have to be cooled.

Wash-oil scrubbers were considered for controlling emissions from storage tanks containing light-oil, BTX, benzene or excess ammonia-liquor. The pressure drop through the scrubber is negligible; therefore, the tanks would not be subjected to pressures significantly higher than normal operating conditions. Consequently, little modification of the tanks, other than covering and sealing any openings, would be necessary. Also, the wash-oil circulation, distillation, and cooling capacity needed to operate a scrubber applied to these sources is expected to be within the capacity of most existing light-oil recovery plants. Estimated costs for applying a wash-oil scrubber to storage tanks containing light-oil, BTX, benzene, or excess ammonia-liquor are less than the estimated costs of gas blanketing these sources. More details of the cost estimates can be found in the section of this preamble entitled "Selection of the Basis of the Proposed Standard" and in Chapter 8 of the BID.

Wash-oil scrubbers were also considered for controlling emissions from tar storage and dewatering tanks. As noted above, the emissions from these sources are at elevated temperatures. For the scrubber to achieve an emission reduction efficiency near 90 percent, the vapors would have

to be cooled, either by a condenser or by a sufficiently high flow rate of cool wash-oil spray. In addition, several other factors would have to be addressed to design a wash-oil scrubber to control benzene emissions from tar storage and dewatering tanks. These include the effects of a hot gas saturated with water, lack of equilibrium data for the mixture of organics expected to be in the emission stream, fouling of equipment from heavy organics from the tar, emulsification problems, and wastewater treatment problems. Even if it is assumed that these factors are not problems with the design, the estimated cost of using the wash-oil scrubber, including cooling the emissions, is higher than the estimated cost of gas-blanketing these sources. (Details of the cost estimates can be found in Chapter 8 of the BID.) Also, as discussed above, the emission reduction achieved by the wash-oil scrubber is less than by gas blanketing. For these reasons, the use of wash-oil scrubber for tar storage and dewatering tanks was not considered further.

The application of the wash-oil scrubber to process vessels other than storage tanks in the tar and light-oil recovery plants was also considered. These sources generally have higher benzene emission rates than the storage tanks. To control these sources, a higher volume of wash-oil spray would be needed. The wash-oil circulation, distillation, and cooling systems required to handle the wash oil would likely be beyond the capacity of most existing light-oil plants. In addition, other sources in the tar recovery plant would need to have the same design considerations described above for tar storage and dewatering tanks. Increasing the capacity of the wash-oil circulation, distillation, and cooling systems, and cooling the emissions before scrubbing them would make the wash-oil scrubber more expensive than gas blanketing, which is the more efficient control system. Therefore, use of the wash-oil scrubber was not considered further for sources other than storage tanks containing light oil, BTX, benzene, or excess ammonia-liquor. The Agency invites comments on its assessment of the application and costs of the wash-oil scrubber to control emissions at coke by-products plants.

Engineering design calculations indicate that a wash-oil scrubber with an inner diameter of 20.3 cm (8 in), an active height of 4 m (13 ft), and a wash-oil (solvent) feed rate of 0.03 *l*/s (0.5 gal/min) will achieve a continuous benzene control eficiency of at least 90 percent from light oil, BTX, benzene, and excess ammonia-liquor storage tanks. This design is based upon the following worst-case assumptions: (1) Maximum gas feed rate to the scrubber of 19 *e*/s (40.1 ft^3/min) resulting from a maximum anticipated liquid displacement rate of 19 *e*/s (300 gal/min) as tank is filled, (2) a maximum gas phase benzene concentration of 17 percent by volume (corresponding to storage of pure benzene liquid at 32° C), and (3) maximum scrubber operating temperature (i.e., temperature of the gas leaving the scrubber) of 32° C (90° F). Two other design parameters, which do not fall in the category of "worst case," are the following: (1) The spray nozzle that distributes wash oil within the column produces a mean droplet diameter of 1 mm, and (2) the smallest droplet produced by the same nozzle has a diameter of 0.2 mm.

For sources with gas phase benzene concentrations of less than 17 percent and for smaller gas phase (vent system) flow rates, smaller scrubbers with correspondingly lower wash-oil feed rates can be designed. However, a scrubber of the design summarized above will ensure that 90 percent efficiency is achieved at design (worst-case) conditions and that the benzene concentration in the absorber offgas stream can be maintained at or below the design level.

Light-oil sump cover. A tightly fitting cover can be used to reduce evaporative losses caused by wind blowing across the surface of a light-oil sump and mixing with benzene or other hydrocarbon vapors. A gasket material applied to the rim of the sump cover would provide a seal to prevent leakage and would also allow removal of the cover to permit access for sludge removal. A vertical vent could also be installed in the sump cover so excess pressure would not build up in the sump. Potential emissions from small pressure increases could be contained with the use of a water leg seal, a pressure relief device, or a vacuum relief device. Enclosing the sump would reduce evaporative emissions, but would still allow working losses (from increasing the liquid level in the sump) and breathing losses (from increasing the temperature of the liquid in the sump). For sumps operated at or near a constant liquid level, a 98-percent control efficiency is estimated for a tightly fitting sealed cover equipped with a vertical vent as compared to the uncontrolled situation with wind blowing across the exposed liquid surface.

Naphthalene Processing and Final Coolers. A process modification is an effective control technique for benzene emissions from naphthalene processing and direct-water final-cooler cooling towers. At a plant operating a direct-water final cooler, a process modification would consist of replacing the direct-water final cooler with a tar-bottom final cooler, converting the direct-water final cooler to a tar-bottom final cooler by adding a mixer-settler, or replacing the direct-water final cooler with a wash-oil final cooler. A control efficiency of 74 percent is estimated for direct-water final-cooler cooling tower emissions through the installation of the tar-bottom process or a tar mixer-settler; collection of the naphthalene by means of a tar or wash-oil system would also eliminate emissions from napthalene processing for an emission reduction of 100 percent. At a plant operating a tar-bottom final cooler, the process modification would be the replacement of the tar-bottom final cooler with a wash-oil final cooler. This control option would provide an industry-wide emission reduction of 100 percent from tar-bottom final-cooler cooling towers and naphthalene processing emissions.

Pumps. Fugitive emissions from pumps primarily result from leakage of process fluids around the pump drive shaft and through deteriorated seal packing or worn mechanical seal faces. These emissions can be reduced with the elimination of the seal by replacing the pump with a sealless pump or by using an improved seal (e.g., double mechanical seals). Because of process condition limitations, sealless pumps are not suitable for all pump applications. However, dual mechanical seal systems with a barrier fluid between the seals (and meeting certain other criteria) can achieve a benzene control efficiency of about 100 percent.

Another control option is the application of a leak detection and repair program based on monitoring each pump at monthly or quarterly intervals. Once detected, leaks from pumps usually can be repaired immediately because critically located pumps are spared at most by-product plants. Based on the leak detection and repair (LDAR) model (described in the EPA document, "Fugitive Emission Sources of Organic Compounds—Additional Information on Emissions, Emission Reductions, and Costs" [EPA-450/3-82-010]), monthly monitoring of pumps would achieve an industry-wide benzene control efficiency of about 83 percent, while quarterly monitoring would achieve an industry-wide control efficiency of abut 71 percent.

Valves. Fugitive emissions from valves result when valve packings or O-

rings that are used to limit leakage of process fluids around valve stems deteriorate. Most valve leaks can be repaired while the equipment is in service by tightening the packing gland. Plug valves may be repaired by the addition of grease. Some valves cannot be repaired while in service. These valves include block valves, whose removal for repair or replacement might require a process shutdown. Other valves, such as control valves with a manual bypass loop, can be isolated for repair or removal.

The control options considered for valves in benzene service include the implementation of a leak detection and repair program based on monthly or quarterly monitoring intervals. Monthly moitoring would achieve an industry-wide benzene control efficiency of about 72 percent, as compared to the 63-percent industry-wide control efficiency achievable with quarterly inspections. A third control option considered is equipping valves with leakless equipment such as sealed bellows valves. The control efficiency of this option is approximately 100 percent.

Exhausters. Emissions from exhausters also occur at the seal. Control options for exhausters include the installation of seal systems with the barrier fluid degassing reservior vented to a control device, or purging the barrier fluid and adding the fluid to a process stream, or maintaining the pressure in the barrier fluid above that of the stuffing box. The control efficiency for each of these methods is estimated at 100 percent. A second control option for exhausters is the implementation of a leak detection and repair program, based on quarterly or monthly monitoring intervals. Monthly monitoring would achieve a control efficiency of about 64 percent, as compared to the 55-percent control defficiency associated with quarterly inspections.

Pressure relief devices. Pressure relief devices may emit benzene fugitive emissions because of the failure of valve seating surfaces, improper reseating after relieving, or process operations near the relief valve set point. Fugitive emissions from pressure relief valves can be controlled by installing a rupture disc system upstream of these valves to prevent fugitive emissions from the valve seat. The control efficiency of the rupture disc system is approximately 100 percent. Emissions from pressure relief devices can also be controlled by venting emissions in a closed system to a control device, such as a flare. The control efficiency of this equipment option is at least 95 percent. However, use of a control device would also reduce emissions resulting from a pressure release in addition to the fugitive emissions. The reduction of these emissions would increase the overall control efficieny of this option to a level approaching that of the rupture disc system.

Implementation of a leak detection and repair program, based on monitoring at monthly or quarterly intervals, was also considered as a control option for pressure relief devices. Monthly and quarterly monitoring would achieve an industry-wide benzene control efficiency of 53 percent and 44 percent, respectively.

Open-ended lines. Fugitive emissions from open-ended lines can be controlled by installing a cap, plug, blind, or second valve on the open end of the line. Capping of open-ended lines and closed-loop sampling represent readily available technologies that have been applied in the industry and exhibit control efficiencies of approximately 100 percent. However, the acutal control efficiencies may depend on site-specific factors.

Sampling connections. When process samples are taken for analysis, obtaining a representative sample requires purging some process fluid through the sample connection. This sample purge could be vented to the atmosphere if the fluid is gaseous, and liquid sample purges could be drained onto the ground or into open collection systems where evaporative emissions would result. Fugitive emissions from sampling connections can be reduced by using a closed-purge sampling system that eliminates purging of process material and provides a benzene control efficiency of about 100 percent.

Selection of Basis of Proposed Standard

EPA selected a level for the benzene standard for coke by-product recovery plants through a two-step process. The first step in determining the basis of the proposed standard was the selection of the best available technology (BAT) as the minimum level of control. Best available technology for new and existing sources is technology which, in the judgment of the Administrator, is the most advanced level of control considering the economic, energy, and environmental impacts and any technological problems associated with the retrofitting of existing sources.

After selecting BAT, EPA identified a level of control more stringent than BAT and evaluated the incremental reductions in health risks obtainable against the incremental costs and economic impacts estimated to result from the application of the more stringent control level. This provides a comparison of the costs and economic impacts of control with the benefits of further risk reduction. The benefits of risk reduction are expressed in terms of the estimated annual leukemia incidence and the estimated risk to the most exposed population. The results of this comparison determine whether, in the judgement of the Administrator, the residual risks remaining after application of BAT are unreasonable. If the risk remaining after application of BAT is determined to be unreasonable, further controls would be required.

This approach while recognizing that risk-free levels of exposure to carcinogens such as benzene may not exist, also considers the technological and economic factors that affect the pursuit of a "risk-free" or zero emissions goal and the uncertainties inherent in the estimation of carcinogenic risks. [For more detail, see the EPA document, "Response to Public Comments on EPA's Listing of Benzene Under Section 112" (EPA–450/5–82–003).]

In selecting BAT, EPA first considered the cost of control for each emission source by examining the annual cost of each benzene emission control option for each source and the resultant emission reduction. The emission sources considered for regulation are indicated on Table 2. EPA then examined the nonair environmental, energy, and economic impacts for the collection of the control options tentatively selected, based on a consideration of cost per megagram of emission reduction for each source to determine if the collection represents BAT for the industry as a whole. If these impacts were reasonable, the control techniques were selected as BAT and then were used in estimating the risks remaining after application of BAT.

The emission reductions and the average and incremental costs per megagram of benzene emission reduction are presented on Table 3. Costs per megagram of emission reduction (average and incremental) were calculated in terms of total emissions (benzene and other volatile organic compounds [VOC's]), as well as benzene alone. Control of benzene emissions also result in VOC control at no additional cost. Therefore, VOC control is an added benefit of benzene control. In regulatory decision-making regarding the acceptability of the cost for emission reductions achieved by a control technique, it is appropriate to consider the VOC as well as the benzene emission reductions. However, VOC emission reductions were considered only in the sense that VOC emission reductions can add weight to selecting a control technique as BAT.

TABLE 3. NATIONWIDE EMISSION REDUCTIONS AND COSTS OF CONTROL

Emission source	Control option[a]	Benzene: Uncontrolled emissions (Mg/yr)	Benzene: Emission reduction (Mg/yr)	Benzene: Average cost effectiveness ($/Mg)[b]	Benzene: Incremental cost effectiveness ($/Mg)[c]	Total emissions (benzene and other VOC): Uncontrolled emissions (Mg/yr)	Total emissions (benzene and other VOC): Emission reduction (Mg/yr)	Total emissions (benzene and other VOC): Average cost effectiveness ($/Mg)[b]	Total emissions (benzene and other VOC): Incremental cost effectiveness ($/Mg)[c]
1. Final-cooler cooling tower[d]	1. Tar-bottom final cooler[e]	8,370	6,240	(310)	(310)	100,600	67,300	(29)	(29)
	2. Wash-oil final cooler	8,370	8,370	4,200	18,000	100,600	100,600	350	1,100
2. Tar decanter tar-intercepting sump, and flushing liquor circulation tank	Gas blanketing	8,340	8,080	(310)	(310)	17,900	17,200	(140)	(130)
3. Tar storage tanks and tar-dewatering tanks	Gas blanketing	1,430	1,410	640	640	33,400	32,900	27	27
4. Light-oil condenser, light-oil decanter, wash-oil decanter, and wash-oil circulation tanks	Gas blanketing	3,490	3,470	120	120	4,940	4,890	85	85
5. Excess ammonia-liquor storage tank	1. Wash-oil scrubber	417	376	1,000	1,000	597	536	710	710
	2. Gas blanketing	417	409	1,200	2,900	597	585	810	1,900
6. Light-oil storage tanks and benzene-mixture storage tanks	1. Wash-oil scrubber	299	269	1,800	1,800	424	385	1,200	1,200
	2. Coke oven gas blanketing	299	293	2,100	6,100	424	418	1,500	4,500
7. Benzene storage tanks	1. Wash-oil scrubber	71	63	1,100	1,100	71	63	1,100	1,100
	2. Nitrogen or natural gas blanketing	71	69	1,700	8,100	71	69	1,700	8,100
8. Light-oil sump	Sealed cover	632	619	(230)	(230)	909	883	(160)	(160)
9. Pumps	1. Quarterly inspections	463	328	100	100	669	473	72	72
	2. Monthly inspections	463	386	110	120	669	557	73	84
	3. Dual mechanical seals	463	463	2,800	16,000	669	669	1,900	11,000
10. Valves	1. Quarterly inspections	312	196	(230)	(230)	450	283	(160)	(160)
	2. Monthly inspections	312	226	(110)	670	450	327	(76)	460
	3. Sealed bellows valves	312	312	17,000	61,000	450	450	12,000	42,000
11. Exhausters	1. Quarterly inspections	25	14	1,300	1,300	107	59	290	290
	2. Monthly inspections	25	16	2,600	9,900	107	69	590	2,400
	3. Degassing reservoir vents	25	25	24,000	62,000	107	107	5,700	15,000
12. Pressure-relief devices	1. Quarterly inspections	209	93	(400)	(400)	302	135	(280)	(280)
	2. Monthly inspections	209	110	(300)	270	302	158	(210)	200
	3. Rupture discs	209	209	870	2,200	302	302	600	1,500
13. Sampling connection systems	Closed-purge sampling	41	41	1,200	1,200	59	59	820	820
14. Open-ended lines	Cap or plug	14	14	700	700	20	20	480	480

[a] Further discussion of control techniques used can be found in Chapters 4 and 6 of the background information document (BID).
[b] Average (mid-range) 1982 dollars per megagram (cost effectiveness) = net annual control cost per source ÷ annual benzene emission reduction per source. The values in parentheses denote a saving in costs.
[c] Incremental dollars per megagram = (net annual cost of the control technique − net annual cost of the next less restrictive control technique) ÷ (annual emission reduction of control technique − annual emission reduction of the next less restrictive control technique). Values in parentheses denote saving.
[d] Includes naphthalene processing.
[e] Nineteen plants have direct-water final coolers, and 12 plants have tar bottom final coolers.

The average cost effectiveness (the cost of control per megagram of emission reduction) was calculated by examining the cost effectiveness of each control option (i.e., the cost of going from an uncontrolled status to the level of control represented by a control option). Where more than one control option was available, EPA examined the incremental cost effectiveness. That is, EPA compared the more stringent level of control to the next less stringent level of control to evaluate the reasonableness of the additional cost incurred by the more stringent level of control in view of the additional benzene emission reduction that would be achieved. The incremental cost effectiveness between any two alternate control techniques was calculated as the difference in net annualized costs divided by the difference in the annual emission reductions of the alternate control techniques. If the incremental cost in comparison to the incremental emission reduction was judged as unreasonable, then the next increment was examined until a control technique with a reasonable cost in comparison to the emission reduction was available. In all cases, EPA selected as BAT (considering costs) the control option that provided the most emission reduction and yet had a reasonable average and incremental cost per megagram of emission reduction.

It should be noted that the control costs do not represent the actual amounts of money spent at any particular plant site. Rather, the cost of emission reduction systems will vary according to the particular products produced, production equipment, plant layout and system design, geographic location, and company preferences or policies. However, these costs and emission reductions are considered typical of control techniques for benzene emission sources within coke by-product recovery plants. Although no construction of new by-product plants is expected during the next 5 years, new sources could be constructed. Because new sources do not incur retrofit costs, the costs of control are generally less than for existing sources. However, the cost of control for new sources in by-product plants is not sufficiently less to warrant a separation examination of new source costs.

In Table 3, the emission sources for which gas blanketing was considered are grouped according to the most cost-effective approach for implementing this control technique. For example, the tar decanter, tar-intercepting sump, and flushing-liquor circulation tank are usually in close proximity. The most cost-effective system design for these (and other emission source groupings) would consist of the large header pipe from the collecting main to the general area of the sources. Smaller diameter piping would then connect the header pipe to each source to provide the blanketing gas.

EPA first examined the cost per unit of benzene emission reduction for all

sources for which only one control option was considered. These groups of sources include: (1) Tar decanters, tar-intercepting sumps, and flushing-liquor circulation tanks; (2) tar storage tanks and tar-dewatering tanks; (3) light/oil condensers, light-oil decanters, wash-oil decanters, and wash-oil circulation tanks; (4) light-oil sumps; (5) sampling connections; and (6) open-ended lines. The cost of control for these sources ranges from a net credit or cost savings to a high of $1,200/Mg of benzene emission reduction. These costs are considered reasonable for the emission reduction achieved by the applicable control option. For this reason, these control options were tentatively selected as BAT, considering costs of control for each source. These control options include: (1) Use of the gas blanketing system for tar decanters, tar-intercepting sumps, flushing-liquor circulation tanks, tar storage tanks, tar-dewatering tanks, light-oil condensers, light-oil decanters, wash-oil decanters, and wash-oil circulation tanks; (2) a sealed cover for the light-oil sump; (3) closed-purge sampling for sampling connection systems; and (4) a cap or plug for open-ended lines.

EPA next examined two control options for naphthalene processing and final coolers: Wash-oil final coolers and tar-bottom final coolers. Wash-oil final coolers, the more effective of the two technologies, would virtually eliminate benzene emissions, applying this technology rather than tar bottom final coolers would result in an additional (incremental) benzene emission reduction of about 2,130 Mg/yr and an additional total emission reduction (including benzene and other VOC) of about 33,300 Mg/yr. The incremental annualized cost for wash-oil final coolers compared with tar bottom final coolers would be about $37.2 million/yr. The incremental cost of wash-oil final coolers over tar bottom final coolers is $18,000/Mg of benzene emission reduction, which is a relatively high incremental cost effectiveness. This relatively high incremental cost effectiveness is substantially reduced when the total emission reduction (including benzene and other VOC) is considered. However, the capital costs of the wash-oil final cooler system are also relatively high, ranging from $2.1 million for a small model plant to $7.9 million for a large model plant. An analysis of these capital costs compared to annual net income and investment indicated a potential for an unreasonably adverse economic impact on some firms. Based on a combination of all these cost-related factors, EPA rejected the selection of wash-oil final coolers as BAT and selected tar bottom final coolers.

For storage tanks containing excess ammonia-liquor, light-oil, BTX, or benzene, EPA considered two control options—gas blanketing and wash-oil scrubbers. Gas blanketing of these sources would provide a benzene control efficiency of at least 98 percent, as compared to the 90-percent emission reduction provided by a wash-oil scrubber. The average cost per megagram of benzene emission reduction for gas blanketing of these sources ranges from about $1,200/Mg to a high of about $2,100/Mg; these costs are considered reasonable for the emission reduction achieved, especially considering that when the VOC emission reduction is added in, the average cost effectiveness is reduced to a range of about $810/Mg to about $1,700/Mg.

However, the wash-oil scrubber may be a viable option for these sources at some plants. A scrubber could be less expensive than gas blanketing. For this reason, EPA examined the nationwide incremental costs and emission reduction of 90 percent control with wash-oil scrubbers as compared to 98 percent control by gas blanketing.

For storage tanks containing light oil or benzene mixtures, the incremental cost associated with the gas blanketing option compared to the wash-oil scrubber option would be $147,000/yr and the incremental benzene emission reduction would be 24 Mg/yr; this represents an incremental cost effectiveness of about $6,100/Mg of benzene emission reduction. Furthermore, the use of gas blanketing would reduce total emissions (including benzene and VOC) by about 33 Mg/yr more than the wash-oil scrubber option; this represents an incremental cost effectiveness of about $4,500/Mg of total emission reduction, including benzene and other VOC. Because the incremental cost effectiveness of gas blanketing for benzene ($6,100/Mg) is relatively high and because the additional VOC emission reduction does not add enough weight to convince EPA that the costs are reasonable, EPA decided to tentatively select wash-oil scrubbers rather than gas blanketing as BAT, considering costs, for storage tanks containing light oil or benzene mixtures.

For storage tanks containing benzene, the incremental cost associated with gas blanketing (with nitrogen or natural gas) compared to the wash-oil scrubber option would be about $45,600/yr and the incremental benzene emission reduction would be 6/Mg/yr; this represents an incremental cost effectiveness of about $8,100/Mg of benzene emission reduction. No emission reduction other than benzene would be achieved because benzene is the only organic emitted from this source. Because the incremental cost effectiveness of gas blanketing for benzene ($8,100/Mg) is relatively high and because there is no additional VOC emission reduction that would be achieved by gas blanketing to convince EPA that the costs are reasonable, EPA tentatively selected wash-oil scrubbers as BAT, considering costs, for benzene storage tanks.

For storage tanks containing excess ammonia-liquor, the incremental cost associated with the gas blanketing option compared to the wash-oil scrubber option would be about $94,000/yr and the incremental benzene emission reduction would be about 33 Mg/yr; this represents an incremental cost effectiveness of about $2,900/Mg of benzene emission reduction. The use of gas blanketing would reduct total emissions (including benzene and VOC) by 49 Mg/yr more than the wash-oil final scrubber option; this represents an incremental cost effectiveness of about $1,900/Mg of total emission reduction (including benzene and other VOC). Because the incremental cost effectiveness of gas blanketing for benzene ($2,900/Mg) is relatively high and because the additional VOC emission reduction does not add enough weight to convince EPA that the costs are reasonable, EPA decided to tentatively select wash-oil scrubbers rather than gas blanketing as BAT, considering costs, for storage tanks containing excess ammonia-liquor.

Although the wash-oil scrubber was selected as the tentative BAT for these sources, some plants may prefer to apply gas blanketing due to site-specific factors or due to the potentially lower maintenance requirements. Because gas blanketing achieves a better control efficiency, the selection of the wash-oil scrubber as BAT would not preclude the use of gas blanketing (or any other control device that is designed and operated to achieve a 90-percent benzene control efficiency).

EPA considered three control options for pumps: Dual mechanical seal systems, monthly leak detection and repair, and quarterly leak detection and repair. (These are listed in order of decreasing control efficiency and cost.) EPA considered the most stringent option, dual mechanical seals, first. The incremental cost associated with the use of dual mechanical seal systems compared to the monthly leak detection

and repair option would be $1.2 million/yr and the incremental benzene emission reduction would be 77 Mg/yr; this represents an incremental cost effectiveness of about $16,000/Mg of benzene emission reduction. Furthermore, the use of dual mechanical seals would reduce total emissions (including benzene and other VOC) by 112 Mg/yr more than the monthly leak detection and repair option; this represents an incremental cost effectiveness of about $11,000/Mg total emission reduction. Because the incremental cost effectiveness of dual mechanical seals for benzene ($16,000/Mg) is relatively high and because the additional VOC emission reduction does not add enough weight to convince EPA that the costs are reasonable, EPA decided not to select dual mechanical seals as BAT, considering costs, for pumps.

Next, EPA considered monthly leak detection and repair. The incremental cost associated with monthly leak detection and repair compared with the quarterly leak detection and repair program would be about $6,600/yr and the incremental benzene emission reduction would be 58 Mg/yr; this represents an incremental cost effectiveness of $120/Mg benzene emission reduction. Because EPA considers the incremental cost effectiveness of monthly detection and repair reasonable and it gets more emission reduction than quarterly leak detection and repair, EPA decided to tentatively select monthly leak detection and repair as BAT, considering costs, for pumps.

EPA considered three control options for valves: Sealed bellows valves, monthly leak detection and repair, and quarterly leak detection and repair. EPA considered the most stringent option, sealed bellows valves, first. The incremental cost associated with the use of sealed bellows valves compared with monthly leak detection and repair is $5.2 million/yr and the incremental benzene emission reduction would be 86 Mg/yr; this represents an incremental cost effectiveness of about $61,000/Mg benzene emission reduction. Furthermore, the use of sealed bellows valves would reduce total emissions (including benzene and other VOC) by 123 Mg/yr more than monthly leak detection and repair; this represents an incremental cost effectiveness of about $42,000/Mg. Because the incremental cost effectiveness of sealed bellows valves for benzene ($61,000/Mg) is relatively high and because the additional VOC emission reduction does not add enough weight to convince EPA the costs are reasonable, EPA decided not to select sealed bellows valves at BAT, considering costs, for valves.

Next, EPA considered monthly leak detection and repair. The incremental cost associated with monthly leak detection and repair compared with the quarterly leak detection and repair program would be $20,200/yr and the incremental benzene emission reduction would be 30 Mg/yr; this represents an incremental cost effectiveness of $670/Mg benzene emission reduction. Because a higher emission reduction would be achieved by monthly monitoring as compared to quarterly monitoring, at a reasonable cost, EPA tentatively selected monthly monitoring as BAT, considering costs, for valves.

For exhausters, the most stringent control option would require the use of degassing reservior vents. This equipment would reduce benzene emissions by approximately 100 percent. The incremental cost of degassing reservior vents over monthly inspections is $568,000/yr and the incremental benzene emission reduction would be 9 Mg/yr; this represents an incremental cost effectiveness of about $62,000/Mg. The use of this equipment would reduce total emissions (including benzene and other VOC) by about 38 Mg/yr more than the monthly inspection option, thereby reducing the overall incremental cost effectiveness to $15,000/Mg total emission reduction (including benzene and other VOC). Because the incremental cost effectiveness of degassing vents for benzene control is relatively high and because the additional VOC emission reduction does not add enough weight to convince EPA that the costs are reasonable, degassing reservior vents were not selected as BAT, considering costs, for exhausters.

Monthly inspections of exhausters would reduce benzene emissions by about 64 percent, or by about 2 Mg/yr more benzene than quarterly leak detection and repair. The incremental cost of monthly monitoring over quarterly monitoring is about $24,000/yr; this represents an incremental cost effectiveness of about $9,900/Mg of benzene emission reduction. Monthly inspections would reduce total emissions (including benzene and other VOC) by about 10 Mg/yr more than the total emission reduction achieved by quarterly monitoring; this reduces the overall cost effectiveness of this option to $2,400/Mg total emission reduction (including benzene and other VOC). Because the incremental cost effectiveness of monthly inspections for benzene control is relatively high, and because the additional VOC emission reduction does not add enough weight to convince EPA that the costs are reasonable, monthly monitoring was not selected as BAT, considering costs, for exhausters.

Quarterly inspections of exhausters would reduce benzene emissions by 14 Mg/yr at a cost of about $17,300/yr. This represents a cost effectiveness of about $1,300/Mg of benzene emission reduction. Furthermore, quarterly inspections would reduce total emissions (including benzene and other VOC) by about 59 Mg/yr; this reduces the overall cost effectiveness of this option to $290/Mg total emission reduction (including benzene and other VOC). Because EPA considers the cost effectiveness of quarterly monitoring to be reasonable, particularly in view of the added VOC emission reduction, EPA tentatively selected quarterly monitoring as BAT, considering costs, for exhausters.

Of the control options considered for pressure relief devices, use of a rupture disc system would provide the greatest benzene emission reduction (approximately 100 percent). The incremental cost associated with the use of a rupture disc system compared to the monthly leak detection and repair option would be $215,000/yr and the incremental benzene emission reduction would be 99 Mg/yr; this represents an incremental cost effectiveness of about $2,000/Mg benzene emission reduction. Furthermore, the use of the rupture disc system would reduce total emissions (including benzene and other VOC) by 144 Mg/yr more than the monthly leak detection and repair option; this represents an incremental cost effectiveness of $1,500/Mg total emission reduction. Because EPA considers the incremental cost effectiveness of the rupture disc system to be reasonable, particularly in view of the added VOC emission reduction, and because rupture disc systems get the most emission reduction, EPA tentatively selected that option as BAT, considering costs, for pressure relief devices.

Before making a final selection of control options as BAT, EPA considered the nonair quality environmental impacts and the economic and energy impacts to determine if the tentative selection of control options as BAT should be altered. Implementation of the control options tentatively selected as the basis of the proposed standard would reduce nationwide benzene emissions from coke by-product recovery plants from their current level of about 24,100 Mg/yr to about 2,700 Mg/yr, an overall emission reduction of

approximately 89 percent. Total uncontrolled nationwide emissions of benzene and other VOC's would be reduced from their current estimated level of 160,000 Mg/yr to about 35,000 Mg/yr, a 78-percent reduction.

No adverse environmental impacts are associated with these control options. Use of the gas blanketing system would actually tend to reduce the amount of benzene in process wastewater, in addition to solid waste disposal problems associated with sludge formation. Use of the gas blanketing system also provides the potential for fuel savings and increased product recovery. If the benzene in the recovered coke oven gas were used to underfire the coke oven battery, the national energy savings from the recovered gases would total about 30,000 terajoules (TJ) per year (0.028 quad/yr), assuming a recovery rate of 21.3 *l of gas/min/Mg of coke per day.* Further information detailing the development and consideration of these control techniques and the associated environmental and energy impacts, and the costs associated with each control option is presented in Chapters 6, 7, and 8 of the BID.

The total national capital and annualized costs of these control options also are considered to be reasonable. The total national capital costs associated with these control options are estimated at about $23.8 million over the baseline (1982 dollars), including the cost of a monitor for leak detection. Light-oil recovery credits result in a savings in total annualized costs for furnace coke producers, as compared to the baseline. (Even though the controls selected as BAT may result in an annualized credit, in general, industries do not necessarily elect to install such controls in the absence of a regulation, because they might be able to attain a higher rate of return on their capital investment if given the opportunity to invest elsewhere.) The price of foundry coke could increase by as much as $0.24/Mg, an increase of less than 1 percent from the baseline price, while the price of furnace coke would increase by less than $0.02/Mg (1982 dollars). An economic analysis indicates that the industry trend is to pass through some increase in costs to consumers. Further information regarding the economic impacts of these control options is presented in Chapter 9 of the BID.

In summary, these control options were considered by EPA to have reasonable incremental costs per megagram of benzene emissions reduced. The environmental, energy, and economic impacts are also positive or negligible. Less restrictive control options were not considered further because they would achieve less benzene emission reduction and because no cost, economic, energy, or nonair quality environmental impacts necessitated further examination of these less restrictive control options. The control options selected as BAT include: (1) A gas blanketing system for process vessels, and tar storage and dewatering tanks; (2) a wash-oil scrubber for storage tanks containing light oil, BTX, refined benzene, or excess ammonia-liquor; (3) the replacement of the direct-water final cooler with a tar-bottom final cooler or the conversion of the direct-water final cooler by the addition of a mixer-settler; (4) a sealed cover for the light-oil sump; (5) monthly monitoring for pumps and valves; (6) quarterly monitoring for exhausters; (7) a rupture disc system for pressure relief devices; (8) closed-purge sampling for sampling connections; and (9) caps or plugs for open-ended valves or lines.

After selecting these control options as BAT, EPA evaluated the estimated health risks remaining after application of BAT to determine if they were unreasonable in view of the estimated health risk reductions, costs, and economic impacts that would result if a more stringent regulatory alternative were applied. After the application of BAT, the annual leukemia incidence is estimated at about 0.19 case per year and the remaining maximum lifetime risk of acquiring leukemia is estimated at 3.0×10^{-6} for the most exposed group.

EPA considered the next most cost-effective control option beyond BAT—requiring storage tanks containing light oil, BTX, refined benzene, or excess ammonia-liquor to use a gas blanketing system, and requiring monthly monitoring for exhausters. Implementation of this control option would further reduce benzene emissions by about 65 Mg/yr. Requiring this higher level of control in lieu of BAT would not significantly change the estimated remaining leukemia incidence and the maximum lifetime risk. For this reason, the next more cost-effective control option beyond BAT was also examined.

The next more effective control option beyond BAT would be to require wash-oil final coolers, in addition to monthly monitoring for exhausters and gas blanketing for storage tanks containing light oil, BTX, refined benzene, or excess ammonia-liquor. This option would reduce benzene emissions by an additional 2,200 Mg/yr. This benzene emission reduction would result in a reduction in the estimated leukemia incidence due to benzene exposure from coke by-product recovery plants from about 0.19 case per year at the BAT level to about 0.06 case per year. The estimated maximum lifetime risk would be reduced from 3.0×10^{-6} at the BAT level to about 2.4×10^{-6} at the beyond BAT level. This action would result in a total capital cost of $131 million, and an incremental annualized cost of $37.5 million/yr compared with BAT. The capital costs of this option, particularly those associated with the wash-oil final cooler system, would be relatively high on a per plant basis, ranging from $2.1 million for a small model plant to $7.9 million for a large model plant. These relatively high capital costs would also result in relatively high annualized costs on a per plant basis, ranging from $0.7 million/yr for a small model plant to about $3.2 million/yr for a large model plant. An analysis of these capital costs compared to annual net income and investment indicated a potential for an unreasonably adverse economic impact on some firms. Because of the relatively small health benefits to be gained with the additional costs and the potential adverse economic impacts on some firms of requiring the wash-oil final cooler option, EPA considers the risks remaining after application of BAT not to be unreasonable. For this reason, EPA judged the level of control selected as BAT to provide an ample margin of safety and decided not to require a more stringent level of control than BAT for coke by-product recovery plants.

Selection of Emission, Equipment, Work Practice, Design, and Operational Standards

Section 112 of the Clean Air Act requires that an emission standard be established for control of a hazardous air pollutant unless, in the judgment of the administrator, it is not feasible to prescribe or enforce such a standard. Section 112(e)(2) of the Act defines the following conditions under which it is not feasible to prescribe or enforce an emission standard: (1) If the pollutants cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant, or (2) if the application of measurement methodology is not practicable because of technological or economic limitations. Section 112(e)(1) allows that if an emission standard is not feasible to prescribe or enforce, then the Administrator may promulgate a design, equipment, work practice, or operational standard, or combination thereof.

The basis of the proposed standard selected for tar decanters, tar-

intercepting sumps, tar storage and dewatering tanks, flushing-liquor circulation tanks, light-oil condensers, light-oil decanters, wash-oil decanters, and wash-oil circulation tanks is a gas blanketing system. A gas blanketing system is not considered "leakless" equipment. Although this control technique could possibly achieve a 100-percent benzene control efficiency to meet a zero emissions limit when first installed, the gradual deterioration of sealing materials, even with proper operation and maintenance, could eventually result in vapor leaks. In addition, fugitive emissions may also be released from opening such as access hatches and sampling ports, which are necessary for proper operation and maintenance of the source. Emissions may also occur during emergency pressure-release episodes. Thus, a 100-percent emission reduction could not be achieved on a continuous basis.

Vapor leaks from the system cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant. For this reason, EPA has concluded that it is not feasible to prescribe or enforce an emission limit applicable to the gas blanketing system and has decided to propose for these sources a combination of equipment and work practices standard. The proposed equipment standard requires each affected source to be totally enclosed with emissions ducted to the gas collection system, gas distribution system, or other enclosed point in the by-product recovery process where the emissions will be recovered or destroyed. A positive-pressure system using dirty or clean coke oven gas, nitrogen, or natural gas as the gas blanket can be used. Pressure relief devices, vacuum relief devices, access hatches, and sampling ports would be the only openings allowed on each source, except for tar decanters. An additional opening to allow clearance for sludge conveyors would be permitted on tar decanters. However, the proposed standard would require that the access hatch and sampling port be equipped with a gasket and a cover or lid, which remains closed at all times to prevent the release of emissions, unless the hatch or port is actually in use.

Sections 112(e)(1) and 302(k) of the Clean Air Act require that design, equipment, work practice, and operational standards include provisions to ensure the proper operation and maintenance of the equipment. Use of gas blanketing on enclosed sources can be designed to be leakless; however, emissions could result if holes or other openings occur in sealing material used on a source or the piping comprising the gas blanketing system. Gaps may also develop between a seal and the shell of a tank or other type of process vessel. Gaps can develop as a result of the deterioration of sealing materials, shell deformations, or the inability of a seal to conform to varying gaps because of a loss of seal flexibility.

To ensure proper operation and maintenance of the gas blanketing system, the proposed equipment standards would require the semiannual monitoring of all connections used on the control system and all sealing materials used to enclose the source for evidence of leaks. This would be performed using the test for "no detectable emissions" in Reference Method 21. An instrument reading indicating an organic chemical concentration greater than 500 ppm above a background concentration, as measured by Reference Method 21, would indicate the presence of a leak. As discussed in the section of this preamble entitled, "Selection of Performance Test Method," an organic chemical concentration of 500 ppm above a background concentration was selected as the leak definition for these sources, based on considerations relating to the calibration procedures and instrument capabilities. The owner or operator would also be required to conduct a semiannual visual check of each source and the ductwork of the control system for defects such as gaps or tears.

The proposed standard would also require that an initial attempt at repair of any leak or other defect detected by visual check or instrument monitoring be made within 5 days of detection. Repair of the leak or defect would be required within 15 days of the date of detection. The maintenance of records indicating the date of each inspection (instrument and visual), the equipment found to be leaking, and the date of repair would also be required. The cost of inspection of each source and control system would be about 1 person-hour. Because a low incidence of equipment failures is expected, requiring frequent inspections of the numerous sources at a typical plant would be unreasonable. For this reason, EPA decided to require that such inspections be conducted on a semiannual basis.

However, proper maintenance of the system is essential to ensure proper operation and, consequently, the effectiveness of the system. To help ensure proper maintenance, the proposed regulation requires an annual maintenance inspection for system problems that could result in abnormal operation, such as plugging problems, sticking valves, or plugged condensate traps. The owner or operator would be required to make a first attempt at any necessary repairs within 5 days of detection, with repair within 15 days. If a system blockage should occur, the proposed regulation requires the owner or operator to conduct an inspection and make any necessary repairs immediately upon detection of the blockage. If a blockage or plugging problem were found, compressed air or a live steam purge could be used to clear the line. However, neither inspection should require a process shutdown.

A wash-oil scrubber with a 90-percent efficiency was selected as the basis of the proposed standard for storage tanks containing light oil, BTX, refined benzene, or excess ammonia-liquor. Fixed roof tank mass emissions vary considerably as a function of tank capacity and the utilization rate of the storage tank. Because of the wide variation in the amount of benzene vapors being emitted from the different types of storage tanks, a mass emission limit cannot be selected that would be achievable on a worst-case basis (i.e., large tank capacity, high vapor pressure, and high utilization rate), and at the same time would not allow the construction of control devices that are less effective than BAT. On this basis, EPA rejected any type of mass emission format for this section of the proposed standards.

The possibility of establishing an emission standard in a reduction efficiency format for storage tanks controlled by an add-on control device, such as a wash-oil scrubber, was then examined. Emissions from storage tanks are variable and are often at flow rates that are too low to measure. When liquid is entering a tank, the liquid surface rises, forcing vapors above the liquid surface out of the tank. While this is occurring, the vapor flow rate and the emissions are large. When liquid is exiting the tank, the liquid surface falls, and the resulting pressure differential sucks air or a blanketing material into the tank. During these operations, vapor flows into the storage tank resulting in no atmospheric emissions. When the liquid level is held constant, pressure differentials resulting from diurnal temperature variations expel vapors at very low flow rates at intermittent times during the cycle.

Certain components of uncontrolled emissions have been measured in very specialized tests conducted by the EPA and the petroleum industry. Total emissions have not been measured.

however, and to do so would require that the operation of the tank be strictly controlled during the testing period. Because of methodology problems, it may not be possible to measure both the flow rate and the concentration simultaneously. This would cast doubt on the accuracy of the measurement. For these reasons, it was concluded that it is impracticable to measure the emissions exiting the storage tank. For the same reasons, it would be impracticable to measure the emissions captured by the closed vent system connecting the control device to the source or entering the control device. Therefore, it was concluded that an emission standard in a reduction efficiency format is not feasible for control devices.

Because reduction efficiency cannot be measured practicably, it is infeasible to establish an emission standard requiring a percent reduction efficiency. A design standard requiring a reduction efficiency design specification, however, is feasible. The possibility of establishing a "design, equipment, work practice, or operational standard, or combination thereof" was, therefore, examined. A reduction efficiency design standard is advantageous in that it accounts for the wide variation in emission and flow rates being vented from the tank, and it would require the use of BAT control devices on all tanks. Therefore, the Administrator concluded that the standard for new and existing tanks storing light oil, benzene mixtures, benzene, or excess ammonia-liquor be a control system designed and operated to reduce emissions by 90 percent. The 90-percent design standard could be met using a wash-oil scrubber (or any other control system capable of achieving the 90-percent emission reduction, such as a gas blanketing system).

The proposed regulation would require that each tank be totally enclosed and sealed with emissions vented to the control device that is used to achieve compliance. Pressure relief devices, vacuum relief devices, access hatches, and sampling ports would be the only openings allowed on each tank. Each access hatch and sampling port must be equipped with a gasket and a cover or lid that is kept in a closed position when not in actual use. To ensure that the source and vent system are properly maintained so that emissions continue to be vented to the control device instead of being leaked to the atmosphere, the proposed standard would require the same work practices proposed for gas blanketed sources. That is, the proposed standard would require the semiannual monitoring of all seals or connections on the source and vent for leaks using Reference Method 21, and visual check of the source and vent ductwork for defects such as gaps or tears. Also included would be the annual maintenance inspection for problems that could result in abnormal operation, such as plugging problems. The same provisions that are associated with these work practices for gas blanketed sources (for example, monitoring technique, repair provisions, recordkeeping, and reporting) would apply for these storage tanks.

To help ensure the proper operation and maintenance of the control device, the proposed standard also would include monitoring of parameters that indicate operation of the control device. For a wash-oil scrubber, the parameters that would need to be monitored to ensure proper operation and maintenance are the temperature of the gases exiting the scrubber, the wash-oil flow rate, and the pressure of the wash oil at the scrubber spray nozzle. Any drop in the wash-oil flow rate or pressure or any increase in the exit gas temperature as compared to the parameters specified in the design of the scrubber could indicate that a 90-percent emission reduction was not being achieved. A description of these occurrences would be included in the semiannual report.

The proposed standard for pressure relief devices is based on the installation of rupture discs upstream of the relief valve to prevent leaks. Measurement methods for determining the quantitative emission rate from pressure relief devices are not practicable because measurement would require the bagging of each device, which is an expensive procedure. Reference Method 21 does not provide for quantitative emission measurements, but does provide for the detection of leaks. Because fugitive emissions from pressure relief devices equipped with rupture discs would not be expected unless an overpressure release occurs, it is feasible to prescribe a "no detectable emissions" limit for pressure relief devices. An instrument reading of less than 500 ppm of organic compounds by volume above a background concentration, as measured by Reference Method 21, would indicate that fugitive emissions were below the "no detectable emissions" level.

The proposed emission limit would not apply to discharges during overpressure conditions because the function of the device is to discharge process gas, thereby reducing dangerous high pressures within the process. However, the proposed standard would specify that the device be returned to a state of "no detectable emissions" within 5 days after such a discharge. The proposed standard would further require an annual test to verify the "no detectable emissions" status of each device, with records indicating the date of inspection, the equipment found to be leaking, and the date of repair.

As an alternative to the use of rupture discs and other techniques that achieve the "no detectable emissions" limit, EPA proposes to allow the venting of pressure relief devices to a control device designed and operated to achieve 95 percent efficiency. When venting a pressure relief device, the control device also reduces emission of benzene that occur during overpressure relief. EPA judges that the emission reduction lost by allowing 95 percent control of leaks (rather than the 100 percent control achieved by the "no detectable emissions" limit) is offset by the emission reduction gained by controlling the emissions due to overpressure relief. Steam-assisted and nonassisted flares designed for and operated with an exit velocity of less than 18 m/sec achieve better than 95 percent control efficiency and are potential control devices for this alternative standard. Therefore, provisions related to the use of flares are included in the proposed regulation. EPA has been studying the question of whether additional types of flares also will achieve better than 95 percent control efficiency; if so, the Agency will revise the standards accordingly.

The control technique selected as the basis of the proposed standard for light-oil sumps is a sealed cover that extends over the entire surface of the sump, coupled with the use of a gasket material applied to the rim of the sump cover. Such a sump cover would not be required to be permanently sealed because the cover may have to be removed for periodic maintenance. Eventual deterioration of the seal could result in leaks, even with proper operation and maintenance. These leaks could not reasonably be vented into a conveyance designed or constructed to capture the pollutant. Therefore, mass emissions from this source could not be measured.

The control techniques selected at BAT would allow the use of a vent on the light-oil sump cover so that excess pressure is not built up in the sump. Potential emissions from small pressure increases would be contained with the use of a water leg seal or a vent pipe equipped with a pressure relief device or a vacuum relief value. Although the vent or vent pipe would provide a conveyance for the measurement of uncontrolled emissions, emission

measurement would still be impractical due to the low, intermittent emission rate. In addition, measurement methods for determining the quantitative emission rate from the pressure relief device on a vent are not practicable because the measurement would require the bagging of each device, which is an expensive procedure.

In addition, establishing a "no detectable emissions" limit would not necessarily ensure the control of emissions from the sump. Because the emissions are dispersed over a wide area, a "no detectable emissions" limit (<500 ppm) could conceivably be met with no control device, even though the mass emissions from the sump would be greater without a cover than with a cover. For these reasons, EPA has concluded that an emission limit applicable to a light-oil sump is not feasible to prescribe or enforce, and has determined that establishment of an equipment standard is appropriate for this source.

To ensure proper operation and maintenance of the sump cover, the proposed equipment standard would require the semiannual inspection of the cover for "detectable" emissions (>500 ppm VOC) using Reference Method 21. An initial attempt at repair of any defect or leak must be made within 5 days of the date of detection. Repair of the leak or defect would be required within 15 days of the date of detection.

The possibility of establishing an emission limit applicable to naphthalene processing was also considered. A process modification requiring the collection of naphthalene in tar (or an alternative medium such as wash oil) was selected as BAT for this emission source. Implementation of the process modification would eliminate naphthalene processing and the emissions that result from the practice of separating naphthalene from the hot well of a direct-water final cooler. Consequently, a "zero" emissions limit was selected for this process. A tar-bottom final cooler system or a wash-oil final cooler system could be used to eliminate naphthalene processing. If a direct-water final cooler is modified by the addition of a mixer-settler, the proposed standard would require that emissions be contained so that they are not released to the atmosphere. This requirement could be achieved by controlling emissions with a gas blanketing system. If a gas blanketing system were used, the mixer-settler would be subject to the proposeed monitoring, reporting, and recordkeeping requirements applicable to other gas-blanketed sources.

Benzene emissions from open-ended lines occur as the result of leakage through the valve seat of a valve, which seals the open end of the line from the process fluid. The basis of the proposed standard is equipment that would enclose the open end of the line. Generally, open-ended lines are not designed to release fugitive emissions to a conveyance, and bagging of these sources for emission measurements would not be economically or technologically practicable. A "no detectable emissions" limit is not feasible to prescribe because benzene could leak through the valve seat and become trapped in the line between the open-ended valve and the cap. The trapped benzene could be emitted to the atmosphere, even though the benzene emitted to the atmosphere would be much less than the benzene emitted without the cap or enclosure. Because an emission limit was found to be infeasible to prescribe or enforec, EPA is proposing an equipment standard requiring that a cap, plug, blind, or a second valve be installed on open-ended lines.

To ensure the proper operation of the equipment, open-ended lines would also be covered by an operational standard. If a second valve is used the proposed standard would require the upstream valve to be closed first. After the upstream valve is completely closed, the downstream valve must be closed. This operational requirement is necessary to prevent trapping process fluid between the two valves, which could result in a situation equivalent to the uncontrolled open-ended valve.

As in the case of other equipment in benzene service, sampling connections are generally not designed to release fugitive emissions to a conveyance, and bagging of these emission sources would not be economically or technologically practicable. A "no detectable emissions" limit is not feasible because no available data indicate that application of any control technique would be able to comply with such a standard at all times.

Because an emission limit is considered infeasible to prescribe or enforce, an equipment standard requiring closed-purge sampling is proposed for sampling connections. Closed-purge sampling systems eliminate emissions caused by purging by either returning the purge material directly to the process or by collecting the purge in a collection system closed to the atmosphere. In-situ sampling would be exempted from these requirements.

Pumps, valves, and exhausters generally are not designed to release fugitive emissions into a conveyance. Because of the large number and diverse locations of pumps, valves, and exhausters, bagging of these sources for emission measurement would not be practicable or economical. Because these sources are expected to leak and because the control technology selected as the basis of the standard is a leak detection and repair program, a "no detectable emissions" limit is not appropriate to prescribe for these sources. EPA considers that the application of a "no detectable emissions" limit for these sources would reflect a control technology more stringent than BAT. For these reasons, a work practice standards was selected as the format for the proposed standards for these sources rather than an emission limit.

Three main factors influence the level of emission reduction that can be achieved by a leak detection and repair program—the monitoring interval, leak definition, and repair interval. Training and diligence of personnel conducting the program, repair methods attempted, and other site-specific factors may also influence the level of emission reduction achievable; however, these factors are less quantifiable than the three main factors. For each of these factors, the proposed standard includes control requirments which provide the most emission reduction without unreasonable costs or other burdens.

The monitoring interval is the frequency at which individual component monitoring is conducted. Monthly monitoring was selected as the required interval for pumps and valves, and quarterly monitoring was selected for exhausters; these intervals would provide the greatest emission reduction potential without imposing unreasonable costs or difficulties in implementing the leak detection and repair program.

The leak definition is the instrument reading observed during monitoring that would be used to determine which components have failed and need to be repaired. The best leak definition would be the one that achieved the most emission reduction at reasonable costs. The emission reduction achieved would increase as the leak definition decreased, due to the increasing number of sources that would be found leaking and, therefore, repaired. At a leak definition of 10,000 ppm organics, approximately 90 percent of benzene fugitive emissions from valves would be detected. Valves found leaking organic compounds at levels of 10,000 ppm or

greater can be brought to levels below 10,000 ppm with proper maintenance. Also, as a practical matter, most commonly available hydrocarbon detectors that are considered intrinsically safe have a maximum reading of 10,000 ppm. Leak definitions higher than 10,000 ppm could, nevertheless, be selected (and dilution probes could be used with portable detectors); however, there would be less emission reduction than with the 10,000-ppm definition and no substantial associated cost savings. Consequently, there is no basis for selecting a leak definition greater than 10,000-ppm organics. A leak definition lower than 10,000 ppm may be practicable in the sense that leaks can be repaired to levels less than 10,000 ppm. However, EPA is unable to conclude that a leak definition lower than 10,000 ppm, would provide additional emission reductions and, therefore, would be reasonable. Because the 10,000-ppm leak definition would address approximately 90 percent of the benzene fugitive emissions from valves at reasonable costs and at reasonable cost effectiveness, and because safe, available hydrocarbon detectors can read 10,000 ppm, the 10,000-ppm level was selected as the leak definition for valves. This definition is also considered appropriate for pumps and exhausters. The same portable monitor used for values would be used for these sources, and consideration of other relevant factors did not indicate that the 10,000-ppm definition should be different for pumps or exhausters.

The repair interval is the length of time allowed between the detection of a leaking source and repair of the source. As noted above, to make the overall program effective, the most practicable selection for this factor should be chosen. Thus, to provide the maximum effectiveness of the leak detection and repair program, the repair interval should require expeditious reduction of emissions but should allow the owner or operator sufficient time to maintain some degree of flexibility in overall maintenance scheduling.

The length of the repair interval would affect emission reductions that are achievable by the leak detection and repair program because leaking sources would be allowed to continue to leak for a given length of time. Repair intervals of 1, 5, 15, 30, and 45 days were evaluated. The effect on the maximum emission reductions potential is proportional to the number of days the sources is allowed to leak between detection and repair.

Some pumps, valves, and exhausters may not be repairable by simple field maintenance. They may require spare parts or removal from the process for repair. Repair intervals of 1 to 5 days could cause problems in obtaining acceptable repair, especially when removal from the process would be required. However, a 15-day interval provides the owner or operator with sufficient time for flexibility in repair scheduling and provides time for better determination of methods for isolating pieces of leaking equipment for repair. In general, a 15-day repair interval allows more efficient handling of repair tasks while maintaining an effective reduction in fugitive emissions. Thus, the repair interval selected for proposal in the leak repair program is 15 days. A repair interval of 30 or 45 days was not selected because 15 days is a more restrictive, yet feasible, selection.

However, the first attempt at repair of a leaking source should be accomplished as soon as practicable after detection of the leak, but no later than 5 days after discovery. Most repairs can be done quickly, and 5 days should provide sufficient time to schedule maintence and repair a leaking source. Attempting to repair the leak within 5 days will help to identify leaks that would require additional efforts so they could be repaired within the 15-day repair interval.

Delay of repair would be allowed for sources that could not be repaired without a process unit shutdown. These leaks would have to be repaired at the next unit shutdown unless the shutdown is unscheduled and lasts less than 24 hours. Delay of repair is not expected for most situations, however, because sources such as exhausters and critically situated pumps are commonly spared at by-product recovery plants. Therefore, they could be repaired without a process unit shutdown.

Monthly monitoring of valves to detect leaks is reasonable. However, some valves may leak less frequently than others. One indicator that might predict which valves leak is valve leak history. That is, once a valve leaks, then it may be more likely to leak again than a valve that has not leaked. The Administrator decided to implement the monthly monitoring requirement by focusing on the valves that tend to leak more often. One approach is to allow an alternative monitoring period for valves found to leak less frequently than others. The Administrator is proposing that leak detection and repair work practices include monthly monitoring for valves unless they are found not to leak for 2 successive months. If a valve is found not to leak for 2 successive months, the owner or operator may elect to monitor during the first month of the next quarter and quarterly thereafter until a leak is detected. Whenever a leak is detected, the valve would be monitored once a month until the valve did not leak for 2 successive months.

Some valves are difficult to monitor because access to them is restricted. Therefore, EPA is proposing an annual leak detection and repair program for valves in existing process units that are difficult to monitor. Valves that are difficult to monitor are defined as valves that would require elevating the monitoring personnel more than 2 meters above any readily available support surface. This means that ladders must be used, if needed, to elevate monitoring personnel.

In addition to valves that are difficult to monitor, some valves are unsafe to monitor because monitoring personnel would be subject to imminent hazards. The proposed standards would allow an owner or operator with valves that are unsafe to monitor to develop a special leak detection and repair program. These special programs would conform with the routine monitoring requirements of the proposed standards as much as possible but would allow deviation from a routine monitoring so that monitoring would not occur under unsafe conditions. Valves that are unsafe to monitor are defined as those valves that could, as demonstrated by the owner or operator, expose monitoring personnel to imminent danger, e.g., hazards from temperature, pressure, or explosive process conditions. There should be few, if any, unsafe-to-monitor valves in benzene service in coke by-product recovery plants.

Pressure relief devices in liquid service and flanges and other connectors in all services would be excluded from the proposed routine leak detection and repair requirements on the basis of data from EPA testing. Screening studies done by EPA in coke by-product recovery plants indicated very low emission rates for individual flanges, which would result in only a small contribution to overall emissions. Testing of pressure relief devices in liquid service in petroleum refineries exhibited very low emission rates; similar results would be expected at coke by-product recovery plants. Applying routine monitoring requirements to these pieces of equipment would result in an exorbitant cost per megagram of emission reduction. However, if leaks are detected from these equipment, the

same allowable repair interval that applies to pumps, valves, and exhausters would apply.

The proposed regulation would also exclude equipment operating under a vacuum, because leaks to the atmosphere would not occur while the equipment is operating at subatmospheric internal pressures.

Alternative Standards for Valves. The emission reduction and annualized cost of the proposed leak detection and repair program depends in part on the number of valves that are found leaking during inspections. If very few leaks are detected in a plant, then the amount of benzene that could be reduced by the proposed program is much smaller than the amount that could be reduced in a plant that had more leaks. In contrast, the annualized cost of the program would be larger in a plant that had fewer leaks than in a plant that had more leaks because the annualized cost includes a recovery credit based on the amount of benzene recovered by the program. Therefore, the cost efectiveness of the proposed leak detection and repair program varies with the number of valves that leak within a plant.

There is no precise breakpoint in the emission reduction and annualized cost relationship as the percentage of leaking valves decreases. However, based on an analysis of coke by-product recovery plants, the Administrator has judged that the emission reduction and annualized cost relationship is unreasonable for plants having an average of less than 1 percent of valves leaking.

Based on this conclusion, the Administrator decided to propose alternative standards based on allowable percentage of valves leaking. The allowable percentage of valves leaking was chosen to include the variability inherent in any system; e.g., leak detection of valves. The variability in leak detection of valves can be characterized as as a binomial distribution around the average number or percentage of valves leaking. Inclusion of the variability in leak detection of valves is accomplished by straightforward statistical techniques based on the binomial distribution. The analysis of by-product plants showed that an alternative standard of 2 percent of valves leaking, to be achieved at any time, would provide an owner or operator a reasonably low risk that a percentage of valves leaking greater than 2 percent would be determined when the average of 1 percent was actually being achieved.

Based on these considerations, the Administrator is proposing two alternative standards that would exempt sources from the required (monthly/quarterly) leak detection and repair program if the sources achieve less than 2 percent leaking valves in benzene service. Owners or operators of affected facilities may identify and elect to achieve either of the alternative standards to allow tailoring of fugitive emissions control programs to their own operations. An owner or operator would report which alternative standard he or she had identified and elected to achieve.

The first alternative standard would limit the maximum percentage of valves in benzene service leaking to 2 percent. This type of standard would provide the flexibility of a performance standard. The first alternative standard could be achieved by the most efficient and practical methods for a particular plant. Choosing this alternative standard would allow for the possibility of different leak detection and repair programs and for the substitution of engineering controls at the discretion of the owner or operator. This standard would also eliminate a large part of the recordkeeping and reporting associated with the routine leak detection and repair program for valves.

An industry-wide allowable leak percent that could necessarily be achieved at all facilities is not possible for valves because of the variability in valve leak frequency and variability in the ability of a leak detection and repair program to reduce these leaks among all plants within the industry. However, this alternative standard would allow any plant the option of complying with an allowable percentage of valves leaking. This alternative standard would require a minimum of one performance test per year. Additional performance tests could be requested by EPA. If the results of a performance test showed a percentage of valves leaking higher than 2 percent, the process unit would not be in compliance with the standards.

The second alternative standard would allow the use of skip-period leak detection. Under skip-period leak detection, an owner or operator could skip from routine leak detection to less frequent leak detection after completing a number of successful leak detections. This skip-period leak detection program would require that the average performance level of 2 percent be achieved on a continuous basis with a reasonable degree of certainty. A plant would choose one of two skip-period leak detection programs and then implement that program. The first skip-period leak detection program could be used when fewer than 2 percent of the valves had been leaking for two consecutive quarterly leak detection periods. The first skip-period leak detection program would allow an owner or operator to skip every other quarterly leak detection period; that, is, leak detection can be performed semiannually. Under the second skip-period leak detection program, if fewer than 2 percent of the valves had been leaking for five consecutive quarterly leak detection periods, the owner or operator may skip three quarterly leak detection periods; that is, leak detection can be performed annually. When more than 2 percent of valves are found to leak, the routine leak detection and repair program would be required to be resumed.

Alternative Means of Emission Limitation

Under the provisions of section 112(e) of the Clean Air Act, if the Administrator establishes work practices, equipment, design or operational standards, then the Administrator must allow the use of alternative means of emission limitations if they achieve a reduction in air pollutants equivalent to that achieved under requirements of a standard. Sufficient data would be required to show equivalency, and a public hearing would be required.

Any peron could request alternatives for specific requirements, such as the proposed equipment and the proposed leak detection and repair program. Under the proposed regulations, that person would be responsible for collecting and verifying the test data used to demonstrate that the alternative control techniques would be equivalent to the control techniques required by the standard. This information would then be submitted to EPA. If, in the Administrator's judgment, the alternative means of emission limitation would achieve a reduction in emissions at least equivalent to the reduction achieved under the design, equipment, work practice or operational standard, the Administrator would publish in the **Federal Register**, after notice and an opportunity for a hearing, a notice permitting the use of the alternative means for purposes of compliance with the standard.

To judge if an alternative control technique achieves an emissions reduction equivalent to gas blanketing, the Administrator would consider the control efficiency of gas blanketing as 98 percent for all sources except the tar decanter. For the tar decanter, the efficiency of gas blanketing would be considered as 95 percent. The lower efficiency is due to the opening that

must be on the tar decanter to allow clearance for the sludge conveyor.

Any control option more stringent than the option selected as the basis of the proposed standard would be at least equivalent to the requirements included in the proposed standard and would be allowed by EPA. EPA has already determined the equivalency of these control options and incorporated them into the standard, along with specified conditions for their use. Therefore, the owner or operator would not need to apply to EPA for their use as an alternative control option.

For example, the proposed standards would not require "leakless" equipment, such as sealed bellows and diaphragm valves and canned and diaphragm pumps. However, use of "leakless" equipment is clearly equivalent to the proposed standards for pumps, valves, and exhausters, and the proposed standards would allow the use of such equipment as an alternative to the required practices.

"Leakless"' equipment would be required to operate with "no detectable emissions" at all times when it is in service. "No detectable emissions" means an instrument reading of 500 ppm or less of organic compounds above background, as measured by Reference Method 21. The proposed standards require that its "leakless" status be verified annually and at the request of the Administrator, using Reference Method 21.

In addition, other types of equipment can achieve emission reduction at least equivalent to that achieved by a monthly leak detection and repair program for pumps and a quarterly one for exhausters. For pumps, this equipment includes dual mechanical seal systems that use a barrier fluid between the two seals. For exhausters, this equipment includes a seal with a barrier fluid system. If the barrier fluid is maintained at a pressure greater than the pump or exhauster stuffing box pressure, any leakage would be from the barrier fluid to the working fluid; therefore, no working fluid would be emitted to the atmosphere. If the stuffing box pressure is greater than the barrier fluid pressure, the barrier fluid collects the leakage from the inner seal; the working fluid collected by the barrier fluid is controlled by either: (1) Connecting the barrier fluid degassing system to a control device, or (2) returning the barrier fluid to the process stream. Because these seal systems which meet these specifications are at least equivalent to a monthly leak detection and repair program for pumps and quarterly leak detection and repair program for exhausters, they have been exempted from the monitoring provisions of the proposed standards.

Sections 112(e)(1) and 302(k) of the Clean Air Act require that when equipment standards are established, requirements must also be established to ensure the proper operation and maintenance of the equipment. A pressure or level indicator on the barrier fluid system would reveal any catastrophic failure of the inner or outer seal or of the barrier fluid system. This indicator would be monitored on a daily basis or equipped with an audible alarm to signal a failure of the system. The point at which the alarm signals a failure of the seal system would be determined for each seal system based on design considerations and operating experience. Thus, these requirements are proposed to ensure the proper operation and maintenance of the seal system.

In many cases, the seal area of a pump or exhauster could be completely enclosed, and this enclosed area could be connected to a control device designed and operated to achieve 95-percent control. Some owners or operators may decide that this approach is preferable to leak detection and repair. Enclosing the seal area and venting the captured emissions to a 95-percent control device is a reasonable alternative because this system would be at least as effective as the leak detection and repair programs for pumps and exhausters. Therefore, the Administrator is proposing to allow pumps and exhausters equipped with enclosed seal areas to be connected to a 95-percent control device.

Steam-assisted and nonassisted flares designed for and operated with an exit velocity of less than 18 m/sec achieve better than 95 percent control efficiency and are potential control devices for this alternative standard. Therefore, provisions related to the use of flares are included in the proposed regulation. EPA has been studying the question of whether additional types of flares also will achieve better than 95 percent control efficiency; if so, the Agency will revise the standards accordingly.

Selection of Test Method

Reference Method 21 (40 CFR Part 60, Appendix A) was selected as a method for measuring leaks from sources subject to the leak detection and repair requirements (including gas-blanketed sources) and for sources subject to "no detectable emissions" limits. The selection of this test method is fully discussed in the proposed new source performance standards for the control of VOC fugitive emissions in the synthetic organic chemicals manufacturing industry (46 FR 1136, January 5, 1981) and proposed technical support document (EPA-450/3-80-033a). The method was promulgated on August 18, 1983 (48 FR 37598).

Reference Method 21 specifies the use of a portable detector to measure the concentration of organic vapors at a source to yield a qualitative or semiquantitative indication of the emission rate from the source. The test procedure does not detect benzene specifically; instead, the organic compound concentration is measured.

Tests have indicated that local conditions cause variations in concentration readings at points removed from the surface of the interface on the component where leaking occurs. Therefore, Reference Method 21 would require the concentration to be measured at the interface surface.

The monitoring instrument would be calibrated before each monitoring survey with methane or n-hexane. Thus, the required calibration gases would be a zero gas (air <10 ppmv volatile organic compounds) and an air mixture (approximately 10,000 ppm methane or n-hexane). If cylinder calibration gas mixtures were used, they would have to be analyzed and certified by the manufacturer to within ± 2 percent accuracy. Calibration gases prepared by the user according to an accepted gaseous standards preparation procedure would also have to be accurate to within ± 2 percent. The monitoring instrument would be subjected to other performance requirements prior to being placed in service for the first time. The instrument would be subjected to the performance criteria every 6 months and after any modification or replacement of the instrument detector.

The proposed standard also requires the ASTM Method D2267-68 ("Aromatics in Light Naphthas in Aviation Gasoline by Gas Chromatography") be used to determine the percentage of benzene in the process fluid within a fugitive emission source. This determination would be made only when the exact concentration of benzene is uncertain.

If a flare is used as a control device, Reference Method 22 of 40 CFR Part 60 shall be used to determine compliance with the "no visible emissions" requirement. The proposed standard specifies the use of Reference Method 2, 2A, or 2C of 40 CFR Part 60 to determine the volumetric flow rate of the flare. It also specifies the use of Reference Method 18 of 40 CFR Part 60 and ASTM Method D2504-67 to determine the

concentrations of the gas components in calculating the net heating value of the gas being flared. In addition, the heats of combustion of the gas may be determined using ASTS Method D2382-76, if published values are not available or cannot be calculated.

The ASTM Methods referenced above will be approved for incorporation by reference in 40 CFR 61.18 on the date of promulgation of the standard for benzene equipment leaks (fugitive emission sources) that was proposed on January 5, 1981 (46 FR 1165). Section 61.18 of 40 CFR Part 61 will be amended to include citations to the paragraphs specifying these ASTM Methods in this coke by-product plant standard when this standard is promulgated. The ASTM Methods are available for inspection at the Office of the Federal Register Information Center, Room 8401, 1100 L Street, N.W., Washington, D.C. 20408 and the Library (MD-35), U.S. EPA, Research Triangle Park, North Carolina 27711. They are available for purchase from at least one of the following addresses: American Society for Testing and Materials (ASTM), 1916 Race Street, Philadelphia, Pennsylvania 19103; or the University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106.

Selection of Reporting and Recordkeeping Requirements

Recordkeeping would be required to document compliance with the proposed regulation; review of these records would provide information for plant and enforcement personnel to assess implementation of the requirements. Compliance would be determined by inspection and review of this recorded information.

For sources subject to equipment and design standards, such as gas-blanketed process units, the owner or operator must record and keep in a readily accessible location a description of the control systems to be used to achieve compliance (i.e., schematics), the installation date, and a description of any changes made after installation. This would also apply to equipment used to achieve compliance with the "zero" emissions limit for naphthalene processing. A record of design and operating specifications is also required for control devices used to achieve compliance.

The following records must be maintained for a least 2 years. For gas-blanketed sources, light-oil sumps, and storage tanks containing light-oil, benzene mixtures, benzene, or excess ammonia-liquor, records of the semiannual inspections must be maintained, including the inspection date, the name of the inspector, a brief description of the leaks detected and repairs made, and the dates of repair attempts for each leak. The owner or operator must also maintain records of each annual maintenance inspection. These records must include a description of the abnormality, the repair made, and the repair dates. The proposed regulation also requires a record of any system blockage (or malfunction), with a brief description of the incident, the cause, the repairs made, and the repair dates.

For control devices, records must be maintained that indicate the dates the device was not operating as designed, the dates and description of any maintenance or repair of the device, and monitored parameters. If a wash-oil scrubber is used, the proposed regulation requires that records be kept of the wash-oil flow rate, the temperature of the gases exiting the scrubber, and the pressure at the scrubber spray nozzle. These records also must be maintained for at least 2 years.

Records of specific information pertaining to the leak detection and repair also would be required. Each source found to be leaking during the first month of a quarter would be identified with readily visible weatherproof identification bearing an identification (ID) number. The identification could be removed after the source had been repaired and monitored for leaks and repaired as necessary for the next 2 successive months. A log would be maintained for information pertaining to the leaking sources. The log would contain the instrument and operator identification numbers, the leaking source identification number, the date of detection of the leaking source, the date of the first attempt to repair the leaking source, repair methods applied in the first attempt to repair the source, and the date of final repair. The log would be kept for at least 2 years following the survey.

Reporting requirements are also included for enforcement personnel to review and assess the compliance status of affected sources. In the intital compliance report required by 40 CFR 61.10, the owner or operator must submit a statement notifying the Administrator that the requirements of the standard are being implemented, along with the other information required under § 61.10. If a waiver of compliance is granted under § 61.11, the statement would be submitted on a date scheduled by the Administrator. The statement also would describe the type of source and the method of compliance being used. For pieces of equipment in benzene service, the statement would include the percent by weight benzene in the fluid and the process fluid state in the equipment (i.e., gas/vapor or liquid).

Semiannual reports starting 6 months after submission of the initial compliance report would be required. For gas-blanketed sources, light oil sumps, and storage tanks containing light oil, benzene mixtures, benzene, or excesss ammonia-liquor, the report must contain a brief description of any visible defect in the source or ductwork, the number of leaks detected and repaired, and the repair dates. A brief description of any system abnormalities found during the annual maintenance inspection, the repairs made, and the repair dates also would be required, as would a brief description of any system blockage or malfunction incidents, the repairs made, and the repair dates.

The semiannual report also would include information regarding the use of control devices. Required information would include the date and time of any occurrence when the monitored parameters exceed or drop below the parameter levels determined in the design specifications. If a wash-oil scrubber is used, the report must include the date and time of any occurrence when the wash-oil flow rate or the pressure at the scrubber spray nozzle falls below the parameter levels determined in the design specifications or the temperature of the gases exiting the scrubber exceeds the design specification temperature.

For pieces of equipment in benzene service, the semiannual report would include the process unit identification for the equipment, in addition to information regarding the number of pumps, valves, and exhausters for which leaks were detected during each month of the reporting period; the number of pumps, valves, and exhausters for which leaks were not repaired; an explanation of any delay of repairs; and dates of any process unit shutdowns that occurred during the reporting period.

Annual performance tests are required to verify the status of sources subject to "no detectable emissions" limits and for valves subject to the alternative standard. The proposed regulation requires the owner or operator to record the results of each performance test and to include this information in the semiannual report for that reporting period.

Each semiannual report also would include a statement signed by the owner or operator stating whether all provisions of the regulation has been fulfilled during the reporting period.

Alternative Approach for Selecting Emission Control Levels

Historically, EPA's approach to selecting control levels for emission sources has been a two-step process that included: (1) the selection of the best available technology (BAT) as the minimum control level, and (2) an evaluation of the incremental risk reductions and costs of more stringent controls. This approach was first outlined by EPA in the proposed Airborne Carcinogen Policy in 1979 (40 FR 58642) and has been generally followed by EPA since that time.

In selecting BAT for specific emission sources of coke by-product plants, EPA considered the cost per megagram of emission reduction for available control techniques. When more than one control option was available, EPA examined the incremental cost per megagram of moving to the more stringent control option. If the incremental cost in comparison to the incremental emission reduction was judged as unreasonable, the next lower increment was examined until a control technique with a reasonable cost in comparison to the emission reduction was available. In all cases, EPA selected as BAT the control option that provided the most emission reduction and yet has a reasonable average and incremental cost per megagram of emission reduction.

In proposing this approach, EPA recognizes that it usually gives somewhat limited and indirect weight to information on exposure and health risks in determining BAT and more direct weight to the amount of emissions reduced. For example, in determining BAT for emission sources, the Agency relies on estimates of the total emissions reduced and on estimates of the average and incremental cost of reducing those emissions. However, the Agency recognizes that emission estimates alone can sometimes be poor measures of public health risks because they do not account for the carcinogenic potency or exposure potential of hazardous air pollutant emissions.

In order to more directly consider health risks, the Agency intends to change the approach for selecting the appropriate control levels in the final standard for coke by-product plants. The new approach the Agency would use in the final standard would combine the current two-step process into one step. In selecting the appropriate control technique, EPA would consider in one step the before- and after-control risks, the health risk reduction, and the economic and societal costs of achieving those risk reductions. The major change in this approach would be the greater consideration of public health risks over emission estimates in selecting controls.

EPA solicits comments on this intended approach.

Paperwork Reduction Act

An analysis of the burden associated with the reporting and recordkeeping requirements has been made. During the first 3 years of this regulation, the average annual burden of the reporting and recordkeeping requirements for the 42 existing coke by-product recovery plants would be about 3.3 person-years. The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1980, 44 U.S.C 3501 *et seq.* Comments on these requirements should be submitted to the Office of Information and Regulatory Affairs of OMB, marked "Attention: Desk Office for EPA." The final rule will respond to any OMB or public comments on the information collection requirements.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act (5 U.S.C. 601 et seq.) requires the EPA to consider the potential impacts of proposed regulations on small "entities." The guidelines for conducting a regulatory flexibility analysis define a small business as "any business concern which is independently owned and operated and not dominant in its field as defined by the Small Business Administration Regulations under Section 3 of the Small Business Act." For the purposes of this proposed regulation, small "entities" are considered to be small furnace and foundary coke firms that employ less than 1,000 workers.

A regulatory flexibility analysis indentifies up to six small foundary coke plants that could be affected by the proposed regulation. Present guidelines for the analysis require an estimate of the degree of economic impact on the firms in terms of: (1) the percent increase in the average total cost of producing coke as a result of the proposed standard, and (2) the total annual cost of control as a percentage of the firm's revenue. If the percent increase in the average total cost of producing coke is estimated as 5 percent or more, the impact of the proposed regulation is to be considered significant. If the total annual cost of control as a percentage of the firm's annual revenue is 10 percent greater for small firms than for large firms, the small firms are to be considered adversely impacted by the proposed standard.

None of the firms identified as small firms were found to have an average coke production cost increase greater than 5 percent. In addition, none of these plants exceeded the second criterion. In summary, no small plants would be adversely affected by the proposed standard. A further discussion of the regulatory flexibility analysis is provided in Chapter 9 of the background information document.

Public Hearing

A public hearing will be held to discuss the proposed standard for coke by-product recovery plants in accordance with sections 112(b)(1)(B) and 307(d)(5) of the Clean Air Act. Persons wishing to make oral presentations on the proposed standards for benzene emissions from coke by-product recovery plants should contact EPA at the address given in the ADDRESSES section of this preamble. Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement before, during, or within 75 days after the hearing. Written statements should be addressed to the Central Docket Section address given in the ADDRESSES section of this preamble and should refer to Docket Number A-79-16.

A verbatim transcript of the hearing and written statements will be available for public inspection and copying during normal working hours at EPA's Central Docket Section in Washington, D.C. (see ADDRESSES section of this preamble).

Docket

The docket is an organized and complete file of all the information submitted to, or otherwise considered by, EPA in the development of this proposed rulemaking. The principal purposes of the docket are: (1) To allow interested parties to effectively participate in the rulemaking process; and (2) to serve as the record in case of judicial review except for interagency review materials [307(d)(7)(A)]

Miscellaneous

In accordance with section 117 of the Act, publication of this proposal was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator will welcome comments on all aspects of the proposed regulation, including economic and technological issues.

Under Executive Order 12291, EPA is required to judge if a regulation is a "major rule" and, therefore, subject to certain requirements of the Executive

Order. The Agency has determined that this regulation would result in none of the adverse economic effects set forth in section 1 of the Executive Order as grounds for finding a regulation to be a "major rule." A savings in industry-wide annualized costs, resulting from benzene recovery credits, would be achieved by the proposed standard. For furnace coke producers, the impacts of the proposed standard would result in only a negligible price increase; the price of foundry coke is expected to increase by less than 1 percent. The Agency has also concluded that this rule is not "major" under any of the criteria established in the Executive Order. Therefore, the Agency has concluded that the proposed regulation is not a "major rule" under Executive Order 12291.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments from OMB to EPA and any EPA responses to those comments are available for inspection in Docket Number A-79-16, Central Docket Section, at the address given in the **ADDRESSES** section of this preamble.

Pursuant to the provisions of 5 U.S.C. 605(b), I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities.

List of Subjects in 40 CFR Part 61

Asbestos, Beryllium, Hazardous substances, Mercury, Reporting and recordkeeping requirements, Vinyl chloride

Dated: May 23, 1984.

William D. Ruckelshaus,

Administrator.

PART 61—[AMENDED]

It is proposed that Part 61 of Chapter I, Title 40, of the Code of Federal Regulations be amended by adding a new Subpart L, as follows:

Subpart L—National Emission Standard for Benzene Emissions From Coke By-Product Recovery Plants

Sec

61.130 Applicability and designation of sources.
61.131 Definitions.
61.132-1 Standards: General.
61.132-2 Standards: Process vessels, tar storage tanks, and tar-intercepting sumps.
61.132-3 Standards: Light-oil sumps.
61.132-4 Standards: Light-oil, benzene, and excess ammonia-liquor storage tanks.
61.132-5 Standards: Naphthalene processing.
61.132-6 Standards: Pumps.
61.132-7 Standards: Exhausters.
61.132-8 Standards: Pressure relief devices in gas/vapor service.
61.132-9 Standards: Sampling connection systems.
61.132-10 Standards: Open-ended valves or lines.
61.132-11 Standards: Valves.
61.132-12 Standards: Pressure relief devices in liquid service and flanges and other connectors.
61.132-13 Standards: Delay of repair for equipment leaks.
61.132-14 Standards: Closed vent systems and control devices for equipment leaks of benzene.
61.133-1 Alternative standards for valves in benzene service—allowable percentage of valves leaking.
61.133-2 Alternative standards for valves in benzene service—skip period leak detection and repair.
61.134 Alternative means of emission limitation.
61.135 Test methods and procedures.
61.136 Recordkeeping requirements.
61.137 Reporting requirements.

Authority: Secs. 112 and 301(a) of the Clean Air Act, as amended (42 U.S.C. 7412 and 7601(a)), and additional authority as noted below.

Subpart L—National Emission Standard for Benzene Emissions From Coke By-Product Recovery Plants

§ 61.130 Applicability and designation of sources.

(a)(1) The provisions of this subpart apply to each of the following sources in a coke by-product recovery plant: naphthalene processing and direct-water final-cooler cooling systems; tar decanters; tar-dwatering tanks; tar-intercepting sumps; flushing-liquor circulation tanks; light-oil sumps; light-oil condensers; light-oil decanters; wash-oil decanters; wash-oil circulation tanks; and each storage tank containing tar, light-oil, benzene, or excess ammonia-liquor.

(2) The provisions of this subpart also apply to each of the following sources in a coke by-product recovery plant that are intended to operate in benzene service: pumps, valves, exhausters, pressure relief devices, sampling connection systems, open-ended valves or lines, flanges and other connectors, and control devices or systems required by this subpart.

§ 61.131 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in Subpart A of Part 61, and the following terms shall have the specific meanings given them:

"Benzene storage tank" means any tank, reservoir, or other type container used to collect or store refined benzene.

"Closed-vent system" means a system that is not open to atmosphere and that is composed of piping, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device.

"Coke by-product recovery plant" means any facility designed and operated for the separation and recovery of coal tar derivatives (by-products) evolved from coal during the coking process of a coke oven battery.

"Connector" means flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment.

"Control device" means an enclosed combustion device, vapor recovery system, or flare.

"Double block and bleed system" means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

"Equipment" means each pump, valve, exhauster, pressure relief device, sampling connection system, open-ended valve or line, and flange or other connector in benzene service, and any devices or systems required by § 61.132-14.

"Excess ammonia-liquor storage tank" means any tank, reservoir, or other type container used to collect or store a flushing-liquor solution prior to ammonia or phenol recovery.

"First attempt at repair" means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere, using best practices.

"Flushing-liquor circulation tank" means any vessel that functions to store or contain flushing liquor that is separated from the tar in the tar decanter and is recirculated as the cooled liquor to the gas collection system.

"In benzene service" means a piece of equipment, other than an exhauster, that either contains or contacts a fluid (liquid or gas) that is at least 10 percent benzene by weight or any exhauster that either contains or contacts a fluid (liquid or gas) at least 1 percent benzene by weight as determined by the provisions of § 61.135(d). The provisions of § 61.135(d) also specify how to determine that a piece of equipment is not in benzene service.

"In gas/vapor service" means that a piece of equipment contains process fluid that is in the gaseous state at operating conditions.

"In vacuum service" means that a process unit (including associated equipment) is operating at an internal pressure that is at least 5 kilopascals (kPa) below ambient pressure.

"In VOC service" means, for the purposes of this subpart, that: (1) The piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight: and (2) the piece of equipment is not in light liquid service as defined in 40 CFR 60.481. See 40 CFR 60.2 for the definition of volatile organic compound or "VOC" and 40 CFR 60.485(d) to determine whether a piece of equipment is not in VOC service.

"In-situ sampling systems" means nonextractive samplers or in-line samplers.

"Light-oil condenser" means any vessel, tank, or other type device in the light-oil recovery operation that functions to condense benzene-containing vapors.

"Light-oil decanter" means any vessel, tank, or other type device in the light-oil recovery operation that functions to separate light oil from the coke oven gas process stream. A light-oil decanter may also be known as a light-oil separator.

"Light-oil storage tank" means any vessel, tank, reservoir, or other type of container used to collect or store crude light oil or light-oil fractions such as benzene-toluene-xylene (BTX) mixtures.

"Light-oil sump" means any tank, pit, enclosure, or slop tank in light-oil recovery operations that functions as a wastewater separation device to recover hydrocarbon liquids from the surface of the water.

"Mixer-settler" means a tank containing tar that is inserted into the final cooling process of a direct-water final cooler system that serves to remove naphthalene from the direct-contact water.

"Naphthalene processing" means any operations required to recover naphthalene from a direct-water final cooler, including the separation, refining, drying, handling, and transporting of crude or refined naphthalene.

"Open-ended valve or line" means any valve, except pressure relief devices, having one side of the valve seat in contact with process fluid and one side open to atmosphere, either directly or through open piping.

"Pressure release" means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

"Process unit" means each group of process vessels and equipment assembled to produce, as intermediate or final products, any by-product evolved from coal in a coke by-product recovery plant (e.g., the light-oil plant). A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient product storage facilities.

"Process unit shutdown" means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

"Process vessel" means each tar decanter, flushing-liquor circulation tank, light-oil condenser, light-oil decanter, wash-oil decanter, or wash-oil circulation tank.

"Quarter" means a 3-month period, the first quarter concludes on the last day of the last full month during the 180 days following startup for new sources; the first quarter concludes on the last day of the last full month during the 180 days after (date of publication of final rule in Federal Register) for existing sources.

"Repaired" means that a source is adjusted or otherwise altered in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, instrument reading of 500 ppm or greater above a background concentration, indication of liquids dripping, or indication by a sensor that a seal system or barrier fluid system has failed.

"Semiannual" means a 6-month period; the first semiannual period concludes on the last day of the last full month during the 180 days following initial startup for new sources; and the first semiannual period concludes on the last day of the last full month during the 180 days after (date of publication of final rule in Federal Register) for existing sources.

"Sensor" means a device that measures a physical quantity or the change in a physical quantity, such as temperature, pressure, flow rate, pH, or liquid level.

"Tar decanter" means any vessel, tank, or other type container that functions to separate heavy tar and sludge from flushing liquor by means of gravity, heat, or chemical emulsion breakers. A tar decanter may also be known as a flusing-liquor decanter.

"Tar storage tank" means any vessel, tank, reservoir, or other type container used to collect or store crude tar or tar-entrained maphthalene except for tar products obtained by distillation, such as coal tar pitch, creosotes, or carbolic oil. This definition also includes any vessel, tank, reservoir, or other type container used to reduce the water content of the tar by means of heat, residence time, chemical emulsion breakers, or centrifugal separation. A tar storage tank may also be known as a tar-dewatering tank.

"Tar-intercepting sump" means any tank, pit, or enclosure that serves to separate light tars and aqueous condensate received from the primary cooler. A tar-intercepting sump may also be known as a primary-cooler decanter.

"Wash-oil circulation tank" means any vessel that functions to hold the wash oil used in light oil recovery operations or the wash oil used in the wash-oil final cooler.

"Wash-oil decanter" means any vessel that functions to separate, by gravity, the condensed water from the wash oil received from a wash-oil final cooler or from a light-oil scrubber.

§ 61.132-1 Standards: General.

(a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of § 61.132 for each new and existing source, except as provided in § 61.133 and § 61.134.

(b) Compliance with this subpart will be determined by review of records, review of performance test results, and inspection using the methods and procedures specified in § 61.135.

(c)(1) An owner or operator may request permission to use an alternative means of emission limitation to meet the requirements of §§ 61.132-2, 61.132-3, 61.132-6, 61.132-7, 61.132-9, 61.132-10, 61.132-11, 61.132-12, 61.132-13, and 61.132-14. Permission to use an alternative means of emission limitation may be requested as specified in § 61.134.

(2) If the Administrator permits the use of an alternative means of emission limitation to meet the requirements of §§ 61.132-2, 61.132-3, 61.132-6, 61.132-7, 61.132-9, 61.132-10, 61.132-11, 61.132-12, 61.132-13, or 61.132-14, an owner or operator shall comply with the conditions of that permission.

(d) Each piece of equipment in benzene service to which this subpart applies shall be marked in such a manner that it can be distinguished readily from other pieces of equipment in benzene service.

(e) Equipment that is in vacuum service is excluded from the requirements of this subpart if it is identified as required in § 61.136(h)(5).

(f) At all times, owners and operators shall, to the extent practicable, maintain and operate any source including associated air pollution control equipment, according to good air pollution control practice for minimizing emissions. Determining whether

acceptable operating and maintenance procedures are used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source.

§ 61.132-2 Standards: Process vessels, tar storage tanks, and tar intercepting sumps.

(a)(1) Each owner or operator shall enclose and seal all openings on each process vessel, tar storage tank, and tar intercepting sump.

(2) The owner or operator shall duct gases from each source to the gas collection system, gas distribution system, or other enclosed point in the by-product recovery process where the benzene in the gas will be recovered or destroyed. This control system shall be designed and operated for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified in § 61.135(c). This system can be designed as a closed, positive-pressure, gas blanketing system.

(i) Except, the owner or operator may elect to install, operate, and maintain a pressure relief device, vacuum relief device, an access hatch, and a sampling port on each source. Each access hatch and sampling port must be equipped with a gasket and a cover, seal, or lid that must be kept in a closed position at all times, unless in actual use, and

(ii) The owner or operator may elect to leave open to the atmosphere the portion of the liquid surface in each tar decanter necessary to permit operation of a sludge conveyor. If the owner or operator elects to maintain an opening on part of the liquid surface of the decanter,the owner or operator shall install, operate, and maintain a water seal on the tar decanter roof near the sludge discharge chute to ensure enclosure of the major portion of the liquid surface not necessary for the operation of the sludge conveyor.

(b) Following the installation of any control equipment used to meet the requirements of paragraph (a) of this section, the owner or operator shall monitor semiannually the connections and seals on each control system to determine if it is operating with no detectable emissions, using Reference Method 21 (40 CFR Part 60, Appendix A) and procedures specified under § 61.135(c) of this subpart. The owner or operator shall also conduct semiannually a visual inspection of each source (including sealing materials) and the ductwork of the control system for evidence of visible defects such as gaps or tears.

(1) If an instrument reading indicates an organic chemical concentration more than 500 ppm above a background concentration, as measured by Reference Method 21, a leak is detected.

(2) If visible defects such as gaps in sealing materials are observed during a visual inspection, a leak is detected.

(3) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after it is detected.

(4) A first attempt at repair of any leak or visible defect shall be made no later than 5 calendar days after each leak is detected.

(c) Following the installation of any control system used to meet the requirements of paragraph (a) of this section, the owner or operator shall conduct a maintenance inspection of the control system on an annual basis for evidence of system abnormalities, such as blocked or plugged lines, sticking valves, plugged condensate traps, and other maintenance defects that could result in abnormal system operation. The owner or operator shall make a first attempt at repair within 5 days, with repair within 15 days of detection. If a system blockage occurs at any time, the owner or operator shall conduct an inspection and perform any necessary repairs immediately upon detection.

§ 61.132-3 Standards: Light-oil sumps.

(a) Each owner or operator of a light-oil sump shall enclose and seal the liquid surface in the sump to form a closed system to contain the emissions.

(1) Except, the owner or operator may elect to install, operate, and maintain a vent on the light-oil sump cover. Each vent pipe must be equipped with a water leg sea, a pressure relief device, or vaccum relief device; and

(2) The owner or operator may elect to install, operate, and maintain an access hatch on each sump cover. Each access hatch must be equipped with a gasket and a cover, seal, or lid that must be kept in a closed position at all times, unless in actual use.

(3) The sump cover may be removed for periodic maintenance but must be replaced (with seal) at completion of the maintenance operation.

(b) The venting of steam or other gases from the by-product process to the light-oil sump is not permitted.

(c) Following the installation of any control equipment used to meet the requirements of paragraph (a) of this section, the owner or operator shall monitor semiannually the connections and seals on each control system to determine if it is operating with no detectable emissions, using Reference Method 21 (40 CFR Part 60, Appendix A) and the procedures specified under § 61.135(c) of this subpart. The owner or operator shall also conduct on a semiannual basis a visual inspection of each source (including sealing materials) and the ductwork of the control system for evidence of visible defects such as gaps or tears.

(1) If an instrument reading indicates an organic chemical concentration more than 500 ppm above a background concentration, as measured by Reference Method 21, a leak is detected.

(2) If visible defects such as gaps in sealing materials are observed during a visual inspection, a leak is detected.

(3) When a leak is detected, it shall be repaired as soon as practicable , but not later than 15 calendar days after it is detected.

(4) A first attempt at repair of any leak or visible defect shall be made no later than 5 calendar days after each leak is detected.

§ 61.132-4 Standards: Light-oil, benzene, and excess ammonia-liquor storage tanks.

(a)(1) Each storage tank containing light-oil benzene, or excess ammonia-liquor shalll be equipped with a control device designed and operated to achieve a 90-percent benzene control efficiency.

(2) Each owner or operator shall enclose and seal all openings on each tank; the gases from each tank shall be ducted to the control device used to achieve compliance with paragraph (a)(1) of this section.

(3) The owner or operator may elect to install, operate, and maintain a pressure relief device, vacuum relief device, an access hatch, and a sampling port on each tank. Each access hatch and sampling port must be equipped with a gasket and a cover, seal, or lid that must be kept in a closed position at all times, unless in actual use.

(b) Following the installation of any control equipment used to meet the requirements of paragraph (a) of this section, the owner or operator shall monitor semiannually the connections and seals on each tank to determine if the control system is operating with no detectable emissions, using Reference Method 21 (40 CFR Part 60, Appendix A) and procedures specified under § 61.135(c) of this subpart. The owner or operator shall also conduct semiannually a visual inspection of each tank (including sealing meterials) and the ductwork to the control device for evidence of visible defects such as gaps or tears.

(1) If an instrument reading indicates an organic chemical concentration more

than 500 ppm above a background concentration, as measured by Reference Method 21, a leak is detected.

(2) If visible defects such as gaps in sealing materials are observed during a visual inspection, a leak is detected.

(3) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected.

(4) A first attempt at repair of any leak or visible defect shall be made no later than 5 calendar days after each leak is detected.

(c) Following the installation of any control device (or control system) used to meet the requirements of paragraph (a) of this section, the owner or operator shall conduct a maintenance inspection of the connections and seals on each tank and ductwork to the control device on an annual basis for evidence of system abnormalities, such as blocked or plugged lines, sticking valves, plugged condensate traps, and other maintenance defects that could result in abnormal system operation. The owner or operator shall make a first attempt at repair within 5 days, with repair within 15 days of detection. If a system blockage occurs at any time, the owner or operator shall conduct an inspection and perform any necessary repairs immediately upon detection.

(d)(1) The owner or operator shall monitor parameters that indicate proper operation of the control device to ensure that the device is operated and maintained in conformance with the design. The selection of monitoring parameters is subject to approval by the Administrator.

(2) If a wash-oil scrubber is used as the control device, the owner or operator shall install, operate calibrate, and maintain a device to monitor and record the wash-oil flow rate, the temperature of the gases exiting the scrubber, and the pressure of the wash oil at the scrubber spray nozzle.

(e) The ducting of gases (e.g., coke oven gas, natural gas or nitrogen used as a blanketing agent) from a storage tank to the gas collection system, gas distribution system, or another enclosed point in the by-product recovery process where the benzene in the gas will be recovered or destroyed is permitted for compliance with the standard specified in paragraph (a) of this section.

(f) An owner or operator ducting gases from a tank in the manner described in paragraph (e) of this section shall comply with all requirements specified in § 61.132-2, including leak detection and repair provisions.

(g) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any source, including associated air pollution control equipment, according to good air pollution control practice for minimizing emissions. Determining whether acceptable operating and maintainace procedures are used will be based on information available to the Administrator that may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the source.

§ 61.132-5 Naphthalene processing.

(a) No ("zero") emissions are allowed from naphthalene processing.

(b) The emission limit specified in paragraph (a) of this section is not applicable if a mixer-settler is used to separate naphthalene from the water of a direct-water final cooler by tar or another organic liquid.

(c) If a mixer-settler is used to separate naphthalene from the water of a direct-water final cooler, the mixer-settler is subject to all requirements specified in § 61.132-2 for process vessels, including leak detection and repair provisions.

§ 61.132-6 Standards: Pumps.

(a)(1) Each pump shall be monitored monthly to detect leaks by the methods specified in § 61.135(b), except as provided in § 61.132-1(c) and paragraphs (d), (e), and (f) of this section.

(2) Each pump shall be checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seal.

(b)(1) if an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(2) If there are indications of liquids dripping from the pump seal, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.132-13.

(2) A first attempt to repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a) of this section provided the following requirements are met:

(1) Each dual mechanical seal system is:

(i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or

(ii) Equipped with a barrier fluid degassing reservoir that is connected by a closed-vent system to a control device that complies with the requirements of § 61.132-14; or

(iii) Equipped with a system that purges the barrier fluid into a process stream with zero benzene emissions to the atmosphere.

(2) The barrier fluid system is not in benzene service and if the pump is covered by the standards in 40 CFR Part 60, subpart VV, it is not in VOC service.

(3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.

(4) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.

(5)(i) Each sensor as described in paragraph (d)(3) of this section is checked daily or is equipped with an audible alarm, and

(ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.

(6)(i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both, based on the criteria determined in paragraph (d)(5)(ii) of this section, a leak is detected.

(ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.132-13.

(iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) Any pump that is designated, as described in § 61.136(h)(2) for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump:

(1) Has no externally actuated shaft penetrating the pump housing,

(2) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in § 61.135(c), and

(3) Is tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.

(f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a control device that complies with the requirements of § 61.132-14, it is exempt from the

requirements of paragraphs (a)–(c) of this section.

§ 61.132-7 Standards: Exhausters.

(a) Each exhauster shall be monitored quarterly to detect leaks by the methods specified in § 61.135 except as provided in § 61.132-1(c) and paragraphs (d)–(f) of this section.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.132-13. A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) Each exhauster equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluids to atmosphere is exempt from the requirements of paragraphs (a) and (b) of this section provided the following requirements are met:

(1) Each exhauster seal system is:

(i) Operated with the barrier fluid at a pressure that is greater than the exhauster stuffing box pressure; or

(ii) Equipped with a barrier fluid system that is connected by a closed vent system to a control device that complies with the requirements of § 61.132-14; or

(iii) Equipped with a system that purges the barrier fluid into a process stream with zero benzene emissions to the atmosphere.

(2) The barrier fluid system is not in benzene service and if the exhauster is covered by standards in 40 CFR Part 60, Subpart VV, it is not in VOC service.

(3) Each barrier fluid system shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.

(4)(i) Each sensor as described in paragraph (d) of this section shall be checked daily or shall be equipped with an audible alarm.

(ii) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both

(5) If the sensor indicates failure of the seal system, the barrier system, both based on the criterion determined under paragraph (d)(4)(ii) of this section, a leak is detected.

(6)(i) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.132-13

(ii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(e) An exhauster is exempt from the requirements of paragraphs (a) and (b) of this section if it is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a control device and that complies with the requirements of § 61.132-14, except as provided in paragraph (f) of this section

(f) Any exhauster that is designated, as described in § 61.136(i)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a)-(e) of this section if the exhauster:

(1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in § 61.135(c); and

(2) Is tested for compliance with paragraoh (f)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.

§ 61.132-8 (Standards: Pressure relief devices in gas/vapor service.

(a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above backgroud, as measured by the methods specified in § 61.135(c).

(b)(1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as soon as practicable, but no later than 5 calendar days after each pressure release.

(2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in § 61.135(c).

(c) Any pressure relief device that is equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in § 61.132-14 is exempt from the requirements of paragraphs (a) and (b). of this section

§ 61.132-9 Standards; Sampling connection systems

(a) Each sampling connection system shall be equipped with a closed purge system or closed vent system, except as provided in § 61.132-1(c).

(b) Each closed purge or closed vent system as required in paragraph (a) shall:

(1) Return the purged process fluid directly to the process line with zero benzene emissions to the atmosphere; or

(2) Collect and recycle the purged process fluid with zero benzene emissions to the atmosphere; or

(3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of § 61.132-14.

(c) In-situ sampling systems are exempt from paragraphs (a) and (b) of this section.

§ 61.132-10 Standards: Open-ended valves or lines.

(a)(1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in § 61.132-1(c).

(2) The cap, blind flange, plug, or second valve seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.

(b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.

(c) When a double block and bleed system is used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) of this section at all other times.

§ 61.132-11 Standards: Valves.

(a) Each valve shall be monitored monthly to detect leaks by the methods specified in § 61.135(b) and shall comply with paragraphs (b)-(e) of this section, except as provided in paragraphs (f), (g), and (h) of this section. § 61.132-1(c), and § 61.133-1 or § 61.133-2.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.

(2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.

(d)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected, except as provided in § 61.132-13.

(2) A first attempt at repair shall be made no later than 5 calandar days after each leak is detected.

(e) First attempts at repair include, but are not limited to, the followng best practices where practicable:

(1) Tightening of bonnet bolts;

(2) Replacement of bonnet bolts;

(3) Tightening of packing gland nuts;

(4) Injection of lubricant into lubricated packing.

(f) Any valve that is designated, as described in § 61.136 (1)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) of this section if the valve:

(1) Has no external actuating mechanism in contact with the process fluid,

(2) Is operated with emissions less than 500 ppm above background, as determined by the method specified in § 61.135(c), and

(3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.

(g) Any valve that is designated, as described in § 61.136(i)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section, and

(2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.

(h) Any valve that is designated, as described in § 61.136(i)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) of this section if:

(1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more then 2 meters above a support surface.

(2) The equipment within which the valve is located is an existing process unit, and

(3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 61.132-12 Standards: Pressure relief devices in liquid service and flanges and other connectors.

(a) Pressure relief devices in liquid service and flanges and other connectors shall be monitored within 5 days by the method specified in § 61.135(b) if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method.

(b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(c)(1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in § 61.132-13.

(2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

(d) First attempts at repair include, but are not limited to, the best practices described under § 61.132-11(e).

§ 61.132-13 Standards: Delay of repair for equipment leaks.

(a) Delay of repair of equipment for which leaks have been detected will be allowed if the repair is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.

(b) Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in benzene service.

(c) Delay of repair for valves will be allowed if:

(1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and

(2) When repair procedures are effected, the purged material is collected and destroyed in a control device complying with § 61.132-14.

(d) Delay of repair for pumps will be allowed if:

(1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(e) Delay of repair for exhausters will be allowed if:

(1) Repair requires the use of a seal system that includes a barrier fluid system, and

(2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.

(f) Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

§ 61.132-14 Standards: Closed vent systems and control devices for equipment leaks of benzene.

(a) Owners or operators of closed vent systems and control devices used to comply with the provisions of § 61.132-6 (d) or (f), § 61.132-7 (d) or (e), § 61.132-8(c), or § 61.132-9(b) shall comply with the provisions of this section.

(b) Vapor recovery systems (for example, condensors and adsorbers) shall be designed and operated to recover the benzene vapors vented to them with an efficiency of 95 percent or greater.

(c) Enclosed combustion devices shall be designed and operated to reduce the benzene emissions vented to them with an efficiency of 95 percent or greater or to provide a minimum residence time of 0.50 seconds at a minimum temperature of 760° C.

(d)(1) Flares shall be designed for and operated with no visible emissions as determined by the methods specified in § 61.135(e) except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

(2) Flares shall operate with a flame present at all times, as determined by the methods specified in § 61.135(e).

(3) Flares shall be used only with the net heating value of the gas being combusted being 11.2 MJ/scm (300 Btu/scf) or greater if the flare is steam-assisted or air-assisted; or with the net heating value of the gas being combusted being 7.45 MJ/scm or greater if the flare in nonassisted. The net heating value of the gas being combusted shall be determined by the methods specified in § 61.135(e).

(4) Steam-assisted and nonassisted flares shall be designed for and operated with an exit velocity, as determined by the method specified in § 61.135(e)(4), less than 18 m/sec (60 ft/sec).

(5) Air-assisted flares shall be designed and operated with an exit velocity less than the velocity, V_{max}, as determined by the method specified in § 61.135(e)(5).

(6) Flares used to comply with this subpart shall be steam-assisted, air-assisted, or nonassisted.

(e) Owners or operators of control devices that are used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their design.

(f)(1) Closed-vent systems shall be designed for and operated with no

detectable emissions, as indicated by an instrument reading of less than 500 ppm above background and by visual inspections, as determined by the methods specified in § 61.135(c).

(2) Closed-vent systems shall be monitored to determine compliance with this section initially in accordance with § 61.05, annually, and at other times requested by the Administrator.

(3) Leaks, as indicatd by an instrument reading greater than 500 ppm above background or by visual inspections, shall be repaired as soon as practicable, but not later than 15 calendar days after the leak is detected.

(4) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

(g) Closed-vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 61.133 Alternative standards for valves in benzene service—allowable percentage of valves leaking.

(a) An owner or operator may elect to comply with an allowable percentage of valves leaking of equal to or less than 2.0 percent.

(b) The following requirements shall be met if an owner or operator wishes to comply with an allowable percentage of valves leaking:

(1) An owner or operator must notify the Administrator that the owner or operator has elected to comply with the allowable percentage of valves leaking before implementing this alternative standard, as specified in § 61.137(d).

(2) A performance test as specified in paragraph (c) of this section shall be conducted initially upon designation, annually, and at other times requested by the Administrator.

(3) If a valve leak is detected, it must be repaired in accordance with § 61.132-11 (d) and (e).

(c) Performance tests shall be conducted in the following manner:

(1) All valves in benzene service within the coke by-product recovery plant shall be monitored within 1 week by the methods specified in § 61.135(b).

(2) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

(3) The leak percentage shall be determined by dividing the number of valves in benzene service for which leaks are detected by the number of valves in benzene service within the coke by-product recovery plant.

(d) Owners or operators who elect to comply with this alternative standard shall not operate valves in benzene service with a leak percentage greater than 2.0 percent.

(e) If an owner or opeator decides to no longer comply with § 61.133-1, the owner or operator must notify the Administrator in writing that the work practice standard described in § 61.132-11 (a)-(e) will be followed.

§ 61.133-2 Alternative standards for valves in benzene service—skip period leak detection and repair.

(a)(1) An owner or operator may elect to comply with one of the alternative work practices specified in paragraphs (b) (2) and (3) of this section.

(2) An owner or operator must notify the Administrator before implementing one of the alternative work practices, as specified in § 61.137(d).

(b)(1) An owner or operator shall comply initially with the requirements for valves, as described in § 61.132-11.

(2) After 2 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 1 of the quarterly leak detection periods for the valves in benzene service.

(3) After 5 consecutive quarterly leak detection periods with the percentage of valves leaking equal to or less than 2.0, an owner or operator may begin to skip 3 of the quarterly leak detection periods for the valves in benzene service.

(4) If the percentage of valves leaking is greater than 2.0, the owner or operator shall comply with the requirements as described in § 61.137 but can again elect to use this section.

§ 61.134 Alternative means of emission limitation.

(a) Permission to use an alternative means of emission limitation under Section 112(e)(3) of the Clean Air Act shall be governed by the following procedures.

(b) For equipment, design, and operational requirements of this subpart:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data to demonstrate equivalence of a means of emission limitation.

(2) The Administrator will compare test data for the means of emission limitation to test data for the equipment, design, and operational requirements.

(3) For sources subject to § 61.132-2 (except tar decanters), §§ 61.132-3, 61.132-4(e), and 61.132-5(c), the Administrator shall compare test data for the means of emission limitation to a benzene control efficiency of 98 percent. For tar decanters, the Administrator shall compare test data for the means of emission limitation to a benzene control efficiency of 95 percent.

(4) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the equipment, design, and operational requirements.

(c) For work practices in this subpart:

(1) Each owner or operator applying for permission shall be responsible for collecting and verifying test data to demonstrate equivalence of means of emission limitation.

(2) For each source for which permission is requested, the emission reduction achieved by the required work practices shall be demonstrated for a minimum period of 12 months.

(3) For each source for which permission is requested, the emission reduction achieved by the equivalent means of emission limitation shall be demonstrated.

(4) Each owner or operator applying for permission shall commit in writing each source to work practices that provide for emission reductions equal to or greater than the emission reductions achieved by the required work practice.

(5) The Administrator will compare the demonstrated emission reduction for the equivalent means of emission limitation to the demonstrated emission reduction for the required work practices and will consider the commitment in paragraph (c)(4) of this section.

(6) The Administrator may condition the permission on requirements that may be necessary to assure operation and maintenance to achieve the same emission reduction as the required work practices of this subpart.

(d) An owner or operator may offer a unique approach to demonstrate the equivalence of any means of emission limitation.

(e)(1) Manufacturers of equipment used to control equipment leaks of benzene may apply to the Administrator for permission to use an alternative means of emission limitation that achieves a reduction in emissions of benzene achieved by the equipment, design, and operational requirements of this subpart.

(2) The Administrator will grant permission according to the provisions of paragraphs (b), (c), and (d) of this section.

§ 61.135 Test methods and procedures.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the test method and procedure requirements provided in this section.

(b) Monitoring, as required by §§ 61.132, 61.133, and 61.134, shall comply with the following requirements.

(1) Monitoring shall comply with 40 CFR Part 60, Appendix A, Reference Method 21.

(2) The detection instrument shall meet the performance criteria of Reference Method 21.

(3) The instrument shall be calibrated before use on each day of its use by the procedures specified in Reference Method 21.

(4) Calibration gases shall be:

(i) Zero air (less than 10 ppm of hydrocarbon in air); and

(ii) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.

(5) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible, as described in Reference Method 21.

(c) When equipment is tested for compliance with no detectable emissions, as required in §§ 61.132-2, 61.132-3, 61.132-4(b), 61.132-4(f), 61.132-5(c), 61.132-6(e), 61.132-7(f), 61.132-8, 61.132-11(f), and 61.132-14(f), the test shall comply with the following requriements:

(1) The requirements of paragraphs (b)(1)-(4) of this section shall apply.

(2) The background level shall be determined, as set forth in Reference Method 21.

(3) The instrument probe shall be traversed around all potential leak interfaces as close to the interface as possible, as described in Reference Method 21.

(4) The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.

(d)(1) Each piece of equipment within a coke-by-product recovery plant is presumed to be in benzene service unless an owner or operator demonstrates that the piece of equipment is not in benzene service. For a piece of equipment to be considered not in benzene serivce, it must be determined that the percent benzene content can be reasonably expected never to exceed 10 percent by weight (for equipment other than exhausters), or 1 percent by weight for exhausters. For purposes of determining the percent benzene content of the process fluid that is contained in or contacts equipment, procedures that conform to the methods described in ASTM Method D-2267 (incorporated by reference as specified in § 61.18) shall be used.

(2)(i) An owner or operator may use engineering judgment rather than the procedures in paragraph (d)(1) of this section to demonstrate that the percent benzene content does not exceed 10 percent by weight for equipment other than exhausters, or 1 percent by weight for exhausters, provided that the engineering judgment demonstrates that the benzene content clearly does not exceed 10 percent by weight for equipment other than exhausters, or 1 percent by weight for exhausters. When an owner or operator and the Administrator do not agree on whether a piece of equipment is not in benzene service, however, the procedures in paragraph (d)(1) of this section shall be used to resolve the disagreement.

(ii) If an owner or operator determines that a piece of equipment is in benzene service, the determination can be revised only after following the procedures in paragraph (d)(1) of this section.

(3) Samples used in determining the percent benzene content shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.

(e)(1) Reference Method 22 of 40 CFR Part 60 shall be used to determine the compliance of flares with the visible emission provisons of this subpart.

(2) The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

(3) The net heating value of the gas being combusted in a flare shall be calculated using the following equation:

$$H_T = K\left(\sum_{i=1}^{n} C_i H_i\right)$$

where:

H_T = Net heating value of the sample, MJ/scm; where the net enthalpy per mole of offgas is based on combustion at 25° C and 760 mm Hg, but the standard temperature for determining the volume corresponding to one mole is 20° C.

K = Constant, 1.740×10^{7} (1/ppm) (g mole/scm) (MJ/kcal), where standard temperature for (g mole/scm) is 20° C.

C_i = Concentration of sample component i in ppm, as measured by Referrence Method 18 of Appendix A of 40 CFR Part 60 and ASTM D2504-67 (reapproved 1977) (incorporated by reference as specified in § 61.18).

H_i = Net heat of combustion of sample component i, kcal/g mole. The heats of combustion may be determined using ASTM D2382-76 (incorporated by reference as specified in § 61.18) if published values are not available or cannot be calculated.

(4) the actual exit velocity of a flare shall be determined by dividing the volumetric flowrate (in units of standard temperature and pressure), as determined by Reference Method 2, 2A, or 2C of 40 CFR Part 60, as appropriate, by the unobstructed (free) cross sectional area of the flare tip.

(5) The maximum permitted velocity, V_{max}, for air-assisted flares shall be determined by the following equation:

$$V_{max} = 8.76 + 0.7084(H_T)$$

V_{max} = Maximum permitted velocity, m/sec.

8.706 = Constant.

0.7084 = Constant.

H_T = The net heating value as determined in paragraph (e)(3) of this section.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

§ 61.136 Recordkeeping requirements.

(a)(1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.

(2) An owner or operator may comply with the recordkeeping requirements in one recordkeeping system if the system identifies each record by each source.

(b) The following information pertaining to the design requirements of control equipment installed to comply with §§ 61.132-2, 61.132-3, 61.132-4, and 61.132-5 shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3)(i) For any control device used to comply with § 61.132-4, the recorded design specifications shall include any parameters that are necessary to determine proper operation and maintenance of the control device.

(ii) For a wash-oil scrubber, the design parameters include the wash-oil flow rate, the temperature of the gases existing the scrubber, and the pressure at the scrubber spray nozzle.

(c) The following information pertaining to process vessels subject to § 61.132-2, light-oil sumps subject to § 61.132-3, storage tanks subject to §61.132-4(b) or § 61.132-4(f), or mixer-settlers used to comply with § 61.132-5(c) shall be recorded and maintained for 2 years following each semiannual inspection; each annual maintenance inspection, and any other inspections for system blockage:

(1) The date of the inspection and the name of the inspector.

(2) A brief description of each visible defect in the source or control equipment and the method and date of repair of the defect.

(3) The presence of a leak, as measured using the method described in 61.135(b). The record shall include the method and date of repair of the leak.

(4) A brief description of any system abnormalities found during the annual maintenance inspection, the repairs made, and the date of repairs.

(5) A brief description of any system blockage, the repairs made, and the date of repair.

(d) The following information pertaining to any control device used to comply with § 61.132-4 shall be recorded and kept for a least 2 years:

(1) The dates when the control device was not operating as designed.

(2) The dates and description of any maintenance or repair of the control device.

(3) Any parameters monitored to ensure that control devices are operated and maintained in conformance with their design.

(4) If a wash-oil scrubber is used to comply with § 61.132-4, the records of the wash-oil flow rate, the temperature of the gases exiting the scrubber, and the pressure at the spray nozzle.

(e) When each leak is detected as specified in § 61.132-6, 61.132-7, 61.132-11 and 61.132-12, the following requirements apply:

(1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.

(2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in § 61.132-11(c) and no leak has been detected during those 2 months.

(3) The identification on equipment except on a valve, may be removed after it has been repaired.

(f) When each leak is detected as specified in § 61.132-6, 61.132-7, 61.132-11, and 61.132-12, the following information shall be recorded in a log, and shall be kept for 2 years in a readily accessible location:

(1) The instrument and operator identification numbers and the equipment identification number.

(2) The date the leak was detected and the dates of each attempt to repair the leak.

(3) Repair methods applied in each attempt to repair the leak.

(4) "Above 10,000" if the maximum instrument reading measured by the methods specified in 61.135(b) after each repair attempt is equal to or greater than 10,000 ppm.

(5) "Repair delayed" and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.

(6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.

(7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.

(8) Dates of process unit shutdown that occur while the equipment is unrepaired.

(9) The date of successful repair of the leak.

(g) The following information pertaining to the design requirements for closed vent systems and control devices described in § 61.132-14 shall be recorded and kept in a readily accessible location:

(1) Detailed schematics, design specifications, and piping and instrumentation diagrams.

(2) The dates and descriptions of any changes in the design specifications.

(3) A description of the parameter or parameters monitored, as required in § 61.132-14(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.

(4) Periods when the closed-vent systems and control devices required in § 61.132-6, 61.132-8, and 61.132-9, are not operated as designed, including periods when a flare pilot light does not have a flame.

(5) Dates of startups and shutdowns of the closed vent systems and control devices required in § 61.132-6, 61.132-7, 61.132-8, and 61.132-9.

(h) The following informatio pertaining to all equipment subject to the requirements in §§ 61.132-6 to 61-132-14 shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for equipment subject to the requirements of this subpart.

(2)(i) A list of identification numbers for equipment that the owner or operator elects to designate for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, under the provisions of §§ 61.132-6)e), 61.132-7(f), 61.132-8, or 61.132-11(f).

(ii) The designation of equipment as subject to the requirements of §§ 61.132-6(e), 61.132-7(f), 61.132-8, and 61.132-11(f) shall be signed by the owner or operator.

(3) A list of equipment identification number for pressure relief devices required to comply with § 61.132-8(a).

(4)(i) The dates of each compliance test as required in §§ 61.132-6(e), 61.132-7(f), 61.132-8, and 61.132-11(f).

(ii) The background level measured during each compliance test.

(iii) The maximum instrument reading measured at the equipment during each compliance test.

(5) A list of identification numbers for equipment in vacuum service.

(i) The following information pertaining to all valves subject to the requirements of 61.132-11 (g) and (h) shall be recorded in a log that is kept in a readily accessible location:

(1) A list of identification numbers for valves that are designated as unsafe-to-monitor, an explanation for each valve stating why the valve is unsafe-to-monitor, and the plan for monitoring each valve.

(2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation of each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.

(j) The following information shall be recorded for valves complying with § 61.133-2:

(1) A schedule of monitoring.

(2) The percent of valves found leaking during each monitoring period.

(k) The following information shall be recorded in a log that is kept in a readily accessible location:

(1) Design criterion required in § 61.132(d)(5) and 61.132-7)e)(2) and an explanation of the design criterion: and

(2) Any changes to this criterion and the reasons for the changes.

(l) Information and data used to demonstrate that price of equipment is not in benzene service shall be recorded in a log that is kept in a readily accessible location.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7114)

§ 61.137 Reporting requirements.

(a)(1) An owner or operator of any source to which this subpart applies shall submit a statement in writing notifying the Administrator that the requirements of 61.132, 61.133, 61.135, 61.136, and 61-137 are being implemented.

(2) In the case of an existing source or a new source which has an initial startup date preceding the effective date, the statement is to be submitted within 90 days of the effective date, unless a waiver of compliance is granted under § 61.11, along with the information required under § 61.10. If a waiver of compliance is granted, the statement is to be submitted on a date scheduled by the Administrator.

(3) In the case of new sources that did not have an initial startup date preceding the effective date, the

statement shall be submitted with the application for approval of construction, as described under § 61.07.

(4) The statement is to contain the following information for each source:

(i) Type of source (for example, a light-oil sump, benzene storage tank, or pump).

(ii) For equipment in benzene service, equipment identification number and process unit identification.

(iii) For equipment in benzene service, percent by weight benzene in the fluid at the equipment.

(iv) For equipment in benzene service, process fluid state in the equipment (gas/vapor or liquid).

(v) Method of compliance with the standard (for example, "gas blanketing," "use of a tar-bottom final cooler," "monthly leak detection and repair," or "equipped with dual mechanical seals").

(b) A report shall be submitted to the Administrator semiannually starting 6 months after the initial report required in § 61.137(a), which includes the following information:

(1) For process vessels subject to § 61.132-2, light-oil sumps subject to § 61.132-3, storage tanks subject to § 61.132-4, or mixer-settlers used to comply with § 61.132-5(c):

(i) A brief description of any visible defect in the source or ductwork.

(ii) The number of leaks detected and repaired.

(iii) A brief description of any system abnormalities found during the annual maintenance inspection, the repairs made, and the date of repair; and

(iv) A brief description of any system blockages or malfunctions, the repairs made, and the date of repair.

(2) If a control device is used to comply with § 61.132-4(a), the date and time of any occurrence when the monitored parameters exceed or drop below the parameter levels determined in the design specifications.

(3) If a wash-oil scrubber is used to comply with § 61.132-4(a), the date and time of any occurrence when the wash-oil flow rate or the pressure at the scrubber spray nozzle drop below the parameter levels determined in the design specifications, or the temperature of the gases exiting the scrubber exceeds the design specification temperature.

(4) For equipment in benzene service:

(i) Process unit identification.

(ii) For each month during the semiannual reporting period:

(A) Number of valves for which leaks were detected as required in § 61.132-11(b) of § 61.133-2.

(B) Number of valves for which leaks were not repaired as required in § 61.132-11(d).

(C) Number of pumps for which leaks were detected as described in § 61.132-6 (b) and (d)(6).

(D) Number of pumps for which leaks were not repaired as required in §61.132-6 (c) and (d)(6).

(E) Number of exhausters for which leaks were detected as described in § 61.132-7(f).

(F) Number of exhausters for which leaks were not repaired as required in § 61.132-7(g).

(5) The facts that explain any delay of repairs and, where appropriate, why a process unit shutdown was technically infeasible.

(6) Dates of process unit shutdowns that occurred within the semiannual reporting period.

(7) Revisions to items reported according to paragraph (a) of this section if changes have occurred since the initial report or subsequent revisions to the initial report.

(8) The results of all performance tests to determine compliance with § 61.132-6(e), 61.132-7(f), 61.132-8(a), 61.132-11(f), 61.132-14(f), 61.133-1, and 61.133-2 conducted within the semiannual reporting period.

(9) A statement signed by the owner or operator stating whether all provisions of 40 CFR Part 61, Subpart L had been fulfilled during the semiannual reporting period.

(c) In the first report submitted as required in § 61.137(a), the report shall include a reporting schedule stating the months that semiannual reports shall be submitted. Subsequent reports shall be submitted according to that schedule unless a revised schedule has been submitted in a previous semiannual report.

(d) An owner or operator electing to comply with the provisions of § 61.133-1 or § 61.133-2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

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40 CFR Part 61

[AD-FRL-2660-6]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Benzene Emissions From Coke By-Product Recovery Plants

AGENCY: Environmental Protection Agency (EPA).

ACTION: Reopening of the Public Comment Period.

SUMMARY: On June 6, 1984, EPA proposed national emission standards for benzene emissions from coke by-product recovery plants (49 FR 23522). In response to requests from two trade associations, the period for receiving written comments on the proposed standards is being reopened.

DATE: Comments must be postmarked on or before October 19, 1984.

ADDRESS: Comments should be submitted (in duplicate, if possible) to: Central Docket Section (LE-131), Attention: Docket Number A-79-16, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460.

FOR FURTHER INFORMATION CONTACT: Mr. Gilbert Wood, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone (919) 541-5578.

SUPPLEMENTARY INFORMATION: The Agency received letters from two trade associations requesting extensions of the comment period. Those two trade associations together represent over 90 percent of the potentially affected companies. One trade association requested an extension to complete its review of the proposed information, particularly in relation to emission rates at small plants and the economic impacts of the proposed standards. The other trade association requested an extension of the time to prepare their comments because of the complexity of the technical, economic, and health-related issues raised by the proposed standards. The association's representative stated that analyzing the technical and cost aspects of the controls for the numerous sources considered by EPA, and examining EPA's baseline assumptions and estimates of public health impacts have turned out to be more time consuming than EPA may have anticipated. The difficulty of this work is compounded by the association's need to coordinate among numerous companies.

The Agency believes it would benefit from the results of these associations' analyses and is therefore reopening the comment period until October 19, 1984.

Dated: August 21, 1984.

John C. Topping, Jr.,

Acting Assistant Administrator for Air and Radiation.

[FR Doc. 84-22661 Filed 8-24-84; 8:45 am]

BILLING CODE 6560-50-M

ENVIRONMENTAL PROTECTION AGENCY

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NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

INORGANIC ARSENIC

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AH-FRL 2378-2]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Inorganic Arsenic

AGENCY: Environmental Protection Agency.

ACTION: Proposed rule and announcement of public hearing.

SUMMARY: On June 5, 1980, EPA listed inorganic arsenic as a hazardous air pollutant under Section 112 of the Clean Air Act. Pursuant to Section 112, EPA is proposing standards for the following categories of sources of emissions of inorganic arsenic: high-arsenic primary copper smelters, low-arsenic primary copper smelters, and glass manufacturing plants. EPA identified other categories of sources emitting inorganic arsenic; and, after careful study, determined that the proposal of standards for these categories of sources is not warranted at this time. These categories of sources are primary lead smelters, secondary lead smelters, primary zinc smelters, zinc oxide plants, cotton gins, and arsenic chemical manufacturing plants.

DATES: See "SUPPLEMENTARY INFORMATION" below.

ADDRESSES: See "SUPPLEMENTARY INFORMATION" below.

FOR FURTHER INFORMATION CONTACT: See "SUPPLEMENTARY INFORMATION" below.

SUPPLEMENTARY INFORMATION:

Public Hearings and Related Information

Dates

Comments. Comments must be received on or before September 30, 1983.

Public Hearing. Two public hearings will be held. The first hearing will be held in Washington, D.C., on August 23, 24, and 25, 1983, beginning at 9:00 a.m. each day. This hearing will consist of two separates sessions. The first session will be for the purpose of receiving comments on the listing of arsenic as a harzadous pollutant. The second session will be for the purpose of receiving comments on the content of the proposed regulations. The order of items on the agenda of the second session will be: (1) high-arsenic coppers smelters, (2) low-arsinic copper smelters, (3) glass manufacturing plants, and (4) others. Persons planning to attend the first hearing may call mrs. Naomi Durkee (919) 541-5578 after August 16, 1983, to obtain an estimated time and date at which each subject will be addressed.

The second hearing will be held in Tacoma, Washington, on August 30, 1983. This hearing will be for the purpose of receiving comments on the proposed standards for high-arsenic copper smelters. This hearing will be held fromm 12:00 noon to 10:00 p.m. and may be continued on August 31, 1983, if necessary to allow all persons wishing to speak an opportunity to do so.

Request to Speak at Hearing. Persons wishing to present oral testimony at the first hearing must notify Mrs. Naomi Durkee by August 15, 1983, at telephone number (919) 541-5578 or mailing address: Standards Development Branch, MD-13, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

Persons wishing to present oral testimony at the second hearing must notify Ms. Laurie Kral by August 23, 1983, at telephone number (206) 442-1089 or mailing address: Air Programs Branch, U.S. Environmental Protection Agency, Region X, 1200 6th Avenue, Seattle, Washington, 98101.

Addresses

Comments. Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. Specify the following Docket Numbers:

OAQPS-79-8 Listing of arsenic as a hazardous pollutant
A-80-40 High-arsenic and low-arsenic copper smelters
A-83-8 Glass manufacturing plants
A-83-9 Secondary lead
A-83-10 Cotton gins
A-83-11 Zinc oxide plants
A-83-23 Primary zinc, primary lead, arsenic chemical manufacturing

Public Hearing. The public hearing to be held on August 23, 24 and 25, 1983, will be held at the Department of Agriculture, Thomas Jefferson Auditorium, South Building, 14th and Independence Ave., SW., Washington, D.C.

The public hearing to be held on August 30, 1983, will be held at the Tacoma Bicentennial Pavilion, Rotunda Room, 1313 Market Street, Tacoma, Washington.

Background Information Document. Background information documents (BID's) for the proposed standards may be obtained from the U.S. Environmental Protection Agency library (MD-35), Research Triangle Park, North Carolina 27711, telephone 919-541-2777. Please specify:

EPA 450/3-83-009a Inorganic Arsenic Emissions From High-Arsenic Primary Copper Smelters—Background Information for Proposed Standards.

EPA 450/3-83-010a Inorganic Arsenic Emissions From Low-Arsenic Primary Copper Smelters—Background Information for Proposed Standards.

EPA 450/3-83-011a Inorganic Arsenic Emissions From Glass Manufacturing Plants—Background Information for Proposed Standards.

EPA 450/5-82-005 Preliminary Study of Sources of Inorganic Arsenic.

Dockets. Dockets containing supporting information used in developing the proposed standards are available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW., Washington, D.C. 20460. A reasonable fee may be charged for copying. The following dockets are available:

OAQPS-79-8 Listing of arsenic as a hazardous pollutant
A-80-40 High-arsenic and low-arsenic copper smelters
A-83-8 Glass manufacturing plants
A-83-9 Secondary lead
A-83-10 Cotton gins
A-83-11 Zinc oxide plants
A-83-23 Primary zinc, primary lead, arsenic chemical manufacturing

The docket A-80-40, which contains the supporting information for the proposed standards for high-arsenic and low-arsenic copper smelters, will also be available for inspection and copying at the EPA Region X office in Seattle, Washington. Persons wishing to view this docket should contact Ms. Laurie Kral at telephone number (206) 442-1089 or at mailing address: Air Programs Branch, U.S. Environmental Protection Agency, Region X, 1200 6th Avenue, Seattle, Washington, 98101.

For Further Information

For information concerning the listing of arsenic as a hazardous pollutant, contact Mr. John Fink, Pollutant Assessment Branch, MD-12, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone 919-541-5645. For information concerning the background information supporting the proposed standards, contact Mr. Jim Crowder, Industrial Studies Branch, MD-13, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone 919-541-5601. For information concerning the proposed standards, contact Mr. Robert L. Ajax, Standards Development Branch, MD-13, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina

27711, telephone 919-541-5578. For information concerning the "Alternative Regulatory Strategies" section of Part III of this preamble, contact Mr. Alex Cristofaro, Air Economics Branch, Office of Policy and Resource Management (PM-220), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, telephone 202-382-5490.

I. OVERVIEW OF THE PROPOSED STANDARDS

Background

In 1977, Congress amended the Clean Air Act (the Act) to address airborne emissions of arsenic. Section 122 of the Act required the Administrator of EPA to determine whether or not emissions or arsenic into the ambient air will cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health. On June 5, 1980, EPA published a **Federal Register** notice listing inorganic arsenic as a hazardous air pollutant under Section 112 of the Act (44 FR 37886, June 5, 1980). The listing was based upon EPA findings that there is a high probability that inorganic arsenic is carcinogenic to humans and that there is sufficient public exposure to inorganic arsenic. Epidemiological studies provide the primary evidence of inorganic arsenic's carcinogenicity. The results of these studies have led widely respected scientific groups, such as the National Cancer Institute(*1*), the National Academy of Sciences(*2*), and the International Agency for Research on Cancer(*3*), to conclude that there is strong evidence that inorganic arsenic is carcinogenic to humans. In 1979, EPA submitted to the Science Advisory Board (SAB), an advisory group of nationally prominent scientists from outside EPA, a report on the available health effects information or arsenic.(*4*) The SAB concluded that, "All the available data lead to a consensus that there is a real association between exposure to arsenic and the development of cancer, both lung and skin cancer."(*5*) The evidence of significant public exposure included the identification of multiple stationary sources of arsenic emissisons, and data showing that large numbers of people living near emitting sources are exposed to ambient air concentrations of arsenic many times the national average.(*6*) The data and documents supporting the listing are available for public inspection and copying in the Central Docket Section at EPA headquarters in Washington, D.C.; the material is filed under Docket Number OAQPS-79-8. Pursuant to Section 112, the listing signified that, in the judgment of the Administratoir, inorganic arsenic is an air pollutant which causes, or contributes to, air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness. The listing also signified the Administrator's intention to establish emissions standard for inorganic arsenic under Section 112.

Concurrent with the decision to list inorganic arsenic as a hazardous air pollutant, EPA began a series of studies of the sources of inorganic arsenic emissions. The purpose of the earliest studies in the series was to identify which types of sources merited more detailed study toward possible regulation, and the purpose of the final studies in the series was to develop the detailed information needed to support the proposal of standards. EPA is now under court order to publish proposed emission standards for inorganic arsenic by July 11, 1983. *New York v. Gorsuch*, 554, F. Supp. 1060, 1066 (S.D.N.Y. 1983).

Section 112 requires the Administrator to prescribe an emission standard for inorganic arsenic after proposal of a standard unless he finds, on the basis of information presented at the public hearings associated with the proposal of a standard, that inorganic arsenic clearly is not a hazardous air pollutant. As noted above, the information relevant to EPA's listing inorganic arsenic as a hazardous air pollutant is contained in Docket Number OAQPS 79-8. The health effects assessment information that supported the 1980 listing decision is included in the docket. The docket also contains a draft copy of an updated health assessment document that EPA's Office of Health and Environmental Assessment has just released for public and Science Advisory Board review (see 48 FR 27290, June 14, 1983). The reader may obtain a single copy of the draft document from EPA by writing to the following address: ORD Publications—CERI-FR, U.S. EPA, Cincinnati, Ohio 45268; or by calling the following telephone number: (513) 684-7562.

In today's notice, EPA is proposing standards for certain source categories of inorganic arsenic emissions to the ambient air and is proposing not to regulate others. To EPA's knowledge, these source categories comprise all the source categories of inorganic arsenic that could or may cause significant risks. The public is reminded that comments are solicited on the proposed standards, the proposals not to regulate, and the listing of inorganic arsenic as a hazardous air pollutant.

Public Health Risks

The health risk basis for listing inorganic arsenic as a hazardous air pollutant is summarized briefly in the Background section above. The results of studies linking worker exposure to inorganic arsenic with cancer, the number of sources emitting inorganic arsenic and the large numbers of people living near the sources, the measured concentrations of arsenic in the ambient air, and the reports of excess cancer not only among workers but among populations living near sources (*7*) led to the Administrator's judgment that inorganic arsenic causes or contributes to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness. EPA recognized at the time of listing that epidemiological studies had not clearly proven that exposure to inorganic arsenic at ambient levels causes cancers. Epidemiological studies that have successfully revealed associations between occupational exposure and cancer for substances such as asbestos, benzene, vinyl chloride, and ionizing radiation, as well as for inorganic arsenic, are not as easily applied to the public sector, with its increased number of confounding variables, much more diverse and mobile exposed population, lack of consolidated medical records, and almost total absence of historical exposure data. Given the above characteristics, EPA considers it improbable that any epidemiological association, short of very large increases in cancer can be detected among the public with any reasonable certainty. Furthermore, as noted by the National Academy of Sciences (NAS), ". . . when there is exposure to a material, we are not starting at an origin of zero cancers. Nor are we starting at an origin of zero carcinogenic agents in our environment. Thus, it is likely that any carcinogenic agent added to the environment will act by a particular mechanism on a particular cell population that is *already being acted on by the same mechanism to induce cancers.*"(*8*) In discussing experimental dose-response curves, the NAS observed that most information on carcinogenesis is derived from studies on ionizing radiation with experimental animals and with humans, which indicate a linear no-threshold dose-response relationship at low doses. They added that although some evidence exists for thresholds in some animal tissues, by and large, thresholds have not been established for most tissues. NAS concluded that establishing

such low-dose thresholds ". . . would require massive, expensive, and impractical experiments . . ." and recognized that the U.S. population ". . . is a large, diverse, and genetically heterogeneous group exposed to a large variety of toxic agents." This fact, coupled with the known genetic variability to carcinogenesis and the predisposition of some individuals to some form of cancer, makes it extremely difficult, if not impossible, to identify a threshold.

For these reasons, EPA has taken the position, shared by other Federal regulatory agencies, that in the absence of sound scientific evidence to the contrary, carcinogens should be considered to pose some cancer risk at any exposure level. This no-threshold presumption is based on the view that as little as one molecule of a carcinogenic substance may be sufficient to transform a normal cell into a cancer cell. Evidence is available from both the human and animal health literature that cancers may arise from a single transformed cell. Mutation research with ionizing radiation in cell cultures indicates that such a transformation can occur as the result of interaction with as little as a single cluster of ion pairs. In reviewing the available data regarding carcinogenicity, EPA found no compelling scientific reason to abandon the no-threshold presumption for inorganic arsenic.

Section 112 requires that standards be set at levels which, in the Administrator's judgment, provide an ample margin of safety to protect the public health. Thus one factor EPA considers is the nature and relative magnitude of health hazards. Unfortunately, agencies can never obtain perfect data but have to make regulatory decisions on the basis of the best information available. So, EPA evaluates the potential detrimental effects to human health caused by pollutant exposure based on the best scientific information currently available. EPA has produced quantitative expressions of public health risks associated with exposure to inorganic arsenic emitted from stationary sources. The Agency recognizes that significant uncertainties are associated with the data and the estimating procedure; however, the Agency believes that these quantitative expressions of public health risks serve a useful purpose by providing a measurement tool that facilitates relative comparisons of important factors, e.g., comparison of the relative effectiveness of two types of emission control in reducing public health risk, and that when used appropriately, these quantitative expressions of risk are useful in decision-making. In developing the exposure-risk relationship for inorganic arsenic, EPA has assumed that a linear no-threshold relationship exists at or below the levels of exposure reported in the epidemiological studies of occupational exposure. This means that any exposure to inorganic arsenic is assumed to pose some risk of damage to health and that the linear relationship between cancer risks and levels of public exposure is the same as that between cancer risks and levels of occupational exposure. EPA believes that this assumption is reasonable for public health protection in light of presently available information. However, it should be recognized that the basis for using the linear no-threshold relationship model for inorganic arsenic is not quite as strong as that for carcinogens, which interact directly or in metabolic form with DNA. Nevertheless, there is no adequate basis for dismissing the linear no-threshold model for inorganic arsenic. The quantitative risk estimate based on the application of the linear no-threshold model represents a plausible upper-limit estimate in the sense that the risk is probably not higher than the calculated level and could be much lower.

The numerical constant that defines that exposure-risk relationship used by EPA in its analysis of carcinogens is called the unit risk estimate. The unit risk estimate for an air pollutant is defined as the lifetime cancer risk occurring in a hypothetical population in which all individuals are exposed continuously from birth throughout their lifetimes (about 70 years) to a concentration of 1 $\mu g/m^3$ of the agent in the air which they breathe. Unit risk estimates are used for two purposes: (1) to compare the carcinogenic potency of several agents with each other, and (2) to give a crude indication of the public health risk which might be associated with estimated air exposure to these agents. A range of unit risk estimates for inorganic arsenic was derived from the dose-response relationships relevant to epidemiological studies involving workplace exposures. The derivation was based on a linear no-threshold model. The range in EPA's unit risk estimates reflects the uncertainty of combining the three different dose-response relationships relevant to the three occupational studies which EPA used as the basis for the development of unit risk estimates.(*9*) As noted in the Background section of this notice, EPA is updating its health effects assessment document for inorganic arsenic and has just released a draft document for public and Science Advisory Board (SAB) review (see 48 FR 27290, June 14, 1983). The draft document reflects a change in the unit risk estimate. The SAB review will include an examination of the applicability of the health effects models to the epidemiology data and the results of this review will be received and carefully considered by the Administrator before final standards are promulgated.

The unit risk estimate is only one of the factors needed to produce quantitative expressions of public health risks. Another factor needed is a numerical expression of public exposure, i.e., of the numbers of people exposed to the various concentrations of inorganic arsenic. The difficulty of defining public exposure was noted by the national Task Force on Environmental Cancer and Heart and Lung Disease in their 5th Annual Report to Congress, in 1982.(*10*) They reported that ". . . a large proportion of the American population works some distance away from their homes and experiences different types of pollution in their homes, on the way to and from work, and in the workplace. Also, the American population is quite mobile, and many people move every few years." They also noted the necessity and difficulty of dealing with very-long-term exposures because of ". . . the long latent period required for the development and expression of neoplasia [cancer] . . ." To develop quantitative expressions of public exposure to inorganic arsenic, it was necessary to use assumptions and a computerized model.

The models for estimating the unit risk for and the public exposure to inorganic arsenic are described briefly below. More information is available in references (*9*) and (*11*).

Model for Estimation of Unit Risk Based on Human Data(12)

Very little information exists that can be utilized to extrapolate from high-exposure occupational studies to low environmental levels. However, if a number of simplifying assumptions are made, it is possible to construct a crude dose-response model whose parameters can be estimated using vital statistics, epidemiologic studies, and estimates of worker exposures. In human studies, the response is measured in terms of the relative risk of the exposed cohort of individuals compared to the control group. The mathematical model employed assumes that for low exposures the lifetime probability of

death from lung cancer (or any cancer), P, may be represented by the linear equation

$$P = A + B_H x$$

where A is the lifetime probability of cancer in the absence of the agent, and x is the average lifetime exposure to environmental levels in some units, say micrograms per cubic meter of air breathed. The factor, B_H, is the increased probability of cancer associated with each unit increase of the agent in air.

If we make the assumption that R, the relative risk of lung cancer for exposed workers, compared to the general population, is independent of the length or age of exposure but depends only upon the average lifetime exposure, it follows that

$$R = \frac{P}{P_0} = \frac{A + B_H(x_0 + x_1)}{A + B_H(x_0)}$$

or

$$RP_0 = A + B_H(x_0 + x_1)$$

where x_0 = lifetime average daily exposure to the agent for the general population, x_1 = lifetime average daily exposure to the agent in the occupational setting, and P_0 = lifetime probability of respiratory cancer applicable to the general population. Substituting $P_0 = A + B_H x_0$ and rearranging gives

$$B_H = P_0 (R-1)/x_1$$

To use this model, estimates of R and x_1 must be obtained from the epidemiologic studies. The value P_0 is derived from the age-cause-specific death rates for combined males found in 1976 U.S. Vital Statistics tables using the life table methodology. For lung cancer the estimate of P_0 is 0.036.(*13*)

The Exposure Model(*11*)

The basic assumption used in the exposure model is that exposed individuals reside at a single location for a 70-year period and are exposed at that location to a constant source of inorganic arsenic emissions. Updated 1970 census data were used to locate people with respect to the emitting sources, and the exposed population consisted of all the people estimated to be living within a radial distance of 20 kilometers from the sources. Twenty kilometers was selected because up to this distance the dispersion model used to estimate ambient air concentrations is reasonably accurate. Through several studies and other data-gathering efforts, EPA, insofar as it was reasonably possible to do so, located sources by latitude and longitude, estimated both stack and fugitive emissions, and developed the plant factors needed to estimate long-term ambient air concentrations up to a radial distance of 20 kilometers by use of a dispersion model. By combining people and concentrations, the exposure model produced estimates of exposure at selected radial distances from each identified source and summed the exposure estimates for each category of sources. As used in this notice, the term "exposure" means the product of the estimated ambient air concentration of inorganic arsenic and the estimated number of people exposed to that concentration. The units of exposure are people—$\mu g/m^3$.

Quantitative Estimates of Public Health Risks

By combining the estimates of public exposure with the unit risk, two types of quantitative estimates are produced. The first, called maximum lifetime risk, relates to the individual or individuals estimated to live in the area of highest concentration as estimated by the dispersion model. As used here, the word "maximum" does not mean the greatest possible risk of cancer to the public. It is only the maximum estimated by the procedure used, and the procedure represents long-term average rather than worst-case situations. The second type of risk estimate, called aggregate risk, is a summation of all the risks to people living within 20 kilometers of a source and is customarily summed for all the sources in a particular category. The aggregate risk is expressed as incidences of cancer among all of the exposed population after 70 years of exposure; for statistical convenience, it is often divided by 70 and expressed as cancer incidences per year. Cancer incidences per year does not connote an event that will occur each year from now until something is done to alter the "exposure" on which the statistic is based. In reality, there is a long latent period between initiation of exposure and the onset of cancer.

There also are risks of nonfatal cancer and serious genetic effects, depending on which organs receive the exposure. The risks of nonfatal cancer and of genetic effects are not estimated; however, EPA considers all of these risks when it makes regulatory decisions on limiting emissions of inorganic arsenic.

EPA must make numerous assumptions when producing quantitative estimates of public health risks. Factors such as elevated terrain around sources, reentrainment of dust containing inorganic arsenic, and the additive impact of emissions from sources near to one another are site specific. Individual characteristics such as age, physiology, physical activity level, amount of time spent indoors, and the effects of exposures to other substances influence the rate and amount of inorganic arsenic affecting the individual. Such factors could strongly influence the actual risks to any given individual, but are not usually treated in the analysis.

Basis for the Proposed Standards

Today's proposed standards are set "at the level which in [the Administrator's] judgment provides an ample margin of safety to protect the public health" from inorganic arsenic emissions, as required by Section 112(b)(1)(B).

As discussed in a previous section, inorganic arsenic, like most carcinogens, seems to present finite risks at any level of exposure, risks that increase as the level of exposure increases. Were this not the case—were there exposure levels below which there is no risk of cancer—the standards could be set so as to prevent those exposure levels. This cannot be done for inorganic arsenic unless the standards prevented any exposure, which would in turn require preventing any emissions. It does not appear that Congress intended Section 112 standards to cause widespread shutdown of arsenic emitting industries, and the other industries emitting nonthreshold pollutants (such as the carcinogens asbestos, vinly chloride, benzene and radionuclides). Therefore, as an alternative to widespread shutdown of industries, EPA must establish emission standards for inorganic arsenic at levels that may present some human health risk. Some argue that an increase in cancer risk not exceeding one in one thousand due to a specific cause is acceptable, whereas others argue that an increase in risk of one in one million is unacceptable. Regardless, the use of these numbers is accompanied by great scientific uncertainty. For example, scientific uncertainties not resolved to date include the establishment of toxicity to humans based on extrapolation, using uncertain mathematical models from high-dose animal tests or occupational exposure to low-dose public exposure at ambient air concentrations, and identification of the appropriate level of emission controls for pollutants for which health effects thersholds have not been demonstrated.

There also is uncertainty with exposure estimates because of difficulty

in obtaining precise date on emission rates, atmospheric dispersion patterns and population concentrations around individual sources, and because of the lack of information on short-term and long-term movement (migration) of people and indoor versus outdoor toxic air pollutant concentration patterns. Further, ambient monitoring data are limited and both very costly and time consuming to obtain for use in exposure assessment. There also are uncertainties concerning possible additive effects of multiple sources or pollutants, synergistic or antagonistic health effects, and heightened susceptibilities to some cancers by some population groups. These factors make it difficult, if not impossible, to determine the absolute magnitude of the risk to human health based on the available data or to establish any epidemiological association between cancer and public exposure to ambient concentrations of a specific substance.

Another issue that has been encountered in using risk estimates is whether protection should focus on the risk to the most exposed individuals or to the exposed population as a whole (aggregate risk). Even when the many uncertainties in risk estimates are considered, resulted to date indicate that the total cancer incidence (expressed as cases per year) associated with exposure to inorganic arsenic, even on a nationwide basis, is likely to be small compared to the incidence associated with factors such as smoking and diet. However, individual risks for a limited number of people living close to uncontrolled or partially controlled emission sources may be relatively high.

Neither the language nor the legislative history of Section 112 reveals any specific Congressional intent on how to deal with these issues and how to apply the phrase "provides an ample margin of safety to protect the public health," to nonthreshold pollutants like inorganic arsenic that present cancer risks at any level of exposure.

In view of this, it is EPA's judgment that the best interpretation of Section 112 as applied to a nonthreshold pollutant is as follows. All source categories of the pollutant that are estimated to result in significant risks should be evaluated. Each such source category should be controlled at least to the level that reflects best available technology (BAT), and to a more stringent level if, in the judgment of the Administrator, it is necessary to prevent unreasonable risks. If a source category is not already controlled at this level, EPA will set the Section 112 standard at this level. If a category is already controlled (for example, by other EPA standards, other Federal, State, or local requirements, or standard industry practice) to this level, and EPA expects that the level of control will continue to be required for these and new sources (EPA will continue to monitor this), a Section 112 standard will be redundant and need not be established. By BAT, EPA means the best controls available, considering economic, energy, and environmental impacts. The level of control that represents BAT may be different for new and existing sources within a source category because of higher costs associated with retrofitting controls on existing sources, or differences in control technology for new vs. existing sources. Whether a source category is estimated to cause a significant risk will be decided in light of the estimated risks to individuals, and the estimated cumulative risks to populations affected by that source category. Whether the estimated risks remaining after application of BAT are unreasonable will be decided in light of a judgmental evaluation of the estimated maximum lifetime risk and cancer incidences per year remaining after application of BAT, the impacts, including economic impacts, of further reducing those risks, the readily available benefits of the substance or activity producing the risk, and the availability of substitutes and possible health effects resulting from their use. In all cases where estimated risks are used, the significant uncertainties associated with those numbers will be weighed carefully in reaching the final decision.

In EPA's judgment, standards based on the interpretation of Section 112 just described provide an ample margin of safety to protect the public health. EPA solicits comments on this interpretation of Section 112.

This approach is believed to provide a rational, consistent and nationally appropriate mechanism for dealing with nonthreshold pollutants in the face of the many scientific uncertainties. The main issues have been dealt with in this proposal in the following ways:

1. Source categories are identified on the basis of estimates of their potential to result in significant risk because risk to public health is the dominant theme of Section 112. A significant risk is considered to be associated with a source category when the weight of the health evidence indicates a strong likelihood that the substance emitted by the source category is a human carcinogen *and* either individuals or larger population groups are significantly exposed to the substance as emitted from the source category. A numerical target level of significance is not used because of the uncertainties discussed above.

2. All source categories that are estimated to result in significant risks are evaluated and the current level of control ascertained. That control may result voluntarily or from State, local or other Federal regulations. Whether the level of control meets the definition of BAT (considering cost and other impacts) then is determined. The BAT determination in this case can take into account such factors as the potential for improved control, the economic impacts of improved control on the source category, and the age and remaining useful life of the facilities.

3. The use of risk estimates generally has been confined to areas of broad comparisons, e.g., in selecting source categories to evaluate, and in assessing the incremental change in risk that results from application of various control options. The use of risk estimates in an absolute sense is avoided because of the many uncertainties of the estimates. These uncertainties are compounded as the focus is narrowed. In other words, in evaluating specific sources, as opposed to source categories, the uncertainties associated with the risk estimates increase dramaticaly.

4. Cost effectiveness is one of the major criteria used in selecting BAT. However, the use of cost effectiveness in the BAT selection may result in some apparent disparities in risk improvement at some sources. However, risk estimates are highly uncertain while technology and cost are generally well understood and provide an objective means of determining reasonableness of control.

Other alternative treatments of these issues were considered. A discussion of these alternative treatments as applied to the low-arsenic-throughput copper smelter source category is presented in the section entitled "Alternative Regulatory Strategies" in Part III of this preamble.

Source Categories for Which Standards are Not Proposed

EPA has identified several inorganic arsenic source categories for which standards are not being proposed. The emissions from some of these source categories (primary lead smelters, primary zinc smelters, zinc oxide plants) are comprised of inorganic arsenic that occurs naturally in the environment but is released to the air through industrial processes. In addition to these source categories, EPA is not proposing

standards for arsenic chemical plants, secondary lead smelters, and cotton gins that process cotton desiccated with orthoarsenic acid. The reasons for these decisions are discussed in the following paragraphs. Additional supporting information may be found in the dockets for the source categories and in the document entitled "Preliminary Study of Sources of Inorganic Arsenic."

Estimates of risk used in this analysis were developed using the methods and assumptions discussed in this notice and in the Appendix E of each background information document (BID). It is important to recognize that the actual risk to specific individuals may differ greatly from the estimates because (1) there is no solid scientific basis for any mathematical extrapolation model that numerically relates inorganic arsenic exposure to cancer risks at the low concentrations in the environment, and the actual dose-response relationship may differ greatly from that used in this analysis; and (2) the actual exposures of individual to inorganic arsenic over their lifetimes are not known and may differ greatly from the assumptions used to make the estimates in this analysis.

Primary Lead Smelters

Primary lead smelters produce metallic lead from lead ore concentrates. There are five primary lead smelters in the United States. In 1979, these smelters produced 578,000 Mg of lead, which accounted for 41 percent of the total domestic demand for lead that year.

Inorganic arsenic is a contaminant in lead-bearing ores. The arsenic content can range from 0.02 to 0.4 percent by weight. Fugitive emissions occur from lead ore handling and storage, and are controlled by ventilated enclosure systems and wet suppression methods. Ore transfer points are generally hooded and vented to fabric filter or venturi scrubber systems. Process emissions containing arsenic trioxide occur from sinter plants, blast furnaces, dross reverberatory funaces, zinc fuming furnaces, and reverberatory softening furnaces. These sources are currently controlled by State implementation plans (SIPs) for SO_2 and particulate matter through the use of low-temperature fabric filters or contact sulfuric acid plants. Total nationwide inorganic arsenic emissions from primary lead smelters are about 43 Mg/year. Aggregate risks are estimated as ranging from 0.008 to 0.098 lung cancer incidences annually, and the estimated maximum lifetime risk calculated ranges from 0.07 in 10,000 to 1.1 in 10,000.

All primary lead smelters are covered by SIPs for SO_2 and particulate matter, and by Occupational Safety and Health Administration (OHSA) lead and inorganic arsenic standards. As a result, low-temperature fabric filter systems or contact sulfuric acid plants are reducing emissions from process vents, and fugitive emissions are controlled by enclosing ore storage areas, ventilating and/or enclosing material transfer points, ventilating and/or enclosing furnace operations, and treating all of the ventilation gas streams with fabric filter systems. In addition, lead SIPs that have been submitted by the States but not yet approved by EPA would also cover all primary lead smelters.

EPA considers these controls to represent the best available technology (BAT). EPA knows of no demonstrated control techniques, short of closure, that would result in further inorganic arsenic emissions reduction.

EPA is not proposing standards under Section 112 for these sources because, in response to existing regulatory requirements, these sources already are required to control emissions by using technology that represnts BAT; and the Agency does not believe that requiring plant closure is a reasonable control alternative in this case, finding that risks remaining after BAT are not unreasonable in light of the impacts of further reducing them.

Primary Zinc Smelters

Primary zinc smelters produce metallic zinc from zinc ore concentrates. There are five primary zinc smelters in the United States. These smelters produced 407,000 Mg of zinc in 1978, which accounted for about 49 percent of total domestic demand for zinc in that year.

Inorganic arsenic is a contaminant in zinc-bearing ores. The arsenic content can range from about 0.001 to 0.1 percent by weight. Zinc is smelted by two kinds of processes: electrothermal and electrolytic. Electrothermal process emissions arise from roasting, sintering, and reducing operations. Arsenic emissions from roasting are controlled as a result of routing process gases to a contract sulfric acid plant for SO_2 removal. Arsenic emissions from sintering and reducing are controlled by low-temperature baghouses. Fugitive emissions from handling are contained and collected by low-temperature fabric filters.

The only potential source of significant arsenic emissions from electrolytic zinc smelting is the roasting operation. As in electrothermal smelting, these emissions are also routed to a contact sulfuric acid plant.

Primary zinc smelters are affected by new source performance standards (NSPS) for SO_2 and particulate matter, SIP's for SO_2 and particulate matter, and OSHA inorganic arsenic workplace standards. Current nationwide inorganic emissions from this source category are about 0.3 Mg/year. The aggregate risks are estimated to range from 0.0005 to 0.008 lung cancer incidences annually, and the estimated maximum lifetime risk calculated ranges from 0.01 in 10,000 to 0.22 in 10,000.

The controls currently in place at primary zinc smelters to comply with existing regulations provide good control of arsenic emissions and are considered BAT. No technology has been demonstrated that can reduce emissions further. Additional reductions can be gained only by smelter closure.

EPA is not proposing standards under Section 112 for these sources because, in response to existing regulatory requirements, these sources are controlling emissions by using BAT; and the Agency does not believe that requiring plant closure is a reasonable control alternative in this case, finding that risks remaining after BAT are not unreasonable in light of the impacts of further reducing them.

Zinc Oxide Plants

There are 17 zinc oxide production facilities in the United States. Some of these facilities merely grind zinc oxide to specific product standards. The remainder produce zinc oxide directly from either zinc ore concentrates (termed the American process) or purified zinc metal (termed the French process). Arsenic emissions from zinc oxide production originate from the arsenic contained in the zinc feed. Because of the purity of the zinc feed used in the French process, arsenic emissions from this process are assumed to be small. The American process has the potential for producing arsenic emissions because of the arsenic contained in the zinc ore concentrates. There are only two domestic zinc oxide plants that use zinc ore concentrates as feed material: an ASARCO plant in Columbus, Ohio and a New Jersey Zinc plant in Palmerton, Pennsylvania.

The ASARCO-Columbus plant processes a zinc sulfide ore concentrate, and the operation consists of roasting in a fluid bed roaster followed by processing in a densifying kiln and a Wetherill zinc oxide furnace. A contact sulfuric acid plant is used to treat the roaster offgas, and low-temperature baghouse units are used to treat the other offgas streams. The acid plant and low-temperature baghouse units provide good control of arsenic emissions by

condensing of the vapor-phase arsenic and capturing it as particulate arsenic.

The New Jersey Zinc-Palmerton plant processes a low-sulfur zinc ore concentrate, and the major steps include Waelz kiln operations, sintering, and horizontal grate furnace operations. Because there is little SO_2 in the offgas from the kiln opertaion due to the low-sulfur feed, New Jersey Zinc does not employ an acid plant for SO_2 removal. Particulate removal is achieved using baghouse units on each of the process offgas streams and process fugitive streams. Because of the relatively small amount of arsenic present in these streams, further cooling of the gas streams would not result in additional arsenic collection.

The process emission points at these two zinc plants are subject to SIPs for SO_2 or particulate matter. In addition, zinc oxide plants are subject to the OSHA workplace standard for inorganic arsenic. Current inorganic arsenic emissions from these two plants are about 5.2 Mg/year. Aggregate risks are estimated as ranging form 0.0015 to 0.024 lung cancer incidences annually, and the estimated maximum lifetime risk calculated ranges from 1.7 in 10,000 to 28 in 10,000.

The federally enforceable controls currently in place at the two American process zinc oxide plants to comply with existing regulations provide good control of arsenic emissions. No technology has been demonstrated that can reduce emissions further. Additional reductions can only be gained by plant closure. Consequently, the existing controls are considered to be BAT.

EPA is not proposing standards under Section 112 for these sources because, in response to existing regulatory requirements, these sources are controlling emissions by using BAT; and the Agency does not believe that requiring plant closure is a reasonable control alternative in this case, finding that risks remaining after BAT are not unreasonable in light of the impacts of further reducing them.

Arsenic Chemical Manufacturing Plants

The manufacture of chemicals containing arsenic consumes about 90 percent of the total arsenic used in the United States. Eight plants handle dry powdered arsenic trioxide and have the potential to be significant inorganic arsenic emission sources.

The inorgnic arsenic emissions are in the form of particulates. All eight plants are covered by SIP's for particulate matter and OSHA regulations for inorganic arsenic. Each plant has a particulate capture and collection system in place that meets all applicable regulations. As a result, total current nationwide inorganic arsenic emissions are estimated to be about 0.04 Mg/year. The aggregate risks are estimated to range from 0.0008 to 0.012 incidences of lung cancer annually, and the estimated maximum lifetime risk calculated ranges from 0.4 in 10,000 to 6.4 in 10,000.

Of the eight plants with the potential to emit arsenic trioxide dust, three use fabric filters, four use wet scrubbers and one uses a fabric filter followed by a wet scrubber. The collected particulate matter is returned to the process. Fabric filters reduce arsenic trioxide particulate emission by about 99.5 percent, and while no test data are available on the arsenic removal efficiency of the wet scrubbers, it is believed, based on the emission rates, that it is comparable to the fabric filters.

These plants are currently well-controlled under federally enforceable OSHA regulations for inorganic arsenic and SIPs for particulate matter, with arsenic removal efficiencies of greater than 99 percent. There are no demonstrated control techniques, short of closure, that would result in further emissons reduction.

EPA is not proposing standards under Section 112 for these sources because, in response to existing regulatory requirements and due to the economic benefits of collecting and reusing arsenic trioxide, these sources are controlling emissions by using BAT; and the Agency does not believe that requiring plant closure is a reasonable control alternative in this case, finding that risks remaining after BAT are not unreasonable in light of the impacts of further reducing them.

Cotton Gins

There are about 320 cotton gins that handle and gin cotton that has been desiccated with orthoarsenic (arsenic) acid. Most of these gins are small businesses. Ginning is a seasonal operation, lasting only 3 to 4 months in late summer or fall.

Arsenic acid is applied to the cotton plants as a desiccant. The amount of desiccant applied varies from season to season and is affected by such factors as the condition of the cotton plants and the weather. A desiccant is applied to the cotton prior to mechanical-stripper harvesting to dry out green plant leaves in order to prevent fiber staining and unacceptable levels of fiber moisture content. Cotton desiccation is necessary to allow timely harvesting and preserve the quality of the cotton. Under the Federal Insecticide, Fungicide, and Rodenticide Act, EPA limits the application rate of arsenic acid to 3 pints per acre.

Most of the arsenic emissions from cotton gins is associated with gin trash, i.e., leaves, burrs, sticks, and hulls. The data base for estimating arsenic emissions is very limited, and the emissions estimates are very uncertain. Furthermore, it is not known what percent of the total arsenic emissions is inorganic arsenic. Total arsenic is believed to be emitted in about equal quantities as process and fugitive emissions. Process arsenic emissions occur primarily from the gin high-pressure section, which emits gin trash and large soil particles, and also from the low pressure section, which emits lint fly and cotton dust. Nationwide arsenic emissions are estimated to be about 0.8 Mg/year from the high-pressure section, and it is estimated that negligible quantities (0.005 Mg/yr) are emitted from the low-pressure section.

Fugitive particulate emissions, potentially containing inorganic arsenic, are also emitted from cotton gins. These fugitive emissions come from building and piping leaks, equipment leaks, burr hopper dumping, and wind blowing of open burr piles, and may be in the form of fine-leaf trash, burr material, lint fly, or cotton dust. It has been estimated that about 50 percent of the total particulate emissions resulting from a gin are from fugitive sources and that fugitive arsenic emissions would account for about 0.8 Mg/year nationwide.

Nationwide total arsenic emissions (organic and inorganic) from cotton gins are estimated to be about 1.6 Mg/year. The estimated maximum lifetime risk calculated, under the current level of control, ranges from 0.17 in 10,000 to 2.8 in 10,000. "Model" plants located in "model" cites were used to produce these estimates. Estimates of the aggregate risk to all those living within 20 kilometers of all the gins are not available because the locations of the gins are not available.

Cyclones are predominantly used to control gin high-pressure-section emissions. A high-efficiency cyclone can achieve greater than 99 percent removal of particles larger than 20 to 30 micrometers. Low-pressure-section emissions are typically controlled by coverings over condenser drums or by in-line filters. The use of a "long-cone" cyclone can reduce emissions further from both the high-pressure and low-pressure sections. Although very limited data are available, it is estimated that the long-cone cyclone can be used as a secondary control device for the high-pressure section to remove about 50 percent of the particulate matter that is less than 20 micrometers, and as a

primary control device for the low-pressure section to remove about 94 percent of the particulate matter that is less than 20 micrometers. Though inorganic arsenic reduction efficiency data are not available, it is reasonable to assume that arsenic in particulate form would be controlled with the same reduction efficiencies. As a result, nationwide arsenic emissions from the high-pressure section would be reduced by about 0.4 Mg/year and those from the low-pressure section by about 0.0047 Mg/year.

Based on control of only the high-pressure section, the total capital cost of installing a long-cone cyclone ranges from $23,000 for a small gin to $81,000 for a large gin, and total annualized costs would range from about $5,000 to $20,000. The cost per Mg of total arsenic reduced would range from about $3.8 million to $9.4 million per Mg. Nationwide capital and annualized costs are estimated to be $10.8 million and $2.4 million, respectively. The estimated maximum lifetime risk would be reduced by about 11 percent, to a range of 0.15 in 10,000 to 2.5 in 10,000.

Several control techniques are available for controlling fugitive emissions, but the operational differences among cotton gins inhibit an across-the-board technique. Although each technique has been used with varying degrees of success by a portion of the industry, most of the cotton gins either have not employed any of these techniques or have applied them improperly. Cotton gins are typically small operation, and it has not been demonstrated that most gin operators are capable of applying fugitive emission control techniques on a continuous basis. In addition, none of these techniques has ever been evaluated with regard to emissions reduction efficiency or cost of control. Consequently, little is known about the impacts of applying techniques to reduce fugitive emissions.

Although the estimated costs of long-cone cyclones (capital cost of $20,000 to $80,000 and annualized costs of $5,000 to $20,000) may not appear unreasonable for most industries, a preliminary economic analysis reveals that the cotton gin industry would be severely affected by such costs. Cotton gins typically operate less than one-third of the year. The profitability of the cotton gin industry varies considerably from year to year, so that in some years the gins may operate profitably, while in other years they do not. It appears that the cost of long-cone cyclones would put many gins in a position whereby they would not be able to continue operation. The cost of this control would reduce cash flow at a typical size gin operating at a 100 percent utilization rate by 31 percent. For a gin operating at 70 percent utilization rate, the cash flow would be reduced by 98 percent.

Considering these economic impacts, EPA judges that the existing level of control for process emissions is BAT. In addition, because available information does not allow determination of the effectiveness of possible fugitive emission control techniques, and because such techniques have not been demonstrated to be amenable to all but operational variabilities of cotton gins, EPA has determined that the existing level of fugitive emission control is BAT.

In conclusion, EPA is not proposing standards under Section 112 for cotton gins because the existing level of control is considered to be BAT and the Agency cannot, from the data available, reasonably conclude that the risks remaining after BAT are unreasonable, in light of the impacts of requiring controls more stringent than BAT.

There are statutes other than the Clean Air Act that give the Agency the authority and the mechanism to reduce the inorganic arsenic emissions from cotton gins. For instance, under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), EPA has the authority to further restrict or cancel the use of arsenic acid as a cotton plant desiccant. Such an action could reduce or eliminate the arsenic portion of the particulate matter emissions created during the ginning process. In addition to presently limiting the application rate of arsenic acid to 3 pints per acre of cotton plants, the Agency also is conducting an intensive risk-benefit analysis regarding the use of arsenic acid at this rate of application. The analysis is expected to lead to a decision by the Administrator to not change, further restrict, or cancel the use of this desiccant (see 43 FR 42867). The background information developed for this notice (such as the public exposure estimates) and other data, such as the ambient arsenic data now being collected near cotton gins in Texas, will be factored in the Administration's proposed decision regarding the future use of the desiccant under FIFRA (scheduled for 1984). Substitutes are being considered; but based on the analysis to date, it appears that there are no chemicals or new desiccation techniques that are nearly as cost-effective as arsenic acid in preparing the short season cotton for mechanical-stripper harvesting. Paraquat is the only other desiccant registered for use on cotton fields, but it is not as effective a desiccant as arsenic acid.

EPA also has authority under Subtitle C—Hazardous Waste Management—of the Resource Conservation and Recovery Act (RCRA) to require special handling, storage and treatment of any hazardous waste material that is generated from cotton ginning. Since the gin wastes contain arsenic, the wastes may be identified as hazardous wastes under the Hazardous Waste Management regulations (see 40 CFR 261). If gin wastes are classified as hazardous and the gin generates and stores enough of the wastes on site, then the storage, transportation, and disposal of the wastes must meet the standards established under RCRA, e.g., the piles of gin wastes must be designed and operated to control dispersal of the waste by the wind (see 40 CFR 264.250). However, based on very limited data in the technical literature, it appears that the wastes would not be classified as hazardous and would not be subject to the hazardous waste regulations.

As seen from the other inorganic arsenic source category discussions, the OSHA workplace standards often indirectly provide for reduction of inorganic arsenic emissions to the atmosphere. However, in the case of cotton gins, OSHA's current inorganic arsenic workplace standard does not apply to agricultural facilities such as cotton gins (see 29 CFR 1910.1018(a)).

Secondary Lead Smelters

Secondary lead is produced by smelting lead-bearing scrap, and accounts for about half of the lead produced in the United States. In 1980, about 60 secondary lead smelters owned by 26 companies produced 676,000 Mg of lead. Though the exact number of smelters currently operating is difficult to determine due to the relatively rapid rate at which smelters are closing, it is estimated that 40 smelters are currently operating.

The normal sequence of operations of a secondary lead smelter is scrap receiving, charge preparation, furnace smelting, and refining and alloying. Prepared lead scrap (primarily used batteries) is combined with other furnace feed materials and charged to a reverberatory or blast furnace. The molten lead product is tapped into a holding and refining pot. Arsenic emissions occur during these operations because arsenic is present in many of the furnace feed materials and in all of the furnace products. The lead-bearing feed materials to reverberatory furnaces typically consist of crushed battery scrap that contains about 0.03 to 0.07

percent arsenic by weight. The lead-bearing feed materials to blast furnaces typically consist of crushed battery scrap and/or reverberatory furnace slag that contains as much as 2 percent arsenic by weight. Smelting furnace products can contain from 0.001 to 3 percent arsenic by weight. A large proportion of the arsenic fed to reverberatory furnaces reports to the reverberatory furnace slag, while a large proportion of the arsenic fed to blast furnaces reports to the hard lead product. During the smelting operations, the arsenic-containing raw materials are subjected to high furnace temperatures, which can vaporize the arsenic in the form of arsenic trioxide. Uncontrolled arsenic emissions can vary widely and are affected by such factors as the amount of arsenic in the feed material, the operating conditions of the furnace, the amount of chlorides in the feed material, and the slag composition.

The sources of arsenic emissions from secondary lead smelters can be divided into three broad classes. These are process emissions, process fugitive emissions, and area fugitive emissions. Process emissions occur from the main furnace vents and consist of metal and metal oxide fumes entrained in the furnace combustion products. The furnace offgas streams are directed to one or more control devices prior to atmospheric discharge. Process fugitive emissions occur intermittently during furnace charging, slag tapping, lead tapping, and refining. They are collected by hoods and directed to a control device prior to atmospheric discharge.

The area fugitive sources can include the battery storage area, the battery breaking yard, the charge make-up area, the slag storage area, smelter access roads, and furnace building fugitives. A study at one smelter showed that the largest area fugitive contributors to *lead* emissions were the charge make-up area (32 percent), the battery breaking yard (21 percent), and the slag storage area (19 percent). Of the area fugitive sources, the charge make-up area and the slag storage area are expected to be significant sources of *arsenic* emissions. The prime contributor to fugitive emissions in the battery breaking yard is the lead oxide battery paste which does not contain arsenic. Flue dust handling in the charge make-up area is of particular concern because of the relatively high arsenic content and small particle size of the flue dust at secondary lead smelters. However, this source is well controlled at most smelters.

As a result of complying with the applicable SIP's and NSPS for particulate emissions, secondary lead smelters have applied fabric filters to control particulate emissions from smelting furnaces. The average of the operating temperature data available for fabric filters used on secondary lead smelting furnaces is 80°C (176°F). Fabric filters provide good control of arsenic in particulate form; and because the fabric filters used at most secondary lead smelters are operated at relatively low temperatures, it is believed that some of the vapor-phase arsenic is condensed and captured as well. Several plants have installed a scrubber after the fabric filter to comply with State and/or local SO_2 emission regulations. It is estimated that arsenic emissions from a scrubber/fabric filter combination may be about 60 percent less than arsenic emissions from a fabric filter alone. (As described later, this estimate is based on very limited data and is uncertain.)

The OSHA workplace standard for lead has resulted in good control of process fugitive sources at secondary lead smelters. Furnace charging, slag tapping, and lead tapping are controlled at most smelters by a combination of hoods and enclosures coupled with low-temperature (<37°C) fabric filters.

The OSHA lead standard also directly affects the control of some of the area fugitive sources, in particualr the flue dust handling practices in the charge make-up area. A recent telephone survey and visits fo five secondary lead smelters showed that the majority of smelters have improved their fuel dust handling practices in an attempt to meet the OSHA lead standard. Thus, as mentioned earlier, the area fugitive source with the highest potential for arsenic emissions, flue dust handling, is well controlled at the majority of smelters.The most prevalent control technique used is direct recycle of flue dust to the furnace via screw conveyors. A survey of the lead SIP's that are currently being developed to achieve compliance with the National Ambient Air Quality Standard (NAAQS) for lead indicated that additional area fugitive emission controls will be required for at least nine secondary lead smelters that have caused lead NAAQS exceedences.

There very little actual arsenic emissions data available for secondary lead smelters. However, particulate and lead emissions from furnaces at secondary lead smelters have been well characterized, and several studies of combustion sources have shown that lead and arsenic behave in a similar manner when exposed to high temperatures. Because of the parallels, arsenic emissions have been estimated from measured process and fugitive lead emissions at a secondary lead smelter in conjunction with lead-to-arsenic ratios measured in dustfall near secondary lead smelters. The available flue dust arsenic content data from different smelters range from 0.04 to 1.1 percent by weight arsenic, indicating the potential for a wide range of arsenic emissions from plants in the source category. In the following discussion, arsenic emission ranges are shown for individual plants. The ranges shown for individual plants reflect the variability in lead-to-arsenic ratios observed at different smelters. The estimated nationwide emissions and the estimated annual cancer incidence, however, are based on the mid-point of the estimated emission ranges in order to reflect the industry as a whole. Since most of the flue dust arsenic content data available are clustered at the low end of the range of data, use of the midpoint is a conservative approach. The estimated maximum lifetime risk is based upon the maximum emissions estimated for individual plants because this risk parameter reflects the worst case ambient concentration situation.

The estimated baseline nationwide arsenic emissions from process sources at secondary lead smelters is 15.0 Mg/yr. Estimated individual plant arsenic emissions from process sources controlled by fabric filters range from 0.016 to 0.33 Mg/yr for a small plant and from 0.035 to 1.3 Mg/yr for a large plant, depending on the lead content and the lead-to-arsenic ration of the particulate emissions. Based on these emissions estimates, the aggregate risks associated with process sources at secondary lead smelters are estimated as ranging from 0.08 to 1.3 cancer incidences per year, and the estimated maximum lifetime risk calculated ranges from 0.3 in 10,000 to 5 in 10,000.

The estimated baseline nationwide arsenic emissions from process fugitive sources at secondary lead smelters is 12.3 Mg/yr. Estimated individual plant arsenic emissions from process fugitive sources controlled by fabric filters range from 0.012 to 0.24 Mg/yr for a small plant and from 0.048 to 0.96 for a large plant, depending on the lead content and the lead-to-arsenic ratio of the particulate emissions. Based on these emissions estimates, aggregate risks associated with process fugitive sources at secondary lead smelters are estimate to range from 0.07 to 1.3 lung cancer incidences annually, and the estimated maximum lifetime risk calculated ranges from 0.4 in 10,000 to 6.5 in 10,000.

The estimated baseline nationwide arsenic emissions from area fugitive sources at secondary lead smelters is

27.9 Mg/yr. This estimate was obtained by applying a fixed lead-to-arsenic ratio to each component of a set of measured area fugitive *lead* emissions data from one secondary lead plant. However, it is expected that the lead-to-arsenic ratio is not the same for each of the component area fugitive sources and that the estimate is likely to overstate the magnitude of area fugitive *arsenic* emissions from secondary lead smelters. Estimated individual plant arsenic emissions from area fugitive sources range from 0.028 to 0.56 Mg/yr for a small plant and from 0.11 to 2.2 Mg/yr for a large plant. Based on these emissions estimates, the aggregate risks associated with area fugitive sources at secondary lead smelters are estimated to range from 0.2 to 3.3 lung cancer incidences annually, and the estimated maximum lifetime risk calculated ranges from 2 in 10,000 to 32 in 10,000.

Nationwide, the total baseline estimated arsenic emissions from process, process fugitive, and area fugitive sources are 55 Mg per year. The estimate maximum lifetime risk ranges from 2.1 in 10,000 to 34 in 10,000. This range is calculated using the maximum ambient arsenic concentration predicted by dispersion modeling results for each of 40 secondary lead smelters known to be operating. The estimate of arsenic emissions used in the model for this calculation corresponds to the high end of the individual plant ranges given above for process, process fugitive, and area fugitive sources. Daily ambient arsenic monitoring has been conducted for 3 years at five sites located around the plant that has the highest flue dust arsenic content identified at any secondary lead smelter. The measured average arsenic concentrations are a factor of 2 lower than the modeled arsenic concentration for this plant when the high-end arsenic emission estimates are input to the model. Based on the dispersion modeling results for each of the 40 secondary lead smelters known to be operating, the estimated annual cancer incidence from all emissions sources ranges from 0.4 to 5.7. The arsenic emissions estimates input to the model for this calculation correspond to the midpoint of the individual plant emissions ranges for process, process fugitive, and area fugitive sources.

The control strategy considered for reducing process arsenic emissions from secondary lead smelters consists of a combination system of a fabric filter followed by a scrubber to control furnace emissions. Under the existing OSHA standard for lead, sources of process fugitive emissions are already well controlled. The area fugitive source that is believed to be of most concern (flue dust handling) is well controlled at most plants, and no other significant area fugitive sources that are not controlled with BAT have been identified. This leaves the addition of scrubbers to existing fabric filter systems for the control of process emissions as the only viable control strategy.

The fabric filter/wet scrubber combination is a demonstrated technology in the secondary lead smelting industry. However, retrofitting existing smelters with scrubbers may be difficult because of space limitations, and may cost more than installation at a new facility. Use of a scrubber would also result in wastewater treatment and solid waste disposal problems.

Actual measurements of the inorganic arsenic emissions reduction efficiency of scrubbers have not been made. The arsenic emission reduction estimates used in this analysis are based on lead emissions reduction data and are uncertain. By adding a scrubber to control furnace emissions, estimated nationwide arsenic emissions from process sources would be reduced from 15.0 Mg/yr to about 6.8 Mg/yr, resulting in a cost effectiveness range of $600,000 to $12 million per Mg of arsenic. Estimates show that the maximum lifetime risk associated with process sources of arsenic emissions at secondary lead smelters would be reduced by about 65 percent relative to the current levels (from a range of 0.3 in 10,000 to 5 in 10,000 to a range of 0.11 in 10,000 to 1.76 in 10,000). However, the maximum lifetime risk associated with all sources of arsenic emissions at secondary lead smelters would be reduced by less than 1 percent. The reason for this is that the fugitive emissions, which are released at or near ground level, have the greatest effect on exposure. The estimated annual cancer incidence for process sources would decline by about 60 percent, but the estimated annual incidence for secondary lead smelters as a whole would decline by only about 14 percent (from a range of 0.4 to 5.7 per year to a range of 0.31 to 4.9 per year).

Nationwide capital and annualized costs associated with the use of wet scrubbers at all secondary lead smelters would be about $21.6 million and $13.4 million, respectively. A preliminary economic analysis indicates that these costs would have severe economic impacts on an already severely depressed industry. The control costs would result in a 3.5 percent increase in the price of lead if the control costs can be passed on to the lead consumer. It is more likely, however, that the control costs will not be passed forward in lead prices because of competition from primary lead smelters for the same market. Instead, secondary lead smelters would attempt to pass costs backward to lead scrap dealers. Because domestic smelters are in competition with foreign smelters for purchasing lead scrap, it is expected that passing costs back to lead scrap dealers would increase the rate of export of lead scrap and possibly force the closure of at least seven of the smaller smelters. In addition, the economic analysis indicates that several smelters would have difficulty financing the required capital.

EPA is not proposing standards under Section 112 for inorganic arsenic emissions from secondary lead smelters because, based on the information available, EPA has determined that the existing level of control represents BAT, and the Agency cannot, from the data available, reasonably conclude that the risks remaining after application of BAT are unreasonable, considering the uncertainty in the available data, and the negative economic impacts that would result from additional control. The Agency plans to continue its efforts, begun before the Court order was received, to obtain additional data on arsenic emission rates and control system performance for both fugitive and process sources by conducting tests at several secondary lead smelting facilities. The data will not be available until after this notice is published. When the data have been collected and evaluated, the information will be added to the docket relevant to this notice and will be available for public review.

Requests for Comments

EPA requests comments on its proposed decisions not to issue standards for inorganic arsenic emissions from the categories of sources just described. These decisions will be reconsidered if additional information indicates that reductions of public health risks are significantly greater, costs are significantly lower, or controls are more available than those on which EPA based its decision.

Source Categories for Which Standards Are Proposed

Summary of Proposed Standards

National emission standards for hazardous air pollutants are proposed for low-arsenic-throughput copper smelters, high-arsenic-throughput copper smelters, and glass manufacturing

plants. Each owner or operator of an existing source subject to any of these standards would have to be in compliance with the standard within 90 days of promulgation of the final standard, unless a waiver of compliance from the Administrator is obtained. A waiver of compliance for a period not exceeding 2 years can be obtained. Each owner or operator of a source for which construction or modificaiton commences after the date of publication of the proposed standard would have to operate the source in compliance after the date of promulgation of the final standard. The proposed standards are summarized in this section.

Low-Arsenic-Throughout Copper Smelters

The proposed standards for primary copper smelters processing feed material with an annual average inorganic arsenic content less than 0.7 percent inorganic arsenic would require control of secondary emissions from converter operations and from smelting furnace matte and slag tapping operations. The proposed standards for converter secondary emissions would apply to smelters with an average annual inorganic arsenic feed rate to the converters of 6.5 kilograms per hour or greater. The standards for matte and slag tapping operations would apply to smelters with an annual average combined inorganic arsenic process rate in the matte and slag of 40 kilograms per hour or greater.

For the capture of secondary emissions from converter operations the proposed standards would require the installation of a secondary hood system consisting of a fixed enclosure with a horizontal air curtain on the converters. For the collection of secondary emissions from matte and slag tapping and converter operations the proposed standards would limit particulate emissions from the collection device to 11.6 milligrams of particulate matter per dry standard cubic meter of exhaust air.

Compliance with the proposed particulate emission limit would be determined by measuring the total particulate matter emissions using EPA Reference Method 5. Continuous opacity monitoring of gases exhausted from a particular control device would be required to ensure the control device is being properly operated and maintained. Continuous monitoring of airflow, and inspection and maintenance procedures would be required to ensure the secondary hood system is being properly operated and maintained. The reporting requirements for the proposed standards consist of semiannual reporting of occurrences of excess opacity and occurrences of airflows lower than a reference performance level, and annual reporting of the annual average arsenic content of the smelter feed material, the annual arsenic feed rate to the converters, and the annual arsenic process rate in the matte and slag.

High-Arsenic-Throughput Copper Smelters

The proposed standards for primary copper smelters that process feed material with an annual average inorganic arsenic content of 0.7 percent or more would require control of secondary emissions from converting operations. The proposed standards are expressed in terms of an equipment specification for the capture system and a maximum allowable particulate emission limit for the collection device. The required equipment would consist of a fixed enclosure with a horizontal air curtain. Particulate emissions from the collection device would not be permitted to exceed 11.6 milligrams per dry cubic meter of exhaust gas.

Compliance with the proposed emission limit would be determined using EPA Reference Method 5. Continuous monitoring of the opacity of the exhaust from the particulate collection device would be required. To ensure the proper operation of the capture system, continuous monitoring of the airflow, and inspection and maintenance procedures would be required. The reporting requirements of the proposed standards consist of semiannual reporting of occurrences of excess opacity and occurrences of airflows lower than a reference performance level, and annual reporting of the annual average arsenic content of the feed material.

Glass Manufacturing Plants

The proposed standards for glass manufacturing plants would require either (1) control of inorganic arsenic emissions from each glass melting furnace to the level achievable by an electrostatic precipitator (ESP) or fabric filter, or (2) that uncontrolled (i.e., preceding an add-on control device) inorganic arsenic emissions be maintained at 0.40 Mg/yr or less. Each owner or operator choosing to comply with the proposed standards by reducing inorganic arsenic emissions to levels achievable by an ESP or fabric filter would be required to meet a particulate matter emission limit. The particulate emission limits would vary according to different categories of glass. (The particulate emission limits are listed in Table IV-1 of Part IV of this preamble.)

EPA Reference Method 5 would be used to determine compliance with the particulate emission limits. The opacity of the exhaust from the collection device would be required to be monitored continuously. EPA Reference Method 108 would be used to demonstrate that uncontrolled emissions of inorganic arsenic are 0.40 Mg/yr or less. The reporting requirements of the proposed standards would consist of semiannual reporting of occurrences of excess opacity.

Summary of Environmental, Health, Energy, and Economic Impacts

The nationwide impacts of the proposed standards for inorganic arsenic emissions from low-aresenic-throughput copper smelters, high-arsenic-throughput copper smelters, and glass manufacturing plants are summarized in Table I-1. There are no wastewater impacts associated with any of the proposed standards. The impacts of the proposed standards for each of these source categories are presented in detail in Parts II, III, and IV.

TABLE I-1.—SUMMARY OF IMPACTS OF PROPOSED STANDARDS

	Low-arsenic copper smelters		High-arsenic copper smelters		Glass manufacturing plants	
	No NESHAP	NESHAP	No NESHAP	NESHAP	No NESHAP	NESHAP
Environmental Impacts						
Arsenic emissions, mg/yr	738	627	282	172	36.7	4.7.
Solid waste, mg/yr	3,200,000	9,211,000	182,000	193,000	20	87.
Health Impacts [1]						
Maximum lifetime risk $\times 10^{-4}$	43 to 690	9.4 to 150	230 to 3,600	58 to 920	6.4 to 100	0.97 to 15.6.
Cancer incidence per year	0.10 to 1.6	0.04 to 0.64	1.1 to 17.4	0.21 to 3.4	0.07 to 1.2	0.01 to 0.21.

TABLE I-I.—SUMMARY OF IMPACTS OF PROPOSED STANDARDS—Continued

	Low-arsenic copper smelters		High-arsenic copper smelters		Glass manufacturing plants	
	No NESHAP	NESHAP	No NESHAP	NESHAP	No NESHAP	NESHAP
Cost/Economic Impacts						
Incremental capital costs, millions of dollars.		35.3		3.5		27.4.
Incremental annualized costs, millions of dollars.		9.5		1.5		4.9.
Price increase, percent		0.1 to 4.4		0.5 to 0.6		0.04 to 3.1.
Incremental energy impacts, MW-hr/yr		+25,000		+1,500		+3,400.

[1]The ranges in these quantifications of public health impacts reflect the uncertainty of combining the three different dose-response relationships relevant to the three occupational studies which EPA used as the basis for the development of unit risk estimates. Other significant uncertainties associated with EPA's quantification of public health impact are discussed in the Public Health Risks section of this notice. In addition, the modeled ambient air concentrations depend upon (1) plant configurations, which differ and are difficult to determine for more than a few plants; (2) emission point characteristics, which differ from plant to plant and are difficult to obtain for more than a few plants; and (3) emission rates, which differ among plants and with time.

II. INORGANIC ARSENIC EMISSIONS FROM PRIMARY COPPER SMELTERS PROCESSING FEED MATERIALS CONTAINING 0.7 PERCENT OR GREATER ARSENIC

Proposed Standards

The proposed standards would regulate inorganic arsenic emissions from primary copper smelters that process feed material with an annual average inorganic arsenic content of 0.7 weight percent or more. The proposed standards would require the use of best available technology (BAT) to limit secondary inorganic arsenic emissions from copper converting operations. Secondary inorganic arsenic emissions are emissions that escape capture from the primary emission control system. The BAT for the capture of secondary inorganic arsenic emissions from converter charging, blowing, skimming, holding, and pouring operations is a secondary hood system consisting of a fixed enclosure with a horizontal air curtain. For collection of secondary inorganic arsenic emissions, BAT is a baghouse or equivalent control device. The proposed standards are expressed in terms of equipment specifications for the capture system and a maximum allowable particulate emission limit for the collection device. Particulate emissions from the collection device would not be permitted to exceed 11.6 milligrams of particulates per dry standard cubic meter of exhaust gas (mg/dscm). This limit reflects BAT for collection of secondary inorganic arsenic emissions.

To determine the applicability of the proposed standards to a primary copper smelter, the inorganic arsenic content of the feed materials would be measured using the proposed Reference Method 108A. To determine compliance with the proposed particulate emission limit, Reference Methods 1, 2, 3, and 5 in Appendix A of 40 CFR Part 60 would be used. Continuous opacity monitoring of gases exhausted from a particulate control device would be required to ensure the control device is being properly operated and maintained. Continuous monitoring of airflow would be required to ensure the secondary hood system is being properly operated and maintained.

Summary of Health, Environmental, Energy, and Economic Impacts

The proposed standards would affect primary copper smelters that process feed material having an annual average inorganic arsenic content of 0.7 weight percent or more. This category is defined as high-arsenic-throughput smelters. The only existing primary copper smelter in the high-arsenic-throughput smelter category is owned and operated by ASARCO, Incorporated (ASARCO) and located in Tacoma, Washington. The annual average inorganic arsenic content of the feed material is not expected to be increased to 0.7 percent or above at any other existing smelter, and no new smelters are projected to be built. For this reason only the ASARCO smelter located in Tacoma, Washington (hereafter referred to as the ASARCO-Tacoma smelter), has been analyzed for the purpose of calculating the health, environmental, economic, and energy impacts of the proposed standards.

As will be discussed in the next section, to facilitate regulatory analysis EPA has separated the primary copper smelting industry into two source categories based on the annual average inorganic arsenic content of the smelter feed material. Primary copper smelters which process feed material with an annual average inorganic arsenic content less than 0.7 weight percent are addressed in Part III of this preamble.

The proposed standards would reduce total inorganic arsenic emissions from the ASARCO-Tacoma smelter from the current level of 282 megagrams (Mg) (311 tons) per year to a level of 172 Mg (189 tons) per year. As a result of this reduction in inorganic arsenic emissions, it is estimated that the number of incidences of lung cancer due to inorganic arsenic exposure for the approximately 370,000 people living within about 20 kilometers (12.5 miles) of the ASARCO-Tacoma smelter would be reduced from a range of 1.1 to 17.6 incidences per year to a range of 0.2 to 3.4 incidences per year. The proposed standards would reduce the estimated maximum lifetime risk from exposure to airborne inorganic arsenic from a range of 2.3 to 37 in 100 to a range of 0.58 to 9.2 in 100. The maximum lifetime risk represents the probability of a person contracting cancer who has been exposed continuously during a 70-year period to the maximum annual inorganic arsenic concentration due to inorganic arsenic emissions from the ASARCO-Tacoma smelter. (These estimated health impacts were calculated based on a number of assumptions and contain considerable uncertainty as discussed in Part I of this preamble and in Appendix E of the background information document.)

Application of the controls required by the proposed standards would increase the amount of solid waste (i.e., collected particulate matter containing inorganic arsenic) entering the ASARCO-Tacoma smelter waste disposal system by approximately 11 gigagrams (Gg) (12,000 tons) per year. Currently, the ASARCO-Tacoma smelter generates approximately 182 Gg (200,000 tons) per year of solid waste (including slag). The additional amount of solid waste generated can be handled by the existing waste handling system at the smelter. Because the control systems expected to be used to achieve the proposed standards are dry systems, there would be no water pollution impact.

Energy impacts under the proposed standards would be increased electrical power consumption. The annual energy requirement for the ASARCO-Tacoma smelter is approximately 2.9×10^9 kilowatt-hours per year (kWh/y). Additional energy requirements at the ASARCO-Tacoma smelter due to the proposed standards are estimated to be approximately 1.5×10^7 kWh/y, representing an increase in the annual

smelter energy consumption of about 0.5 percent.

For the ASARCO-Tacoma smelter, capital and annualized costs required to meet the proposed standards would be approximately $3.5 million and $1.5 million, respectively. The primary economic impacts associated with the proposed standards are projected decreases in profitability for the ASARCO-Tacoma smelter. It is anticipated that the proposed standards will not adversely affect the economic viability of the smelter or employment at the smelter. In addition, it is estimated that the proposed standards could result in an increase in the price of copper of up to 0.8 percent.

Rationale

Selection of Source Category

Copper smelting involves the processing of copper-bearing ores containing varying concentrations of inorganic arsenic. EPA estimates that current controlled emissions of inorganic arsenic from primary copper smelters are 1,012 megagrams (Mg) (1,116 tons) per year.

Several studies have assessed health problems in communities where primary copper smelters are located. Increased lung cancer has been reported among male and female residents living near a primary copper smelter located in Anaconda, Montana (this smelter was permanently closed in 1981). The National Cancer Institute has released a study showing excess mortality from respiratory cancer in counties where primary copper smelters are located.(*14*)

EPA initiated a study in 1977 of the populations exposed to various ambient air concentrations of inorganic arsenic. This study, in summarizing 1974 data collected by EPA's National Air Sampling Network (NASN), shows that the annual average concentration of inorganic arsenic for five urban areas within 80 kilometers of selected smelters was 10 times greater than the annual average for all of the sites (in excess of 250) in the nationwide network. At a site within 16 kilometers of the ASARCO-Tacoma smelter, the annual average was more than 25 times the national average.

Based on information provided by the copper smelting industry, EPA has determined that the ASARCO-Tacoma smelter processes feed containing a higher concentration of inorganic arsenic than any other primary copper smelter in the United States. The ASARCO-Tacoma smelter is a custom smelter. ASARCO purchases ore concentrates from other mining and milling producers to process at its Tacoma smelter. Typically, feed material containing on the average 4.0 weight percent inorganic arsenic is processed at the ASARCO-Tacoma smelter at the rate of 940 kilograms of inorganic arsenic per hour (kg/h). The level of inorganic arsenic concentration in the feed materials processed at the ASARCO-Tacoma smelter is an order of magnitude greater than the level processed at the other 14 primary copper smelters. The second highest average inorganic arsenic content in the feed material processed at a domestic smelter is 0.6 weight percent. The second highest average process rate of inorganic arsenic at a domestic smelter is approximately 170 kg/h. In fact, the inorganic arsenic process rate for the ASARCO-Tacoma smelter is significantly greater than the combined inorganic arsenic process rate of 625 kg/h for the other 14 smelters.

Because of the potential for high inorganic arsenic emissions and the proximity of the population, calculated risks and cancer incidence are substantially higher for the ASARCO-Tacoma smelter than for other smelters. Consequently, the benefits associated with the application of specific control technologies to the ASARCO-Tacoma smelter versus the other smelters are significantly different when considered in terms of emission and risk reduction, costs, energy, and other impacts. For this reason, EPA believes it is reasonable for purposes of regulation to separate smelters into two source categories based on the annual average inorganic arsenic concentration in the feed.

The source category for high-arsenic-throughput smelters is primary copper smelters processing feed with an annual average inorganic arsenic content of 0.7 percent or more. The value 0.7 percent was selected based on the consideration of the inorganic arsenic content of the feed materials processed at the existing smelters other than the ASARCO-Tacoma smelter. The regulatory analysis of the 14 existing smelters which process feed material with an annual average inorganic arsenic content less than 0.7 weight percent is presented in Part III of this preamble.

EPA has, as a matter of prudent health policy, taken the position that human carcinogens must be treated as posing some risk of cancer at any non-zone level of exposure. Therefore, in conjunction with the Administrator's determination that (1) there is a high probability that inorganic arsenic is carcinogenic to humans, and (2) that there is significant public exposure to inorganic arsenic emissions from the ASARCO-Tacoma smelter, the Administrator has determined that inorganic arsenic emissions from high-arsenic-throughput smelters are significant and should be regulated.

In making the decision to regulate high-arsenic-throughput smelters, the Administrator considered whether other regulations affecting high-arsenic-throughput smelters were adequate to control atmospheric inorganic arsenic emissions. The Administrator has concluded that existing regulations are not adequate to protect the public health and welfare from sources of inorganic arsenic emissions at high-arsenic-throughput smelters with an ample margin of safety. Based on an analysis of the costs and impacts of more stringent alternatives, it is the Administrator's judgment that a substantial reduction in inorganic arsenic emissions to the atmosphere from the current level is achievable and appropriate. Therefore, EPA has decided to proceed with the development of standards to control inorganic arsenic emissions from high-arsenic-throughput smelters under Section 112 of the Clean Air Act.

EPA expects that only the ASARCO-Tacoma smelter would be in the high-arsenic-throughput smelter source category. Should any other existing smelter process feed materials having an annual average inorganic arsenic feed content above 0.7 weight percent, the smelter would become subject to the proposed standards. In addition, the proposed standards would also apply to any new smelter processing feed materials with an annual average inorganic arsenic concentration of 0.7 weight percent or more.

Other than the ASARCO-Tacoma smelter, no existing smelter is expected to process feed materials having an annual average inorganic arsenic feed content above 0.7 weight percent within the next 5 years. Also, it is projected that no new domestic primary copper smelters will be built within the next 5 years. This projection is based on EPA's conclusion that annual industry growth will be accommodated by existing smelters, which are presently not operating or are operating below capacity.

Description of Smelting Process and Emission Points

A primary copper smelter is a facility that produces copper from copper sulfide ore concentrates using pyrometallurgical techniques. These techniques are based on copper's strong affinity for sulfur and its weak affinity for oxygen as compared to that of iron and other base metals in the ore. The

purpose of smelting is to separate the copper from the iron, sulfur, and other impurities present in the ore concentrate.

Primary copper smelting involves three basic steps. First, the copper sulfide ore concentrates are heated in a roaster to remove a portion of the sulfur contained in the concentrate. The solid material produced by a roaster is called "calcine." The calcine is loaded into small rail cars (called "larry cars"). This operation is called "calcine discharging."

The larry cars transfer the calcine to a smelting furnace. At most smelters, raw copper sulfide ore concentrate is charged directly to the smelting furnace. In the smelting furnace, the calcine or raw, unroasted ore concentrate is heated to form a molten bath containing separate layers of matte (an impure mixture of copper and iron sulfide) and slag (a mixture of nonmetallic impurities). Molten slag is skimmed from the upper layer of the bath and poured from openings in the furnace walls (called "ports") into inclined troughs (called "launders"), which empty the slag into a vessel mounted on a small rail car (called a "slag pot"). This operation is called "slag tapping." Molten matte is poured from a second set of furnace ports into launders, which empty the matte into ladles. This operation is called "matte tapping."

The ladle is transported by an overhead crane to a copper converter. The molten matte is poured from the ladle into a large opening on the top of the converter vessel. Air is blown into the converter to first oxidize the iron sulfide in the matte. The resulting iron silicate slag is poured directly from the converter mouth into a ladle. When all of the iron is oxidized and removed, the remaining copper sulfide is oxidized to form a high-purity copper product (called "blister copper"). The blister copper is poured directly from the converter into a ladle for transfer to an anode furnace (for further refining of the copper) or directly to the anode casting area (for casting of the copper into copper anodes).

Roaster and smelting furnace offgases are produced by the combustion of fuel and the reaction of materials in the high-temperature environments. Converter offgases result from blowing air through the matte and the reaction of materials in the molten matte. Inorganic arsenic in the ore concentrates is volatized during roasting, smelting, and converting, and is exhausted from the process equipment in the offgases. Offgases discharged from roasters, smelting furnaces, and converters, in the absence of any controls, would have the highest inorganic arsenic emissions of any of the copper smelting sources at the ASARCO-Tacoma smelter. An inorganic arsenic material balance was provided by ASARCO and reviewed by EPA to inventory the inorganic arsenic inputs versus outputs from each process at the ASARCO-Tacoma smelter. The material balance shows that the inorganic arsenic emission rates in the absence of any controls would be 255 kg/h for the roasters, 608 kg/h for the smelting furnace, and 207 kg/h for the converters.

During converting, most of the remaining amount of inorganic arsenic and other impurities originally in the copper ore are removed from the copper matte to produce blister copper (98 to 99 percent pure copper). Blister copper from the converters may be further refined in anode furnaces prior to casting of copper anodes (solid slabs of blister copper). Because of the small quantity of inorganic arsenic remaining in the blister copper charged to the anode furnace, inorganic arsenic emissions from anode furnaces are very low when compared to the inorganic arsenic emissions from roasters, smelting furnaces, or converters. The material balance for teh ASARCO-Tacoma smelter shows that inorganic arsenic emissions from anode furnaces in the absence of any controls would be 0.4 kg/h.

The ASARCO-Tacoma smelter is the only primary copper smelter that recovers arsenic from collected waste materials. Dust collected in the flues and control devices at the smelter is processed to produce arsenic trioxide for sale to arsenic chemical manufacturing companies. In addition, metallic arsenic is produced at the smelter site. The material balance shows that inorganic arsenic emissions from the arsenic trioxide and metallic arsenic manufacturing processes in the absence of any controls would be 376 kg/h.

Secondary inorganic arsenic emissions from converters are those emissions that escape capture from the primary emission control system. When the converter is rolled out for charging matte into the converter mouth, skimming slag formed in the converter, or pouring blister copper into a ladle, the primary hood is moved up and away from the converter mouth to provide clearance for the overhead crane and ladle. As a result, charging, skimming, and pouring operations can emit significant amounts of secondary inorganic arsenic because these operations occur outside the range of the converter's primary offgas exhaust hood. Additional secondary inorganic arsenic emissions also escape capture by the primary offgas exhaust hood during blowing and holding operations. For the ASARCO-Tacoma smelter, the material balance shows that the secondary inorganic arsenic emissions rate from converter operations in the absence of any controls would be 14 kg/h.

Secondary inorganic arsenic emissions also escape to the atmosphere during calcine discharging at the roaster and during matte tapping and slag tapping at the smelting furnace. An estimate based on the material balance for the ASARCO-Tacoma smelter shows that inorganic arsenic emissions from matte tapping in the absence of any controls would be 4 kg/h. Inorganic arsenic emissions from calcine discharging and slag tapping are estimated to be less than 1 kg/h. Secondary inorganic arsenic emissions from anode furnace operations are less than 0.1 kg/h. Miscellaneous sources of secondary inorganic emissions from primary copper smelter operations include the handling and transfer of dust from control device storage hoppers, equipment flues, and dust chambers. At the ASARCO-Tacoma smelter these activities are conducted at many locations throughout the plant. Although the amount of inorganic arsenic emissions at each location is very small, the cumulative total of emissions from many locations can be a significant quantity. The material balance for the ASARCO-Tacoma smelter shows that secondary inorganic arsenic emissions from miscellaneous sources would be about 6 kg/h in the absense of any controls.

Policy for Determining Control Levels

For this source category, which consists of only the ASARCO-Tacoma smelter, a three-step approach has been followed to determine the control requirements being proposed. This approach is based on the policy discussed in Part I of this preamble.

The first step consists of determining whether current controls at the ASARCO-Tacoma smelter reflect application of BAT. BAT is the technology which, in the judgment of EPA, is the most advanced level of control which is adequately demonstrated considering environmental, energy, and economic impacts. BAT considers economic feasibility; and, for this smelter, BAT does not exceed the most advanced level of control that the smelter could afford without closing.

For those emission points where BAT is in place, EPA determines whether a NESHAP standard is needed to assure

that BAT will remain in place and will be properly operated and maintained. A primary consideration is the existence of other Federally enforceable standards. If BAT is not in place on specific emission points or if there is reason to expect that BAT may not remain in operation, these emission points are identified for development of standards.

The second step involves the selection of BAT for the emission points at the ASARCO-Tacoma smelter identified for the development of standards. To select BAT, regulatory alternatives are defined based on demonstrated control technology. The environmental, economic, and energy impacts of the alternatives are determined. Based on an assessment of these impacts, one of the alternatives is selected as BAT.

The third step involves consideration of regulatory alternatives beyond BAT for all of the inorganic arsenic emission points at the ASARCO-Tacoma smelter. The risk of cancer incidence due to inorganic arsenic exposure in the population distributed around the ASARCO-Tacoma smelter is estimated. This estimated risk which remains after application of BAT is evaluated considering costs, economic impacts, risk reduction, and other impacts that would result if a more stringent alternative were selected. If the residual risk is judged not to be unreasonable considering the other impacts or beyond BAT controls, more stringent controls than BAT are not required. However, if the residual risk is judged to be unreasonable, then an alternative more stringent than BAT would be required.

Determination of the Adequacy of Current Controls

Inorganic arsenic emission sources at the ASARCO-Tacoma smelter are currently controlled using a variety of capture and collection techniques. Capture techniques are used to gather and confine secondary inorganic arsenic emissions and to transport them to a collection device. Collection techniques are used to remove inorganic arsenic from process offgases and captured gases prior to venting the gases to the atmosphere. Each inorganic arsenic emission source at the ASARCO-Tacoma smelter was examined by EPA to determine the extent to which inorganic arsenic emissions are currently controlled and whether the level of control represents BAT.

Controls currently in place at the ASARCO-Tacoma smelter collect inorganic arsenic emissions in the roaster, smelting furnace, converter, and anode furnace process offgases. During these process operations, inorganic arsenic is volatilized and emitted as a metallic oxide vapor in the process offgases. By cooling the process offgases, the inorganic arsenic vapor condenses to form inorganic arsenic particulates, which can be collected in a conventional particulate control device. Because of the high-inorganic-arsenic content of the feed materials process at the ASARCO-Tacoma smelter, the concentration of inorganic arsenic in the process offgases greatly exceeds the inorganic arsenic saturation concentration at gas temperatures less than 121° C (250°F). Consequently, for process offgases cooled to temperatures below 121° C, inorganic arsenic emission control levels can be achieved that approach the performamce capability of a control device for collecting total particulate matter.

Roaster process offgases at the ASARCO-Tacoma smelter are cooled to a temperature less than 121° C and the inorganic arsenic particulates are collected in a baghouse. The smelting furnace process offgases are cooled to a temperature of 92° C, and the inorganic arsenic particulates are collected in an electrostatic precipitator. Converter process offgases are exhausted to a liquid SO_2 plant or a single-contact sulfuric acid plant. Because the presence of solid and gaseous contaminants can cause serious difficulties in the operation of the SO_2 or acid plants, the converter process offgases are first cleaned by passing the gases through a water spray chamber, an electrostatic precipitator, scrubbers, and mist precipitators. This gas cleaning process removes over 99 percent of the contaminants, including inorganic arsenic, from the offgases prior to entering the SO_2 or acid plants. In the event that the volume of converter process offgases exceeds the capacity of the SO_2 and acid plants or when the plants are not operating, the excess converter offgases are diverted to an electrostatic precipitator. This electrostatic precipitator also serves as the full-time control device for the anode furnace process offgases. Cooling of the gases in the ducting lowers the gas temperature to less than 120° C prior to entering the electrostatic precipitator.

Controls for inorganic arsenic emissions from roaster, smelting furnace, converter, and anode furance process offgases are in place at the ASARCO-Tacoma smelter in order to comply with existing total particulate emission regulations of the Puget Sound Air Pollution Control Agency (PSAPCA). These regulations are expressed in terms of very stringent process weight particulate emission limits. The PSAPCA regulations are included as part of the Washington State implementation plan (SIP) for attaining the Federal ambient air quality standard for particulate matter and, therefore, are Federally enforceable regulations.

Roaster, smelting furnace, converter, and anode furnace process offgases are potentially significant sources of inorganic arsenic emissions. Because of the high inorganic arsenic vapor concentrations in the process offgases at a high-arsenic-throughput smelter, cooling of the offgases to below 121° C results in condensation of the vapor to form particulates. Thus, collection of the inorganic arsenic particulates in properly designed and operated particulate control devices can effectively control the emission to the atmosphere of inorganic arsenic in the process offgases. The types of control systems currently used at the ASARCO-Tacoma smelter to collect inorganic arsenic from process offgases achieve inorganic arsenic collection efficiencies greater than 96 percent.

The control systems in place at the ASARCO-Tacoma smelter to control roaster, smelting furnace, converter, and anode furnace process offgas inorganic arsenic emissions represent the best demonstrated level of control considering economic feasibility. Therefore, the roaster, smelting furnace, converter, and anode furnace process offgases are already controlled using BAT. Existing Federally enforceable regulations require the controls to remain in place and to be properly operated and maintained to reduce total particulate matter emissions. These regulations serve to assure that BAT for inorganic arsenic will remain in place. Therefore, additional standards based on BAT are not necessary at this time for smelter roaster, smelting furnace, converter, or anode furnace process offgases.

Existing controls in place at the ASARCO-Tacoma smelter significantly reduce the quantity of inorganic arsenic emissions from the arsenic trioxide and metallic arsenic manufacturing processes. Arsenic laden offgases from the Godfrey roasters pass through the arsenic kitchens where arsenic trioxide condenses on the walls of the chambers and is collected as a product. Gases passing through the kitchens are vented to a baghouse. The temperature of the gases at the inlet to the baghouse is less than 121° C. Offgases from the metallic arsenic furnaces are also vented to the same baghouse. Inorganic arsenic emission points at conveyors, charge hoppers, storage bunkers, and the barreling and carloading stations are controlled by capturing the emissions using local hoods and venting the

emissions to several small baghouses. These controls are in place at the ASARCO-Tacoma smelter to comply with PSAPCA arsenic and particulate regulations and with the U.S. Occupational Safety and Health Administration (OSHA) inorganic arsenic worker exposure standard.

The composition of the total particulate matter emissions from the arsenic manufacturing processes at the ASARCO-Tacoma smelter is inorganic arsenic particulates. All inorganic arsenic emission points are controlled by collecting the particulate emissions using baghouses. The major process offgas streams are combined and vented to a new baghouse installed in 1982. The baghouse design represents the most advanced level of particulate matter collection technology demonstrated to date. Additional reduction inorganic arsenic emissions is not possible using available control technology. Therefore, EPA considers the controls at the ASARCO-Tacoma smelter arsenic manufacturing plant to be BAT. Since these controls are required by Federally enforceable regulations, EPA is not developing additional BAT standards for arsenic manufacturing processes at this time.

The major source of secondary arsenic emissions at the ASARCO-Tacoma smelter is the converter operations. ASARCO has recently installed a prototype control system on one of the three converters used at the smelter for copper converting operations. (A fourth converter is used as a holding furnace only.) A secondary hood system consisting of a fixed enclosure with a horizontal air curtain is used to capture the secondary inorganic arsenic emissions. The captured emissions are vented to an electrostatic precipitator (designated by ASARCO as the No. 2 ESP). The company is planning to install similar secondary hood systems on the other two converters and to vent the captured emissions to the No. 2 ESP. However, regulations do not exist that would specifically require the use of BAT to limit secondary inorganic arsenic emissions from converter operations. Because of the potential for converter operations to emit large quantities of secondary inorganic arsenic, and because of the demonstrated availability of controls for these emissions EPA decided to develop standards based, as a minimum, on BAT for secondary inorganic arsenic emissions from converter operations.

Smelting furnace secondary inorganic arsenic emissions from matte tapping and slag tapping are captured and collected at the ASARCO-Tacoma smelter. Copper matte or slag flows from ports in the furnace walls through a launder which directs the molten material to a point where it is transferred to a ladle or slag pot. At the ASARCO-Tacoma smelter, the matte tapping launders are enclosed by semicircular covers. Slag tapping launders are covered by fixed hoods mounted above the troughs. Local exhaust hoods are mounted about 1 meter (3 feet) above each tap port. At each launder-to-ladle transfer point for matte tapping, a retractable exhaust hood is used to capture emissions generated at the ladle. An overhead crane places the ladle on the floor in front of the launder. The hood is then lowered over the ladle prior to tapping and is raised after the tap is complete. The overhead crane returns and picks up the ladle of molten matte for transfer to the converters. At each launder-to-slag pot transfer point for slag tapping, large fixed exhaust hoods are mounted above the slag pot transfer point. The captured secondary emissions from matte tapping and slag tapping are vented to the No. 2 ESP.

At the ASARCO-Tacoma smelter, all emission points from smelting furnace matte tapping or slag tapping are enclosed or are covered by local exhaust hoods. In EPA's judgment, this capture system, if properly operated and maintained, represents BAT for capture of secondary emissions from smelting furnace matte tapping and slag tapping because no other demonstrated technology can achieve a higher level of capture efficiency. The capture system is in place to fulfill a tripartite agreement between ASARCO, OSHA, and the United Steelworkers of America (union representing workers at the ASARCO-Tacoma smelter). The agreement specifies the engineering controls and work practices to be implemented at the ASARCO-Tacoma smelter for achieving compliance with the Federal OSHA inorganic arsenic worker exposure standard and, therefore, is Federally enforceable. Although not specified in the agreement, the captured secondary inorganic arsenic emissions are vented to an electrostatic precipitator for collection. The level of performance of this control device is equivalent to the level of performance of BAT for collection of process inorganic arsenic emissions. EPA has no reason to believe that ASARCO will not continue to properly operate and maintain the electrostatic precipitator; therefore, EPA concluded that BAT is in place at the ASARCO-Tacoma smelter for capture and collection of secondary inorganic arsenic emissions from smelting furnace matte tapping and slag tapping.

Roaster secondary inorganic arsenic emissions from calcine discharge are also captured and collected at the ASARCO-Tacoma smelter. Calcine is gravity loaded into larry cars from hoppers located at the bottom of the roaster. An exhaust hood is mounted on either side of each hopper. A spring-loaded top having three small openings covers each larry car. When the larry car is positioned under the hopper, the openings in the car top align with the hopper outlet and the two exhaust hoods. Because the top is spring-loaded, a tight connection is achieved between the top and the hopper outlet and hoods. During loading, an induced draft fan is activated to ventilate the space under the car top and to capture the emissions generated by the loading operation. The captured secondary emissions are combined with the roaster offgases prior to venting to the baghouse. In addition to the local hoods located at the calcine discharge point, the calcine hopper area is enclosed to form a tunnel-like structure. This area is ventilated with the exhaust air being combined with the exhaust air from the local exhaust hoods.

The capture system used at the ASARCO-Tacoma smelter for capturing secondary inorganic arsenic emissions from roaster calcine discharge is the most advanced technology demonstrated. In EPA's judgment, this system represents BAT. Similar to the controls in place at the ASARCO-Tacoma smelter for smelting furnace matte tapping and slag tapping, the calcine discharge capture system is in place to fulfill the tripartite agreement to achieve the OSHA inorganic arsenic worker exposure standard. The captured secondary inorganic arsenic emissions are vented to the baghouse which has been determined to be BAT for collection of inorganic arsenic emissions from the roaster process offgases. Therefore, BAT is in place at the ASARCO-Tacoma smelter for capture and collection of secondary inorganic emissions from roaster calcine discharge.

To control secondary inorganic arsenic emissions from the handling and transfer of flue dust, the ASARCO-Tacoma smelter has implemented the best control practices available. All dust conveyor systems are enclosed in dust-tight housings. Hopper and storage bins are equipped with dust level indicators. Dust-tight connections are used to transfer material from hopers and bins to vehicles. This equipment is in place to fulfill the tripartite agreement to achieve

the OSHA worker exposure standard. Because BAT is already required in order to comply with existing Federal regulations, additional standards based on BAT are not necessary at this time for miscellaneous sources of secondary inorganic arsenic emissions at high-arsenic-throughput smelters.

The anode furnances in operation at the ASARCO-Tacoma smelter are of an atypical design that is not used at anyother primary copper smelter located in the United States. Secondary inorganic arsenic emissions (perhaps up to 0.1 kg/h) escape to the atmosphere from a large opening in the anode furnace wall. This opening allows the furnance operators to perform activities necessary for refining the blister copper. Secondary inorganic arsenic emissions from the anode furnace could conceivably be captured using an elaborate secondary hood system. However, the effectiveness of such a theoretical capture system is uncertain considering the design of the anode furnaces and the nature of operations required to operate the furnaces. EPA believes that any capture system designed to provide the necessary access to the anode furnaces would impose very high costs. Based on the small reduction in total smelter inorganic arsenic emissions that would be expected to result from controlling anode furnace secondary emissions, it is EPA's judgment that the costs for installing controls to capture the anode furnace secondary inorganic arsenic emissions are excessive. Therefore, EPA has determined that the existing equipment represents BAT and, as a result, no standards are being developed at this time for secondary inorganic arsenic emissions from anode furnaces.

In summary, roaster, smelting furnace, and converter process offgases as well as anode furnace, arsenic plant, and flue dust handling sources are judged to be currently controlled using BAT. Also, secondary inorganic emissions from roaster calcine discharge, and smelting furnace matte tapping and slag tapping are captured and collected using BAT. These controls are required by existing Federally enforceable regulations or are expected by EPA to remain in place and to be properly operated and maintained. With the exception of the prototype secondary hood on one converter, no controls are currently in place to limit secondary emissions from the converters. Therefore, because capture technology has been demonstrated, EPA decided to develop standards based, as a minumum, on BAT for secondary emissions from converters.

Selection of BAT for Converters

Control Technology. Primary converter hoods capture process emissions during converter blowing periods; but, during charging, skimming, holding, or pouring operations, the mouth of the converter is no longer under the primary hood, and converter emissions escape capture by the hood. There are three alternative control methods for capturing secondary emissions from converter operations: (1) fixed and retractable secondary hoods, (2) air curtain secondary hoods, and (3) building evacuation.

Four domestic smelters currently use fixed secondary hoods to capture converter secondary emissions. These hoods are attached to the upper front side of the converter primary hoods. More complex retractable secondary hood designs are used at one domestic smelter and smelters in Japan. Visual observations made at two domestic copper smelters showed that fixed and retractable secondary hoods captured a portion of the secondary emissions from converter operations. However, the capture efficiencies of existing fixed and retractable secondary hood designs are judged by EPA to be less than 90 percent.

A more advanced method for the capture of converter secondary emissions is the use of an air curtain secondary hood. Walls are erected to enclose the sides and the back of the area around the converter mouth. A portion of the enclosure back wall is formed by the primary hood. Openings at the top and in the front of the enclosure allow for movement of the overhead crane cables and block, and the ladle. Edges of the walls in contact with the primary hood or the converter vessel are sealed. A broad, horizontal airstream blows across the entire width of the open space at the top of the enclosure. This airstream is called an "air curtain." The air curtain is produced by blowing compressed air from a narrow horizontal slot extending the length of a plenum along the top of one of the side walls. The air is directed to a receiving hood along the top of the opposite side wall. An induced draft fan in the ducting behind the receiving hood pulls the airstream into the hood. When the converter is rolled out away from the primary hood for charging, skimming, or pouring, the air curtain sweeps the converter offgases and emissions which are generated by material transfer between the converter and the ladle into the receiving hood. The captured emissions are then vented to a collection device or released directly to the atmosphere through a stack.

The air curtain secondary hood has been demonstrated as an effective method for capturing converter secondary emissions. For the past 3 years, air curtain secondary hoods have been in place to control converter secondary emissions at copper smelters in Japan. A prototype air curtain secondary hood was installed in 1982 on one of the converters at the ASARCO-Tacoma smelter.

In January 1983, EPA conducted a test program designed to evaluate the effectiveness of the capture of secondary emissions by the prototype air curtain secondary hood at the ASARCO-Tacoma smelter. The capture efficiency of the system was evaluated by performing a gas tracer study and visual observations. The gas tracer study involved injecting a gas tracer inside the boundaries of the fixed enclosure and measuring the amount of the gas tracer in the exhaust gases in the ducting downstream of the enclosure receiving hood. The capture efficiency was then calculated by a material balance of the inlet and outlet tracer gas mass flow rates. Based on the results of this test program, EPA believes an air curtain secondary hood is capable of achieving an overall capture efficiency of 95 percent.

Capture of converter secondary emissions by building evacuation is accomplished by controlling the airflow patterns within the building housing the converters and by maintaining a sufficient air change or ventilation rate. Control of airflow in the ventilated area is obtained by isolating it from other areas and by the proper design and placement of inlet and outlet openings. Proper location and sizing of inlet and outlet openings provide effective airflow patterns so that the secondary emissions cannot escape to adjacent areas or recirculate within the area.

EPA believes that a well-designed building evacuation system should be capable of achieving at least 95 percent capture efficiency of secondary emissions. However, the building evacuation systems currently used in the non-ferrous metallurgical industry have not demonstrated this level of control. A building evacuation system is being used at the ASARCO copper, lead, and zinc smelter located in El Paso, Texas, to capture secondary emissions from copper converters and a zinc smelting furnace operated inside a building. While preventing the venting of secondary emissions to the ambient air outside the building, use of the building evacuation system at the ASARCO-El

Paso smelter has resulted in elevated concentrations of inorganic arsenic, lead, and SO_2, inside the building in addition to excessive heat buildup. To alleviate these unacceptable working conditions, building openings have been increased and roof ventilators designed for emergency use only have been operated routinely. As a result of increasing the number of building openings, the capture efficiency of the building evacuation system has been decreased. The building evacuation system as presently operated at the ASARCO-El Paso smelter achieves a capture efficiency of less than 95 percent.

The control technology for the collection of secondary inorganic arsenic emissions is based on the cooling of the exhaust gases to condense the inorganic arsenic vapors to form particulates, and the subsequent collection of the inorganic arsenic particulates in a conventional particulate control device. Baghouse and electrostatic precipitator control devices are currently used at primary copper smelters to collect secondary inorganic arsenic emissions as well as particulate matter emissions.

To evaluate the efficiency of a conventional particulate control device, EPA tested the baghouse in place at the ASARCO-El Paso smelter used for the collection of secondary emissions from the converters. Emission measurements for inorganic arsenic and total particulates were conducted at the baghouse inlet and outlet for three test runs. At the baghouse outlet, inorganic arsenic concentrations ranged from 0.015 to 0.39 milligram per dry standard cubic meter of exhaust gas (mg/dscm). The corresponding total particulate concentrations at the baghouse outlet ranged from 1.1 to 11.6 mg/dscm. Gas temperatures at the baghouse inlet were less than 50°C (112°F). The inorganic arsenic collection efficiency was over 99 percent for two of the test runs and was greater than 94 percent for the third test run. The test results showed that the overall average inorganic arsenic collection efficiency of the baghouse for three test runs was 96 percent. EPA concluded from the tests that a properly designed, operated, and maintained baghouse or equivalent particulate control device can achieve a collection efficiency of at least 96 percent for inorganic arsenic.

Regulatory Alternatives. To determine the level of control that reflects BAT for control of converter secondary emissions, technical alternatives were identified for reducing inorganic arsenic emissions from the ASARCO-Tacoma smelter.

For the purpose of analysis, these alternatives are identified here and in the background information document as Regulatory Alternatives I and II. For Regulatory Alternative I, no national emission standard would be established for inorganic arsenic emissions from high-arsenic-throughput smelters. No additional controls beyond the controls already in place at the ASARCO-Tacoma smelter to comply with existing regulations (e.g, Washington State implementation plan, OSHA inorganic arsenic worker exposure standard) would be required. Regulatory Alternative I corresponds to the baseline level of control.

Regulatory Alternative II represents control of secondary inorganic arsenic emissions from converter opertions at the ASARCO-Tacoma smelter. This alternative is based on capture of the secondary emissions using a secondary hood consisting of a fixed enclosure with a horizontal air curtain. The captured secondary emissions would be vented to a baghouse or equivalent control device for collection.

Regulatory Alternative I (baseline case) would not change the existing air and non-air quality environmental impacts of operations at the ASARCO-Tacoma smelter. Total inorganic arsenic emissions from the ASARCO-Tacoma smelter would remain at the current level of 282 Mg (311 tons) per year. In addition, there would be no energy or economic impacts associated with this alternative.

Regulatory Alternative II would reduce total inorganic arsenic emissions from the ASARCO-Tacoma smelter by 110 Mg (121 tons) per year to a level of 172 Mg (189 tons) per year. The amount of collected particulate matter containing inorganic arsenic would be approximately 11 gigagrams (Gg) (12,000 tons) per year. This would increase the amount of solid waste generated at the ASARCO-Tacoma smelter from 182 to 193 Gg (200,000 to 213,000 tons) per year, an increase of about 6 percent. The additional solid waste can be handled by the smelter's existing solid waste disposal system. Because the alternative is based on use of an electrostatic precipitator, a dry particulate collection device, there would be no water pollution impact.

The energy impacts of Regulatory Alternative II would be increased electrical energy consumption. To operate the control system specified by the alternative, annual electrical energy consumption would be 1.5×10^7 kilowatt-hours per year (kWh/y). Total smelter energy consumption is approximately 2.9×10^9 kWh/y. Thus, Regulatory Alternative II would increase the total ASARCO-Tacoma electrical energy consumption by 0.5 percent.

The capital costs for installing the control system specified by Regulatory Alternative II is $3.5 million. This represents a major capital expenditure for ASARCO. However, ASARCO is a major publicly held corporation with a good credit rating and good access to financing. Even considering the possibility of additional capital expenditures for control equipment for the two ASARCO low-arsenic-throughput smelters (the ASARCO-El Paso and Hayden primary copper smelters are addressed in Part III of this preamble), it is EPA's determination that ASARCO would be able to obtain the necessary capital to install the control system at the ASARCO-Tacoma smelter. The annualized cost to implement Regulatory Alternative II is estimated to be $1.5 million. If ASARCO chooses to absorb the costs by reducing its profit margin, the profitability of the ASARCO-Tacoma smelter could be reduced up to 8 percent. If ASARCO chooses to maintain its normal profit margin and attempts to recover the costs by increasing copper prices, the price increase would amount to 0.5 to 0.8 percent.

In summary, under Regulatory Alternative II, total smelter inorganic arsenic emissions would be reduced by 39 percent from 282 Mg per year to 172 Mg per year. The reduction in emissions would be achieved with a small increase in the amount of solid waste generated at the smelter. There would be no water pollution impact. Energy consumption at the smelter would be slightly increased. The primary economic impacts associated with this alternative are a projected modest decrease in profitablity for the ASARCO-Tacoma smelter and a possible small increase in the price of copper. In EPA's judgment, this alternative would not adversely affect the economic viability of the ASARCO-Tacoma smelter or employment at the smelter. Because a significant reduction in inorganic arsenic emissions from the ASARCO-Tacoma smelter is achievable with reasonable economic, energy, and non-air quality environmental impacts, EPA selected Regulatory Alternative II as BAT.

It should be noted that the level of control selected as BAT is based upon the Adminstrator's best judgement and the information available at this time. As discussed later, comments and information are being requested on

additional control measures. The final decision on BAT will reflect consideration of these comments and may, therefore, include measures (e.g., production curtailments or improved operating and housekeeping practices) which are not now included in Alternative II.

Consideration of Emission Reduction Beyond BAT and Decision on Basis for Proposed Standards.

After identifying BAT, EPA considered the estimated residual health risks and possible control alternatives that would reduce emissions to rates lower than that achievable with BAT. The health risk is expressed by the number of incidences of cancer due to inorganic arsenic exposure in the population distributed around the ASARCO-Tacoma smelter. Based on epidemiological studies, EPA derived a unit risk number for exposure to airborne inorganic arsenic. The unit risk number is a measure of potency expressed as the probability of cancer in a person exposed to 1 $\mu g/m^3$ of airborne inorganic arsenic for a lifetime (70 years). Annual cancer incidence (the number of cases per year) associated with inorganic arsenic emissions from the ASARCO-Tacoma smelter is the product of the total population exposure around the smelter and the unit risk number divided by 70 years. Total exposure is determined by dispersion modeling estimates of the inorganic arsenic concentration in the ambient air surrounding the smelter combined with data for the distribution of the estimated 370,000 people living within about 20 kilometers (12.5 miles) of the ASARCO-Tacoma smelter. For the current level of inorganic arsenic emissions from the ASARCO-Tacoma smelter, the annual cancer incidence is estimated to range from 1.1 to 17.6 cases per year. With BAT in place at the ASARCO-Tacoma smelter for all of the significant inorganic asenic emission points it is estimated that the annual cancer incidence would be reduced to a range of 0.2 to 3.4 cases per year. Application of BAT would reduce the estimated maximum lifetime risk from exposure to airborne inorganic arsenic from a range of 2.3 to 37 in 100 to a range of 0.58 to 9.2 in 100. The maximum lifetime risk represents the probability of a person contracting cancer who has been continuously exposed during a 70-year period to the maximum annual inorganic arsenic concentration due to inorganic arsenic emissions from the ASARCO-Tacoma smelter.

All known control alternatives were examined with the particular emphasis on the further contol of secondary emissions, which on the basis of modeling results, cause the highest ambient exposure and resultant health risks. This examination, which included evaluation of controls used on smelters in both the United States and Japan as well as the possibility of technology transfer from other source categories, identified no demonstrated technological controls more efficient than those identified as BAT. Therefore, the remaining alternatives are limited to two basic categories: (1) production limitations or curtailments and (2) limitations on the smelter inorganic arsenic throughput.

Impacts of Controls Beyond BAT

Without specific and detailed knowledge of all economic information, which is known only to ASARCO, EPA cannot estimate with certainty the extent to which production curtailment or limitation on inorganic arsenic feed rate may be affordable. The smelter is currently operating under a production curtailment program designed to limit ambient sulfur dioxide (SO_2) levels. This program, which EPA believes to achieve at least a corresponding effect on ambient inorganic arsenic concentrations, currently results in production curtailment of approximately 30 percent. When converter controls are in place, the amount of curtailment needed may be less but is expected to be not less than 20 or 25 percent. Thus, while further curtailments may be possible, it is doubtful that the degree of curtailment necessary to significantly reduce risk (e.g., a 50 percent additional curtailment would reduce the estimated maximum risk from a range of 0.58 to 9.2 in 100 to a range of 0.29 to 4.6 in 100) would be affordable.

An analysis of the importance of high-inorganic-arsenic feed to the economic viability of the ASARCO-Tacoma smelter leads to the conclusion that the smelter would probably close if high-inorganic-arsenic-contact materials could not be processed. High-inorganic-arsenic-content copper ore concentrate and lead smelter by-products represent about one third of the feed material input to the ASARCO-Tacoma smelter. If forced to discontinue use of these feed materials, ASARCO would need to compete with other copper smelting companies for additional supplies of copper ore. In the face of Japanese competition and current copper ore shortages, it is questionable whether sufficient supplies of low-arsenic-content copper ore concentrate could be obtained at prices that would allow profitable operation. More importantly, the use of high-inorganic-arsenic feed allows ASARCO to produce arsenic trioxide and metallic arsenic. EPA estimates that the sale of arsenic trioxide and metallic arsenic represents about 10 to 15 percent of the ASARCO-Tacoma smelter's total revenue and could account for most of the profit. Therefore, for purposes of this analysis, EPA is concluding that any potential means for limiting inorganic arsenic emissions to the extent necessary to significantly reduce risks would result in closure of the ASARCO-Tacoma smelter.

The arsenic produced by the ASARCO-Tacoma smelter supplies about one third of the total nationwide demand for arsenic. The remaining two-thirds is imported and represents over half of the world production outside the U.S. If ASARCO-Tacoma stopped production of arsenic, the world arsenic production capacity would have to increase by 25 percent to makeup the shortage. It is considered doubtful that such an increase would be possible even with substantial upward price pressure. The impact that this shortage would have on industrial products (e.g., pressure treated lumber) and agricultural uses (e.g., cotton desiccants, herbicides) has not been estimated.

Consideration of Health Risks

As detailed in Section I of this preamble, the estimated health risks cited above associated with exposure to ambient inorganic arsenic are at best only a very crude estimator of the actual health effects. The degree of uncertainty in these estimate is very large because of the many assumptions and approximations involved in their derivation. Nevertheless, the estimated risks due to emissions from the ASARCO-Tacoma smelter are high relative to other inorganic arsenic sources and to other sources of hazardous pollutants that have been regulated. These levels, therefore, provide a basis for serious question as to whether limiting emissions based on BAT would protect public health and provide an ample margin of safety. Moreover, direct ambient exposure is not the only potential health impact since the inorganic arsenic emitted into the atmosphere accumulates on land and in water resulting in other avenues of exposure. It should be noted that primarily due to arsenic, the Commencement Bay Near Shore Tide Flats area (which includes the ASARCO-Tacoma smelter) has been proposed as a National Priority List Site by EPA under the Superfund program (47 FR 58476, December 30, 1982).

Consideration of Impacts of Beyond BAT

Closure of the ASARCO-Tacoma smelter would result in severe social and economic impact on the local economy. Moreover, since the ASARCO-Tacoma smelter is the only domestic smelter capable of smelting high-impurity copper ores and production of associated by-products including arsenic, closure of the smelter would result in a total loss of this domestic production capability. Closure of the smelter would eliminate the jobs of about 500 ASARCO employees and 300 additional jobs in the Tacoma area. Closure would also mean elimination of $20 million per year in revenues to local companies and $2 million per year in State and local taxes.

Decision and Proposed Standards

As detailed in Part I of this preamble, under EPA's interpretation of Section 112, the smelter should be controlled at least to the level that reflects BAT and to a more stringent level if necessary to prevent unreasonable risks. The decision as to whether the remaining risks are unreasonable is based upon consideration of the individual and population risks and consideration of the impacts, including costs, economic, and other impacts associated with further reduction of these risks.

The primary purpose of standards promulgated under Section 112 is to protect the public health. The Administrator is concerned that the estimated residual risk after application of BAT at ASARCO-Tacoma may be unreasonable, and, as such, that additional controls beyond BAT may be warranted. As indicated earlier, EPA has not identified technological controls more efficient than BAT; therefore, in making a decision on an appropriate control level of ASARCO-Tacoma, the Administrator's consideration of beyond BAT alternatives was limited to production and arsenic throughput limitations. These control measures could further reduce emissions of inorganic arsenic and associated health risks. Arsenic throughput, for example, could be limited to a level comparable to a low-arsenic-throughput smelter (less than 0.7 percent inorganic arsenic in the total smelter charge), although estimated health risks would still be expected to be higher for ASARCO-Tacoma than for the other smelters due to its location in a highly populated area.

The Administrator believes that control beyond BAT could result in closure of the ASARCO-Tacoma smelter. This would reduce the smelter contribution to the estimated health risks to zero; but would also result in a loss of jobs, a loss of domestic production capacity in both the copper and arsenic industries, and a loss of revenues to local businesses and governments. Certainly the impacts associated with closure of the smelter would be felt directly and immediately by the local population, particularly the employees of the smelter. With these potential serious negative impacts, a decision to require beyond BAT controls must be carefully considered.

Given that the calculated health risks estimated to remain after the application of BAT would be the basis for a decision to require beyond BAT controls and, in this case, possibly cause closure of the ASARCO-Tacoma smelter, the Administrator believes it is necessary to scrutinize the basis for these calculated estimates as a part of the decision-making process. The estimated health risks were calculated by combining a unit risk estimate for inorganic arsenic with the ambient concentrations of inorganic arsenic predicted by modeling and with population data for the area surrounding the ASARCO-Tacoma smelter. As discussed in Part I of this preamble and Appendix E of the BID, there are simplifying assumptions and fundamental uncertainties inherent in each of the components of the calculation, resulting in a number of uncertainties in the risk estimates.

Uncertainties in the unit risk estimate exist due to a number of simplifying assumptions. Among these is the assumption that a linear relationship exists between cancer risks and level of exposure and this relationship is the same at the low levels of public exposure as at the high levels of occupational exposure. There is no solid scientific basis for any mathematical extrapolation model that relates carcinogen exposure to cancer risk at the extremely low concentrations that must be dealt with in evaluating environmental hazards. Because its scientific basis, although limited, is the best of any of the current mathematical extrapolation models, the linear nonthreshold model has been adopted here as the primary basis for risk extrapolation at low levels of exposure. Additional assumptions made in the determination of the unit risk estimate are that all people are equally susceptible to cancer and that persons are exposed continuously from birth throughout their lifetimes (70 years). The Administrator believes that the assumptions made in determining the unit risk estimate are reasonable for public health protection in that they lead to a rough but plausible estimate of the upper-limit of risk. That is, it is not likely that the true unit risk would be much more than the estimated unit risk, but it could be considerably lower.

Uncertainties in the ambient modeling exist due to the limitations of the dispersion model and the assumptions and potential error in the data input to the model. Limitations in the model include its inability to account for the variable operating conditions of the smelter and variable meteorology; that is, one set of operating and meteorological conditions was assumed for modeling purposes. The meteorological conditions used are believed to be representative. However, the smelter operating conditions used in the modeling do not account for the frequent curtailment of operations now required at ASARCO-Tacoma to reduce emissions of sulfur dioxide, and therefore, probably result in an overestimate of ambient air concentrations of inorganic arsenic (since arsenic emissions would be reduced as well). Also, the model does not account for sources of arsenic other than the ASARCO-Tacoma smelter that are in the area.

In addition, there were many inputs to the model such as location of each emission source at the smelter and the rate, temperature, and height at which those emissions are released to the atmosphere. Each of these input parameters is subject to error, but perhaps the most crucial parameter is the estimate of emission rates. The emission rates used by EPA were based on actual emission test data whenever possible. However, for some sources, most notably converter secondary emissions, test data were not available at the time the estimates were made; therefore, some assumptions were made for modeling and impact analysis purposes. The EPA assumed, for instance, that converter secondary inorganic arsenic emissions were approximately 15 percent of those measured in the primary converter offgases. Preliminary results of testing conducted in January 1983 on converter No. 4 at ASARCO-Tacoma indicate that emissions may be significantly less than this.

Additional uncertainties arise from the use of population data. The people dealt with in the analysis are not located by actual residence. They are "located" in the Bureau of Census data for 1970 (the most recent available) by population centroids of census districts. The effect is that the actual locations of residences with respect to the estimated ambient air concentrations is not known

and the relative locations used in the exposure model have changed since the 1970 census. In addition, it is assumed that people remain in the same location for a lifetime (70 years), the only exposure of the population that occurs is due to the ASARCO-Tacoma smelter, and only persons within 20 kilometers of the emission source are affected.

In summary, there is a high degree of uncertainty in the estimated health risks due to the many assumptions and uncertainties associated with the components of the estimates. While the estimated risks may be meaningful in a relative sense, they should not be regarded as accurate representations of true cancer risks. Furthermore, it should be noted that: (1) ambient monitoring data available for the Tacoma area show significantly lower ambient concentrations of inorganic arsenic than those predicted by the model, and (2) data on lung cancer incidence rates for the ten largest cities in Washington for the years 1970 through 1979 show that Tacoma ranks fifth, and the lung cancer rates in Tacoma are below the national average lung cancer rate.

In light of the high degree of uncertainty in the estimated health risks, the apparent absence of further control alternatives short of closure, the serious negative impacts associated with closure, and the absence of comments from the affected public, the Administrator cannot conclude at this time that the risks remaining after the application of BAT are unreasonable. Therefore, standards are being proposed for the category of high-arsenic-throughput smelters based on the application of BAT.

Even though standards are proposed based on BAT, the Administrator remains concerned that the estimated residual health risks, although uncertain, are high relative to those estimated for other source categories regulated by NESHAPs as well as other sources of arsenic. The Administrator believes it is necessary to take extraordinary measures to ensure that his final determination of the control level that is appropriate for high-arsenic-throughput copper smelters is based on the most complete and accurate information available. Therefore, the following steps are being taken:

First, EPA is continuing to refine its estimates of emissions and associated health risks for the ASARCO-Tacoma smelter. This will include a complete, on-site emission source inventory by EPA personnel, emission testing where feasible, and improved modeling. In particular, efforts are currently underway to model the effect of ASARCO-Tacoma's production curtailment. Additionally, further evaluation of controls that could potentially be applied to reduce emissions of inorganic arsenic (particulary secondary emissions) at ASARCO-Tacoma will take place. This evaluation will not be limited to add-on control equipment but will also cover other measures such as improved operating and housekeeping practices.

Secondly, a public hearing for the proposed standards for high-arsenic-throughput copper smelters will be held in the Tacoma, Washington area. This will give those people who would be most affected by the standards the opportunity to comment in person.

Finally, the Administrator has established a special task force to be chaired by EPA's Region X office in Seattle, Washington. The task force will aid the Administrator in securing available information from the area which would be most pertinent in the development of the final standards for high-arsenic-throughput copper smelters. In addition to participating in EPA's evaluation of emission sources and applicable control technologies, the task force will consult with experts outside of EPA in the areas of health impacts analysis and innnovative control technologies for arsenic.

The Administrator is requesting comments on all aspects of the proposed standards and their associated impacts. Comments are also requested on other control measures that may be BAT and on alternatives that would reduce estimated health risks more than the alternative of applying BAT, but would not result in smelter closure. These comments should consider in particular, the means of reducing low-level secondary inorganic arsenic emissions, which result in the highest exposure. The Administrator is also specifically requesting comments on whether the estimated residual health risks associated with the BAT alternative are unreasonable, considering the uncertainty of these estimates and that the only apparent alternative for significantly reducing the risks would likely result in closure of the ASARCO-Tacoma smelter.

Selection of Format of Proposed Standards

Under the authority of Section 112 of the Clean Air Act, national emission standards must, whenever possible, take the format of a numerical emission limit. Typically, an emission limit is written in terms of an allowable mass emission rate (mass of pollutant per unit time) or an allowable concentration (mass of pollutant per volume of gas). In some instances, a process weight limit (weight of pollutant per unit of product or input) or a minimum percent emission reduction of pollutant (control system collection efficiency) is used. All of these types of standards require the direct measurement of emissions to determine compliance. As a alternative, or as a supplement to a standard involving direct measurement of emissions, an emission limit may take the form of a restriction on opacity as measured by EPA Reference Method 9 or on visible emissions as measured by EPA Reference Method 22 or other method. However, in certain instances, numerical emission limits are not possible. Section 112(e)(2) recognizes this situation by defining two conditions when it is not feasible to prescribe or enforce an emission limit. The conditions are: (1) when the pollutants cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant; or (2) when the application of a measurement methodology is not practicable due to technological or economic limitations. In such instances, Section 112(e)(1) authorizes design, equipment, work practice, or operational standards.

For the development of a standard for the capture of secondary inorganic arsenic emissions from converter operations, EPA first considered establishing a numerical emission limit. However, mass rate, concentration, process weight, and percent emission reduction formats for the capture of secondary emissions from converter operations are not feasible because neither the capture efficiency nor the quantity of emissions that escape capture by the secondary hood system can be measured accurately. Visible emission data are available which describe the performance of secondary hood systems over a limited range of operating conditions. However, these data are not considered to represent a sufficient basis for establishing emission standards which must be achieved at all times. Therefore, the format selected for the proposed standards for the capture of secondary inorganic arsenic emissions from converter operations is one in which equipment and work practices are specified.

For the development of a standard for the collection of secondary inorganic arsenic emissions from converter operations, EPA concluded a numerical emission limit is feasible. EPA first considered developing an emission limit specifically for inorganic arsenic. Inorganic arsenic emissions from converter operations vary in relation to the inorganic arsenic content of the ore concentrate processed. Smelting a high-

inorganic-arsenic-content ore concentrate has the potential for higher inorganic arsenic emissions than a low-inorganic-arsenic-content-ore concentrate. The ASARCO-Tacoma smelter is a custom smelter processing ore concentrates shipped from domestic and foreign copper mines. An interruption or discontinuation in shipments from one supplier could change the average inorganic arsenic content of the total smelter charge processed at the ASARCO-Tacoma smelter. Thus, the future inorganic arsenic content of secondary emissions from the ASARCO-Tacoma smelter may increase or decrease depending on the mix of suppliers selling ore concentrate to ASARCO.

The potential variability in the inorganic arsenic content of secondary emissions from the ASARCO-Tacoma smelter increases the complexity of developing numerical emission limits specifically for inorganic arsenic. Emission limits for inorganic arsenic based on a mass emission rate, process weight, or concentration format would establish an upper limit on inorganic arsenic emissions only. An inorganic arsenic emission limit based on the BAT emission control requirements specifically for the ASARCO-Tacoma smelter based on current data might not require application of BAT is other ore concentrates were processed. In contrast, a percent reduction format would require the application of BAT regardless of the level of inorganic arsenic content in the feed materials. However, high collection efficiency may not be continuously achievable for the entire range of inorganic arsenic concentrations which could occur in the captured gas streams from the secondary emission sources.

As an alternative, an emission limit for total particulates that reflects the level of control device performance necessary to achieve BAT for collection of secondary inorganic arsenic emissions can be developed. There are several advantages to using a total particulate emission limit to regulate inorganic arsenic emissions. First, total particulate emissions from primary copper smelter operations remain relatively contant regardless of the inorganic arsenic content of the ore concentrate. Thus, a total particulate emission limit would require the use of BAT for all high-arsenic ore concentrates regardless of variations in the inorganic arsenic content of the feed. The second advantage to a total particulate emission limit is that EPA Reference Method 5 can be used to determine compliance. This method is widely used; and because it captures larger quantities of particulates, it offers the potential for greater precision. Therefore, for these reasons EPA decided to develop standards for collection of inorganic arsenic emissions based on a total particulate emission limit.

Mass emission rate, percent emission reduction, process weight rate, and concentration formats were considered by EPA for setting emission limits for the collection of captured secondary emission gas streams. All four of these formats provide viable alternatives for setting total particulate emission limits.

A mass rate format would limit total particulate emissions per unit of time. However, this format would not reflect differences in production rates (e.g., amount of ore concentrate, calcine, and matte processed). The mass emission rate standard would only place an upper limit on the total amount of particulates emitted per hour or per day.

A percent reduction format would specify a minimum percent reduction of total particulate emissions across a control device. Determination of compliance with a percent reduction standard requires measurement of both uncontrolled and controlled emissions. The measurement of emissions at the inlet to control devices poses testing difficulties due to ductwork and control device configurations. The ductwork modifications necessary to perform accurate inlet testing at the ASARCO-Tacoma smelter would significantly increase the cost of the compliance determination.

A mass per unit production format would limit total particulate emissions per unit of copper produced or smelter charge. Determination of compliance with a mass per production unit standard requires the development of a material balance or production values concerning the operation of the copper smelter. Development of this information depends on the availability and reliability of process data provided by the company. Gathering these data increases the testing and recordkeeping requirements and, consequently, increases the compliance determination costs.

A concentration format would limit total particulate emissions per unit volume of exhaust gases discharged to the atmosphere. Compliance determination of concentration standards requires a minimum of data and information, decreasing the costs of testing and reducing chances of measurement errors. Furthermore, vendors of particulate control devices usually guarantee equipment performance in terms of pollutant concentration in the discharge gas stream. There is a potential for circumventing a concentration standard by diluting the exhaust gases discharged to the atmosphere with excess air, thus lowering the concentration of total particulates emitted but not the total mass emitted. However, for this application, this problem can be solved by specifying a measurement location. Therefore, because a concentration format would involve lower resource requirements and a less complicated compliance determination procedure than the other formats, EPA selected a concentration format as the most suitable format for the proposed standards for collection of secondary emissions.

Selection of Numerial Emission Limit and Equipment Specifications

The proposed standards are based upon the application of a secondary hood system to capture converter secondary emissions and a baghouse or equivalent particulate control device to collect the captured secondary emissions from converters.

The format selected for the proposed standard for capture of secondary inorganic arsenic emissions from converters consists of equipment and work practice specifications. EPA believes that the prototype secondary hood design installed on converter No. 4 at the ASARCO-Tacoma smelter is capable of achieving a capture efficiency level consistent with BAT if the system is installed and operated properly. Therefore, the design and operation of this system were the basis for the equipment and work practice specifications.

The principal components of the secondary hood system are a hood enclosure, an air curtain plenum and exhaust hood, fans, and sufficient ductwork to convey the captured emissions to a control device. Because each secondary hood system must be custom designed due to variations in converter configuration and space availability, EPA chose not to specify physical dimensions for the hood enclosure. Instead, EPA decided to specify the design practices that are necessary to follow in order to obtain a secondary hood system capable of achieving at least a 95 percent capture efficiency. These design practices are: (1) the configuration and dimensions of the hood enclosure are sized so that the converter mouth, charging ladles, skimming ladles, and other material transfer vessels are housed within the confines or influence of the hood during

each mode of converter operation; (2) the back of the hood enclosure is fully enclosed and sealed against the primary hood; (3) the edges of the hood enclosure side walls in contact with the converter vessel remain sealed during each mode of converter operation; (4) the size of the opening at the top and front of the hood enclosure necessary for the entry and egress of ladles and crane apparatus is minimized to the fullest extent practical; and (5) the hood enclosure is fabricated in such a manner and of materials of sufficient strength to withstand incidental contact with ladles and crane apparatus with no damage.

The air curtain is produced by blowing compressed air from a narrow horizontal slot extending the length of a plenum along the top of one side wall of the hood enclosure. The dimensions of this slot and the velocity of the air blown through the slot are essential design parameters for determining the momentum of the air curtain. Sufficient air curtain momentum must be maintained to prevent emissions rising from the converter operations inside the hood enclosure from penetrating the air curtain and escaping to the ambient air.

To ensure that the owner or operator has the capability of developing sufficient momentum in the air curtain to capture secondary emissions, the proposed standards specify that the air curtain fan be sized to deliver a minimum of 22,370 watts (30 air horsepower) at the slot.

After installation of an air curtain secondary hood system, the owner or operator would be required to operate it at conditions optimum for the capture of secondary inorganic arsenic emissions (see "Optimization of Secondary Hood Air Curtain System"). In addition, the owner or operator would be required to visually inspect the components of the system at least once every month and maintain each converter and associated secondary hood system in a manner consistent with minimizing inorganic arsenic emissions.

Over a 1-week period, EPA personnel observed the ASARCO prototype secondary hood system during all converter operating modes. Based on these observations, EPA concluded that the work practices followed by the individual converter and crane operators can significantly impact the amount of secondary emissions that are captured by the secondary hood system. To assure the maximum capture of secondary emissions, the Administrator is proposing five work practices to be followed by the converter and crane operators. These work practices are (1) air curtain and exhaust flow rates shall be increased by the converter operator to optimum conditions prior to raising the primary hood and rolling the converter out for skimming; (2) once rolled out, the converter operator shall hold the converter in an idle position until fuming from the molten bath ceases prior to commencing skimming; (3) during skimming, the crane operator shall raise the receiving ladle off the ground and position the ladle as close as possible to the converter to minimize the drop distance between the converter mouth and receiving ladle; (4) the rate of flow into the receiving ladle shall be controlled by the converter operator to the extent practicable to mimimize fuming; and (5) upon completion of a charge, the crane operator shall withdraw the charging ladle from the confines of the hood enclosure in a slow and deliberate manner.

The Administrator believes that it may be appropriate to specify minimum time periods to be associated with some of these work practices, such as with (1), (2), and (4) above. The public is invited to comment on the need to specify minimum times to be associated with the proposed work practice standards ans on what times may be appropriate.

ASARCO has stated it intends to install air curtain secondary hood systems (similar to the system already in place on converter No. 4) on its converters that will remain in service at the Tacoma smelter. EPA therefore expects that ASARCO would meet NESHAP requirements for controlling secondary inorganic arsenic emissions from converters at Tacoma by installing air curtain secondary hood systems. However, the proposed equipment specification is not intended to preclude the use of other secondary inorganic arsenic capture systems which may be as effective as an air curtain secondary hood. Upon written application to EPA, the use of an alternative secondary inorganic arsenic capture system which has been demonstrated to EPA's satisfaction to be equivalent in terms of capture efficiency for inorganic arsenic may be approved (see "Equivalent Systems for the Capture of Secondary Emissions from Converter Operations" in Part III of this preamble).

To reflect the level of control device performance necessary to achieve BAT for collection of secondary inorganic arsenic emissions, EPA selected a format specifying a maximum allowable total particulate emissions limit. For selecting the numerical value of the limit, EPA reviewed the particulate emission source test results for the control devices judged to represent BAT. The test results were discussed in the Control Technology section of this part of the preamble. These results consist of a series of three consecutive sample runs for which the measured total particulate matter emissions at the control device outlet ranged from 1.1 to 11.6 mg/dscm. The average value for the three runs was 5.1 mg/dscm. The results show that a control level of at least 11.6 mg/dscm can be achieved; and, most likely, control devices will achieve significantly lower emission levels. Therefore, EPA selected 11.6 mg/dscm as the proposed emission limit.

Selection of Emission Test Methods

The use of EPA Reference Method 5—"Determination of Particulate Emissions from Stationary Sources" in Appendix A of 40 CFR Part 60 would be required to determine compliance with the concentration standard for total particulate matter emissions. Calculations applicable under Method 5 necessitate the use of data obtained from three other EPA test methods conducted before the performance of Method 5. Method 1—"Sample and Velocity Traverse for Stationary Sources" must be conducted in order to obtain reprensentative measurements of pollutant emissions. The average gas velocity in the exhaust stack is measured by conducting Method 2—"Determination of Stack Gas Velocity and Volumetric Flow Rate—(Type S Pitot Tube)." The analysis of gas composition is measured by conducting Method 3— "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight." These three tests provide data necessary in Method 5 for converting volumetric flow rate to mass flow rate. In addition, Method 4—"Determination of Moisture Content in Stack Gases" is suggested as an accurate mode of predetermination of moisture content.

Selection of Monitoring Requirements

Section 114 of the Clean Air Act authorizes EPA to establish monitoring requirements for the purpose of determining violations of standards proposed under the Clean Air Act. All monitoring data must be maintained in such a manner so as to be accessible to EPA.

The performance of the equipment used to capture the secondary emissions from the coverter operations is highly dependent on flow rate. If the flow rate is not measured, it is not possible for either the operator or EPA to determine whether the equipment is properly operated and maintained. Therefore the proposed standards require continuous monitoring of the time and air flow rate through the air curtain systems, and keeping a log of times for each of the

converter operations. This would allow the correlation of recorded gas flow rates with the corresponding converter operation.

To help the Administrator determine whether each secondary hood system is being properly operated and maintained, measured airflow rates would be compared to source specific reference values established during the optimization of each system for each converter operating mode. (See "Optimization of Secondary Hood System".) To establish source specific airflow reference values, the owner or operator would determine the flow rates that correspond to each converter operating mode while the secondary hood system is operating under optimum conditions.

The proposed standards for the collection of secondary inorganic arsenic emissions are based upon a total particulate concentration limit. One alternative to monitoring the performance of the collection device is to periodically test the collection device using Method 5. However, this alternative is costly and is not considered reasonable. Continuous monitoring of opacity or an operating parameter of the collection device may be used to indirectly monitor performance by indicating whether or not the collection device is operating in the same manner as when it demonstrated compliance during the emission test. Of these two alternatives, monitoring opacity is simpler to apply. Therefore, the monitoring requirement selected for the collection of secondary arsenic emissions is to continuously monitor opacity using a transmissometer.

To implement this monitoring requirement, it would be necessary to establish a reference opacity level against which future performance of the control system could be compared. To establish the source specific reference opacity level, the owner or operator of the source would be required to conduct continuous opacity monitoring during the emission test. The opacity monitoring results would be reduced to 6-minute averages, and the opacity level would be established at the 97–5 percent upper confidence level of a normal or log normal (whichever is more representative) distribution of the 6-minute average opacity values. This opacity value would be the basis for determining whether the collection device is continuously performing effectively. Any monitored opacity reading above the emission test opacity reading would indicate that the collection device may no longer be meeting the proposed total particulate emission limit. A Method 5 test could then be performed to determine compliance.

Optimization Of Air Curtain Secondary Hood System

It is intended that the installation of equipment specified in the proposed standards for the capture of converter secondary emissions will give the owner or operator of each affected converter the capability of reducing emissions to a level consistent with the application of BAT. In developing the equipment specifications, the Administrator has been specific for some requirements as in the case of fan horsepower capacity, and more general for others, such as the dimensions of the secondary hood. Some of the requirements are general because unless there are any new smelters, which is considered unlikely, each installation will be a retrofit; that is, each air curtain secondary hood system will have to be custom designed to fit each existing converter. Due to space limitations, existing pollution control equipment already in place and other considerations, the exact configuration of each secondary hood with air curtain system installed will vary from smelter to smelter.

Beyond hood configuration, the performance of each air curtain secondary hood system will depend on a balance of several other parameters, including the dimensions of the air curtain slot, the velocity of air through the slot, and the distance from the slot to the offtake. These parameters are adjustable in the sense that they can be altered in a relatively short time and at relatively small cost. It is expected that after the initial installation of each air curtain secondary hood system, there will be a "shakedown" or optimization period during which the proper balance of system parameters will be determined for each particular installation.

For every air curtain secondary hood installation, there will be an optimum set of operating conditions, beyond which further "fine tuning" of the system will not result in increased capture efficiency. Section 112(e)(1) of the Clean Air Act states, in part, that if the Administrator promulgates a design or equipment standard, "he shall include as part of such standard such requirements as will assure the proper operation and maintenance of any such element of design or equipment." "Proper operation" of an air curtain secondary hood system includes operating the system as close to optimum conditions as possible, and the owner or operator would be required to do so under the proposed standards. It is not the Administrator's intent, however, to require the owner or operator to operate a system beyond optimum conditions (i.e., at flow rates and power requirements that do not achieve additional capture) or to prevent operational changes that may not affect the capture efficiency of the system.

Authority for determination of the optimum conditions for each air curtain secondary hood system installed to meet the proposed standards would rest with the Administrator. Due to the variables involved, and the fact each installation will be site specific, it is not possible for the Administrator to prescribe in advance what will constitute optimum operating conditions for each air curtain secondary hood installation. Objective techniques, such as the tracer study used to evaluate the air curtain secondary hood system on the No. 4 converter at the ASARCO-Tacoma smelter, are available to help determine capture effeiciency. However, a final determination of whether a system has truly been optimized, or if not, what steps should (or could) be taken to improve it, will largely be a matter of judgment.

One approach the Administrator is considering as a method for determining optimum conditions for each air curtain secondary hood installation would be to have each system evaluated by a panel of persons with expertise in assessing visible emissions of air pollutants. The panel could be comprised of 3 or more persons, including representatives of industry, EPA and local air pollution control agencies.

The panel would evaluate each air curtain secondary hood as follows: (1) the panel would review the plans and specifications of the system prior to installation; (2) the panel would agree on initial operating conditions for the system; (3) the panel would observe the operation of the system during each mode of converter operation under the initial operating conditions. Estimates of the capture effectiveness achieved, based on visual observations, would be recorded by each panel member for each mode of operation. In addition, comments on the minimum and maximum capture effectiveness achieved, the duration, location and density of visible emissions observed, and a qualitative assessment of the volume of the emissions escaping capture (e.g., light, moderate, heavy, etc.) would be recorded; (4) based on this initial evaluation, the panel would agree on what modifications would be needed to further optimize the operation of the air curtain secondary hood; and (5) the panel would again view the

system (as in 3) after modification to compare its performance to pre-modification performance. After this, steps 4 and 5 would be repeated as needed until there was agreement among the panel members that the system had been optimized. The panel would then recommend a set of optimum operating conditions for that system to the Administrator along with documentation of their evaluation. In the event of disputes, panel members would submit separate recommendations. The Administrator would make a final determination of the optimum conditions based on the panel's recommendation and supporting documentation.

If, subsequent to a determination that a system has been optimized, an owner of operator proposes to make an additional modification to the system, the panel would again be convened and would observe the system both before and after the change as prescribed in (3) above. The modification could be approved by the Administrator if the panel found it did not reduce capture efficiency.

The Administrator believes this approach would assure that the air curtain secondary hood system is designed and operating conditions established which will minimize secondary inorganic arsenic emissions to the greatest extent possible, but would also allow the owner or operator to make modifications to the system that would not reduce capture efficiency. The public is invited to comment on the need to evaluate the optimization of each air curtain secondary hood system and on the panel approach being considered by the Administrator.

Reporting and Recordkeeping Requirement

Owners or operators of sources covered by the proposed standards would be subject to the reporting and recordkeeping requirements of the proposed standards, as well as those prescribed in the General Provisions (Subpart A) of 40 CFR Part 61. Under § 61.10 of the General Provisions, an initial report from each existing source is required to be submitted within 90 days of the effective date. For purposes of determining initial applicability, the proposed standards for high-arsenic-throughput smelters specify that the initial report required in § 61.10(a) will include information on the weight percent inorganic arsenic in the total smelter charge. The proposed standards further require that each month the computation of a rolling annual average of the inorganic arsenic content of the total smelter charge be made and that the monthly computation of a rolling annual average of the inorganic arsentic content of the total smelter charge be made and that the monthly computations be recorded and dept on site for at least 2 years. The monthly computations would have to be reported to EPA on an annual basis to ensure that applicability with respect to the standards had not changed.

Under Section 114, EPA is authorized to establish reporting requirements to determine whether there is a violation of standards proposed under the Clean Air Act. Concern as to whether the systems for the control of inorganic arsenic emissions are continuing to meet the proposed standards would primarily arise when monitoring showed opacity levels in excess of those determined during the compliance demonstration or airflow rates that vary significantly from those established during the optimization procedure. Therefore, in determining the necessary reporting requirements, it was considered reasonable to require reporting only when such "excess emission" conditions exist. Reporting of these excess emission conditions would be required on a semiannual basis. Currently, only the copper smelting companies collect any of this information. In addition, there are no reporting requirements by other governmental agencies for this type if information which would result in overlapping data requirements. The types of information to be included in the reports are discussed below.

For the converter secondary hood system, each semiannual report would indicate: (1) the reference airflow rates established for each converter operational mode, and (2) a record of airflow rates for each day when the airflow rates are less than 20 percent of the corresponding reference values.

For the collection devices for secondary emissions, each semiannual report would provide: (1) a record of transmissometer readings for each day on which the opacity exceeded the reference opacity limit determined at the time the collection device demonstrated compliance, and (2) the values of the emission test opacity limits.

Impacts of Reporting and Recordkeeping Requirements

EPA believes that these reporting and recordkeeping requirements are necessary to assist the Agency in (1) identifying sources, (2) observing the compliance testing and demonstration of monitoring devices, (3) determining initial compliance, and (4) enforcing the standard after the initial compliance determination.

The Paperwork Reduction Act (PRA) of 1980 (Pub. L. 96-511) requires that the Office of Management and Budget (OMB) approve reporting and recordkeeping requirements that qualify as an "information collection request" (ICR). For the purposes of accommodating OMB's review, EPA uses 2-year periods in its impact analysis procedures for estimating the labor-hour burden of reporting and recordkeeping requirements.

The average annual burden on high-arsenic-throughput copper smelters to comply with the reporting and recordkeeping requirements of the proposed standards over the first 2 years after the effective date is estimated to be 1,310 person-hours.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 (RFA) requires that differential impacts of Federal regulations upon small businesses be identified and analyzed. The RFA stipulates that an analysis is required if a substantial number of small businesses will experience significant impacts. Both measures must be met; that is, a substantial number of small businesses must be affected and they must experience significant impacts, to require an analysis. Twenty percent or more of the small businesses in an affected industry is considered a substantial number. The EPA definition of significant impact involves three tests, as follows: (1) prices of products produced by small entities rise 5 percent or more, assuming costs are passed on to consumers; (2) annualized investment costs for pollution control are greater than 20 percent of total capital spending; or (3) costs as a percent of sales for small entities are 10 percent greater than costs as a percent of sales for large entities.

The Small Business Administration (SBA) definition of a small business for Standard Industrial Classification (SIC) Code 3331, Primary Smelting and Refining of Copper, is 1,000 employees. The ASARCO-Tacoma smelter is owned by a company that has more than 1,000 employees. Therefore ASARCO does not meet the SBA definition of a small business and thus no regulatory flexibility analysis is required.

III. INORGANIC ARSENIC EMISSIONS FROM PRIMARY COPPER SMELTERS PROCESSING FEED MATERIALS CONTAINING LESS THAN 0.7 PERCENT ARSENIC

Proposed Standards

The proposed standards would regulate inorganic arsenic emissions from primary copper smelters that process feed material with an annual

average inorganic arsenic concentration less than 0.7 percent. Standards are being proposed to regulate secondary inorganic arsenic emissions from copper smelting furnaces and all converter operations. These standards are being proposed both for the capture and for the collection in a control device of secondary inorganic arsenic emissions from converter operations. The proposed standards would also require the collection of secondary emissions from matte and slag tapping operations at the smelting furnace.

The proposed standards for converter operations would apply to smelters with an annual average arsenic feed rate to the converters of 6.5 kilograms per hour (kg/h) average or greater. The proposed standards for matte and slag tapping operations would apply to smelters with an annual average combined inorganic arsenic process rate in the matte and the slag of 40 kg/h or greater.

The proposed standard for the capture of secondary inorganic arsenic emissions from converters would be an equipment standard. The proposed standard would require the installation of a secondary hood system consisting of a fixed enclosure with a horizontal air curtain on the converters. Equivalency determinations for control techniques other than the secondary hood system as specified in the equipment standard would be made on a case-by-case basis. None of the proposed standards would limit the control technique which may be used to comply with the proposed standards provided equivalency in performance can be shown.

The proposed standard would limit particulate emissions from the collection device to 11.6 milligrams of particulate matter per standard cubic meter (mg/dscm) of exhaust air. To determine compliance with the proposed particulate emission limit, Reference Methods 1, 2, 3, and 5 in Appendix A of 40 CFR Part 60 would be used. Continuous opacity monitoring of gases exhausted from a particulate control device would be required to ensure the control device is being properly operated and maintained. Continuous monitoring of airflow and inspection and maintenance procedures would be required to ensure the secondary hood system is being properly operated and maintained.

Summary of Environmental, Health, Energy, and Economic Impacts

The proposed standards affect primary copper smelters which process feed material having an annual average inorganic arsenic content less than 0.7 percent. This category is defined as low-arsenic-throughput smelters.

It is estimated that the proposed standards would affect six existing domestic primary copper smelters. No new smelters are projected to be built in the next 5 years. Analysis of the 14 smelters in the category included calculation of the environmental, economic, and energy impacts of the proposed standards.

The proposed standards would reduce secondary inorganic arsenic emissions from the affected smelters by about 111 megagrams per year (121 tons per year). As a result of this inorganic arsenic emission reduction, it is estimated that the number of incidences per year of lung cancer due to inorganic arsenic exposure for persons residing within 20 kilometers of the affected smelters would be reduced from a range of 0.1 to 1.6 incidence per year to a range of 0.04 to 0.64 incidence per year. The proposed standards would reduce the estimated maximum lifetime risk from exposure to airborne inorganic arsenic at the low-arsenic-throughput smelters from a range of 43 in 10,000 to 690 in 10,000 to a range of 9.4 in 10,000 to 150 in 10,000. The estimated maximum lifetime risk represents the probability of a person contracting cancer who has been exposed continuously during a 70-year period to the maximum annual inorganic arsenic concentration due to emissions from the smelters. These estimated health impacts were calculated based on a number of assumptions and contain considerable uncertainty as discussed in Appendix E of the background information document (BID) for this source category.

Application of the controls required under the proposed standards would increase the amount of solid waste (i.e., arsenic-laden dust) entering the smelter waste handling systems by approximately 11,100 Mg (12,100 tons) per year. Currently, the low-arsenic-throughput smelters generate approximately 3.2×10^6 Mg (3.5×10^6 tons) per year. The additional amount of solid waste generated under the proposed standards would add relatively minimal quantities which could be easily handled by the smelters.

The control systems expected to be used to meet the proposed standards are dry systems. Therefore, there would be no direct water pollution impact. If scrubbers were used to meet the proposed standards, secondary water pollution impacts may result if the arsenic-containing dusts are disposed of along with acid plant slurry. However, no adverse water pollution impact is anticipated since the amount of additional wastewater generated could be treated at existing water pollution control systems installed due to existing regulations.

Energy requirements under the proposed standards would result in increased electrical consumption. Current annual energy requirements for the affected low-arsenic-throughput smelters total approximately 6.0×10^3 MW utility capacity. Additional energy requirements at the low-arsenic-throughput smelters due to the proposed standards are estimated to be approximately 6.4 MW, or approximately 0.1 percent above plant energy requirements without the proposed standards.

Capital and annualized costs required to meet the proposed standards would be approximately $35.3 million and $9.5 million, respectively. The primary economic impacts associated with the proposed standards are projected decreases in profitability for the six affected low-arsenic smelters if costs cannot be passed through. If the costs are passed forward in the form of a price increase, it is estimated that the proposed standards would result in a 0.1 to 4.4 percent increase in the price of copper. Under the proposed standards, no plant closures are anticipated.

The control technology, which is the basis for the proposed standards, should be less costly when integrated into the original design of a new plant rather than retrofitted to an existing plant. Therefore, EPA considers it appropriate to apply the proposed standards to new plants, thereby establishing a minimum level of required inorganic arsenic control for all low-arsenic-throughput smelters.

Rationale

Selection of Source Category

Copper smelting involves the processing of copper-bearing ores containing varying concentrations of inorganic arsenic. Several studies have assessed health problems in communities where copper smelters are located. A detailed discussion of these studies can be found in Part II of this preamble, which discusses the high-arsenic-throughput smelter category. In making the decision to regulate low-arsenic-throughput smelters, the Administrator considered that arsenic emissions from the source category and resulting exposure are significant. Based on an analysis of the costs and impacts of more stringent alternatives, it is the Administrator's judgment that a substantial reduction in secondary inorganic arsenic emissions to the atmosphere from the current level is achievable and appropriate. There are

no other regulations in place which cause these reductions to occur. Therefore, EPA has decided to proceed with standards to control secondary inorganic arsenic emissions from low-arsenic-throughput copper smelters under Section 112.

The two source categories for primary copper smelters are: (1) smelters processing feed with an annual average inorganic arsenic content less than 0.7 percent (low-arsenic-throughput smelters), and (2) smelters processing feed with an annual average inorganic arsenic content 0.7 percent or more (high-arsenic-throughput smelters). Selection of the value 0.7 percent was based on the consideration of the highest average inorganic arsenic concentration currently used at a domestic smelter other than the ASARCO-Tacoma smelter (the one high-arsenic-throughput smelter). Each category is evaluated separately for the purpose of establishing regulations. Only the category of smelters which process feed material with an annual average inorganic arsenic content less than 0.7 percent is being addressed in this section of the preamble.

Description of Emission Points

A description of the copper smelting process is presented in Part II of this preamble and will not be repeated here. The discussion which follows is limited to the emission points at low-arsenic-throughput smelters.

Inorganic arsenic emissions from primary copper smelters can be categorized as either process emissions or secondary emissions. Process emissions are those emissions from roasters, smelting furnaces, and converters which are confined in exhaust gas streams. Secondary emissions are those emissions which escape capture from the primary emission control system. Chapter 2 of the BID for this source category discusses in detail all potential sources of inorganic arsenic emissions at primary copper smelters.

Process emission sources at low-arsenic-throughput primary copper smelters are the roasters, smelting furnaces, converters, and anode furnaces. The three sources which have the greatest potential arsenic emissions are the roasters, smelting furnaces, and converters. Currently, these process sources are generally well controlled at 9 of the 14 existing low-arsenic-throughput smelters. Because process emissions are a significant source of inorganic arsenic emissions, especially at those sources which are not well controlled, EPA evaluated the requirements of additional process controls.

Anode furnaces at primary copper smelters are used to treat the blister copper. Blister copper, due to the nature of the smelting process, has a low concentration of inorganic arsenic. In addition, there is no known U.S.-applied control technology demonstrated to reduce emissions from the anode furnaces. Therefore, process emissions from anode furnaces were not considered for regulation.

Converter operations (charing, blowing, skimming, holding, and pouring), multihearth roaster discharge, and smelting furnace matte and slag tapping have the greatest potential for secondary inorganic arsenic emissions.

Converter operations are difficult to control in terms of capturing the secondary inorganic arsenic emissions; however, secondary emissions from the converters are typically 7 to 25 times greater than matte and slag tapping emissions combined. There is limited capture of these secondary emissions at 5 of the 14 smelters and emissions are collected at 2 of these smelters. However, EPA believes that further control of secondary emissions from converters is possible at all smelters. Therefore, EPA has considered further regulations for these sources.

Currently all of the 14 existing smelters use localized hoods to capture furnace matte tapping emissions and roaster calcine discharge emissions. Twelve of the fourteen existing smelters use localized hoods to capture furnace slag tapping emissions. In most of these cases, the localized hoods were installed to reduce worker exposure to pollutants discharged into the furnace building. Only three smelters use collection devices to control these captured emissions, while the other smelters discharge the emissions to the atmosphere. Since collection devices have been demonstrated on these secondary inorganic arsenic emission sources to reduce arsenic emissions to the atmosphere, EPA also considered these sources for further regulation.

Further regulations are not being considered for the control of secondary inorganic arsenic emissions from miscellaneous sources. These miscellaneous sources include the transfer, handling, and conveying of dust from control device storage hoppers, smelter flues, and dust chambers. These secondary emission sources are relatively small and would be difficult to control further.

Policy for Determining Control Levels

For this source category of 14 existing smelters EPA used a three-step approach for determining the control levels upon which the proposed standards are based. This approach is based upon the policy described in Part I of this preamble.

The first step consisted of examining the adequacy of current controls for each inorganic arsenic emission source at the low-arsenic smelters. The level of current control for each source was compared to EPA's determination of BAT for the source. For the sources judged by EPA to have BAT in place, EPA then determined if Federally enforceable standards required the controls to be continuously operated and maintained or if these controls could reasonably be expected to remain in use without regulations. Based on this evaluation, EPA identified the emission sources at the low-arsenic smelters which required the development of standards to assure inorganic arsenic emissions were controlled continuously using BAT.

The second step involved the selection of BAT for the emission points at the low-arsenic smelters identified for the development of standards. To select BAT, regulatory alternatives were defined, based on current or projected controls plus new controls as called for by the particular alternative. The environmental, economic, and energy impacts of the alternatives were determined. Based on an assessment of these impacts, the alternatives which reflected BAT at each smelter were selected.

The third step involved consideration of regulatory alternatives beyond BAT for all of the inorganic arsenic emission sources at the low-arsenic smelters. The risk of cancer incidence due to inorganic arsenic exposure in the population distributed around the low-arsenic smelters was estimated. This estimated risk which remains after application of BAT was evaluated considering costs, economic impacts, risk reduction, and other impacts that would result if a more strigent alternative were selected. If the residual risk was judged not to be unreasonable considering the other impacts of controls beyond BAT, more stringent controls than BAT would not be required. However, if the residual risk was judged to be unreasonable, then an alternative more strigent than BAT would be required.

Determination of the Adequacy of Current Controls

Inorganic arsenic emissions sources at the low-arsenic smelters are currently controlled using a variety of capture and collection techniques. Capture techniques are used to gather and

confine secondary inorganic arsenic emissions and to transport them to a collection device. Or, in some cases, secondary emissions are captured and simply vented out of a tall stack for better dispersion. Collection techniques are used to remove inorganic arsenic from process offgases and captured gases prior to venting the gases to the atmosphere. Each inorganic arsenic emission source at the low-arsenic smelters was examined by EPA to determine the extent to which inorganic arsenic emissions are currently controlled and whether the level of control represents BAT. In performing the examination, EPA reviewed the existing process operations and pollution control equipment. Four of the smelters were undergoing improvements due to either consent degree requirements (Phelps Dodge-Ajo, Phelps Dodge-Morenci, and ASARCO-Hayden) or modernization (Kennecotte-Hurley). For purposes of evaluating whether BAT controls were installed, the new smelter configurations were used.

The first sources to be examined were the process sources (roasters, smelting furnaces, and converters) at the low-arsenic-throughput smelters. During these process operations, inorganic arsenic is volatilized and emitted predominantly as a metallic oxide vapor in the process offgases. By cooling the process offgases, the inorganic arsenic vapor sublimates to form inorganic arsenic particulates, which can be collected in a conventional particulate control device. The two most important factors affecting the collectability of inorganic arsenic emissions are the operating temperature of the control device and the concentration of arsenic in the exhaust gas stream. The temperature of the offgas stream determines the amount of inorganic arsenic which can exist as vapor. The concentration of inorganic arsenic compared to the satuation vapor pressure at the offgas temperature determines the quantity of inorganic arsenic which can condense and potentially be captured in a particulate control device. Vapor pressure data indicate a significant logarithmic increase in the vapor pressure of arsenic trioxide (the prevalent oxide of inorganic arsenic in the offgas), and thus the amount of arsenic which can exist in the vapor state, with temperature. Furthermore, the vapor pressure data indicate that arsenic trioxide maintains an appreciable vapor pressure at relatively low temperatures. EPA test data demonstrate the need to cool the gas stream to be treated as much as practicable to condense as much of the arsenic trioxide vapor as possible prior to its entering a control device for collection. There are limits to the extent to which the offgases can be cooled. Corrosion due to the condensation of sulfuric acid can be a major problem if gases are cooled below the acid dew point. Therefore, to ensure the use of existing electrostatic precipitator (ESP) technology without major corrosion problems, BAT evaluations for flue gas cooling to enhance particulate inorganic arsenic collection are limited to a minimum temperature of 121°C (250°F).

Four of the existing smelters incorporate roasting of the copper ore concentrates to remove impurities prior to entering the smelting furnaces. The ASARCO-El Paso and Phelps Dodge-Douglas smelters use multihearth roasters, and the Tennessee Copper-Copperhill and Kenneycott-Hayden smelter use fluid bed roasters. Process offgases from the fluid bed roasters at Tennessee Copper-Copperhill and Kennecott-Hayden and the multihearth roasters at ASARCO-El Paso are treated by acid plant controls to remove SO_2 emissions before being exhausted to the atmosphere. Because of the highly efficient particulate removal equipment required, the acid plant controls are considered 99 percent effective for the removal of arsenic. These acid plant controls represent the most advanced level of control adequately demonstrated considering economic feasibility. Therefore, the roasters at these smelters are already controlled using BAT.

The multihearth roaster at Phelps Dodge-Douglas uses an ESP operating at an elevated temperature (260°C) to control process offgases. EPA estimates that this control device currently achieves an emission reduction of about 30 percent. EPA evaluated the possibility of cooling the process gases to 121°C prior to entering the ESP. The expected concentration of inorganic arsenic in the offgases, after cooling to 121°C, was calculated using arsenic emission rates and flow rate data supplied by the company. This calculated concentration is them compared to the saturation concentration at 121°C. However, the concentration of arsenic in the offgases at Phelps Dodge-Douglas would still be below the saturation concentration. As a result, it is predicted that the inorganic arsenic would remain in the vapor state and pass through the particulate control device with no additional particulate arsenic removal. Because no additional arsenic emission reduction is predicted when this gas stream is cooled to 121°C, and because additional cooling would necessitate costly corrosion resistance measures, EPA concluded that the existing ESP at Phelps-Douglas represents the most advanced level of control adequately demonstrated considering economic feasibility, and is thus BAT.

Smelting furnace offgases at all but 6 of the 14 smelters are controlled currently by acid plants or will be controlled by acid plants under consent decree. As with the roasters, the acid plants are considered to be 99 percent efficient for removing inorganic arsenic and represent BAT controls at these smelters. The ASARCO-El Paso smelter cools the smelting furnace offgases to about 105°C before entering an ESP. The inorganic arsenic concentration in the smelting furnace offgases greatly exceeds the inorganic arsenic saturaton concentration at 10°C, and, therefore, the arsenic is present predominantly in the particulate state. Test data indicate that the inorganic arsenic removal efficiency for the cold ESP at ASARCO-El Paso is approximately 96 percent. Additional cooling is not predicted to result in any appreciable increase in arsenic removal; therefore, the existing cold ESP at ASARCO-El Paso represents the most advanced level of control considering economic feasibility, and is thus BAT.

The remaining five smelters all control smelting furnace offgases with electrostatic precipitators operating at temperatures between 190°C and 315°C. EPA evaluated the possibility of achieving additional inorganic arsenic removal in the existing ESP's by cooling the gas streams to 121°C. In all cases, the concentration of inorganic arsenic would be well below the saturation concentration at 121°C. As a result, the inorganic arsenic would remain as a vapor as it passed through the particulate control device, and no additional inorganic arsenic removal could be predicted. As with the roasters at Phelps Dodge-Douglas, cooling the gas stream further to try to condense the arsenic to particulate would cause serious corrosion problems and would require costly preventative measures. Consequently, EPA concluded that the existing ESP's on the smelting furnace offgases at the Kennecott-Hayden, Magma-San Manuel, Kennecott-McGill, Phelps Dodge-Douglas, and the White Pine smelters were BAT for these sources.

Converter process offgases at 11 of the 14 low-arsenic-throughput smelters are controlled by acid plants. As with the other process sources, these controls are considered BAT for inorganic arsenic. Converter offgases at the Phelps

Dodge-Douglas smelter are controlled by an ESP operating at 230°C, and at the Kennecott-McGill smelter by multiclones operating at 433°C. The converters at the White Pine smelter are uncontrolled with an exhaust gas temperature of 345°C. In all cases, EPA evaluated the possibility of cooling the gas streams to 121°C and collecting the particulate inorganic arsenic in and ESP. The calulations for the Phelps Dodge-Douglas and White Pine smelters indicated that the concentration would be below the saturation concentration, and no additional arsenic removal was predicted. As concluded previously, the existing control scenarios at these two smelters are then considered BAT. The calculations for the Kennecott-McGill smelter, however, indicated that the concentration of inorganic arsenic was significant enough that cooling of the gas stream to 121°C would result in the condensation of over half of the arsenic present to the particulate state and would allow collection of this particulate in a particulate control device.

To summarize the process emission sources, EPA concluded that the control systems currently in place at ten smelters and those systems which will be installed due to consent decree and modernization programs at four smelters to control roaster, smelting furnace, and converter process offgas inorganic arsenic emissions (with the exception of the process emissions from the converters at Kennecott-McGill) represent the most advanced level of control adequately demonstrated considering economic feasibility. Therefore, these process sources are already controlled by BAT. Existing Federally enforceable regulations for particulate and SO_2 emissions will require the controls to remain in place and to be properly operated and maintained to reduce emissions. These regulations serve to assure that BAT for inorganic arsenic will remain in place. It should be noted that if the controls required by consent decree at the three smelters are not installed as expected, EPA will reconsider the need for process standards based upon BAT.

In particular, there is some uncertainty regarding the consent decree for the Phelps Dodge-Ajo smelter. The smelter is negotiating changes to the consent decree because the company now feels that the changes outlined in the decree (installation of oxygen-fuel/oxygen sprinkle smelting and acid plant controls) are no longer required to comply with the recently approved multipoint rollback (MRP) SIP regulations for sulfur dioxide control (48 FR 1717, January 14, 1983). If the smelting furnace and associated pollution control equipment changes are not made as specified in the existing consent decree, EPA would then reconsider the need for standards for smelting furnaces. It is expected that standards based on BAT for smelting furnaces would affect only the Phelps Dodge-Ajo smelter and would necessitate cooling of the reverberatory furnace exhaust gas. Such cooling would result in reduction of inorganic arsenic emissions of about 110 Mg/yr (from about 200 Mg/yr to 90 Mg/yr) at a capital cost of about $1.5 million and an annualized cost of $1.6 million.

Additional inorganic arsenic control can be achieved by the addition of flue gas cooling and particulate controls at the Kennecott-McGill smelter. Therefore, because of the sizeable current inorganic arsenic emission rate (394 Mg/yr) and because demonstrated technology is available, EPA decided to evaluate standards based on BAT for the converter process offgas emissions from the Kennecott-McGill smelter.

In all cases, secondary inorganic arsenic emissions from the low-arsenic-throughput cooper smelters are cool enough to be present essentially in particulate form only. This allows the captured secondary inorganic arsenic emissions to be collected in conventional particulate control devices. The major source of secondary inorganic arsenic emissions at the low-arsenic-throughput smelters is the converter operations. There is limited capture of secondary converter emissions at 5 of the 14 smelters, and particulate control equipment to collect the captured emissions is or will be installed at two of these. Total baseline secondary emissions from the converters at all the smelters are 137 Mg/yr. These emissions have the greatest potential health impact because they are generally low-level emissions and are not emitted through stacks. Technology for capture and collection of these emissions has been demonstrated. Therefore, because of the potential for the converter operations to emit large quantities of secondary inorganic arsenic emissions, and because of the demonstrated availability of controls for these emissions, EPA decided to evaluate standards based on BAT for secondary inorganic arsenic emissions from converter operations.

Three of the low-arsenic-throughput smelters have multihearth roasters with associated calcine discharge secondary inorganic arsenic emissions. One of these smelters, however, will be changing over to a smelting technology which does not require roasting as part of a consent decree modification discussed in the regulatory baseline section. For the two remaining smelters, calcine discharge secondary emissions are captured in localized hoods and sent to a particulate control device. This equipment is already installed at these smelters and is considered BAT.

Smelting furnace secondary inorganic arsenic emissions from matte tapping operations are captured at all smelters using localized hoods. This equipment is installed at all smelters and is considered best technology for capture. Secondary emissions from furnace slag tapping operations are currently captured at 11 of the 14 smelters. This capture is also accomplished with localized hooding. Because this equipment is not used at all smelters, EPA analyzed the impacts of requiring capture for slag tapping secondary inorganic arsenic emissions.

Captured secondary inorganic arsenic emissions from matte tapping operations are collected in particulate control devices at two smelters and captured secondary inorganic arsenic emissions from slag tapping are collected at only one smelter. Because these inorganic arsenic emissions are in the particulate state and because capture and collection equipment have been demonstrated in the industry, EPA decided to analyze the alternative of requiring collection of secondary inorganic arsenic emissions from matte and slag tapping operations.

Selection of BAT for Process and Secondary Inorganic Arsenic Emissions

The control of process and secondary inorganic arsenic emissions at low-arsenic-throughput primary copper smelters is identical to the technology discussed in Part II of this preamble. Therefore, the discussion on technology is only summarized here.

Capture of Secondary Emissions.

The capture of secondary inorganic arsenic emissions from primary copper smelters can be achieved by the application of local ventilation techniques (i.e., ventilation hoods and air curtains) or general ventilation techniques (i.e., building evacuation). Once captured, the emissions may be vented directly to a collection device or combined with process exhaust gases prior to collection.

Converter Operations—Local ventilation techniques for the capture of secondary emissions include the use of fixed secondary hoods, retractable secondary hoods, or air curtain secondry hoods. General ventilation techniques, such as building evacuation,

take the form of either natural air changes due to wind and density differences, or mechanically assisted air changes.

The most effective local ventilation technique evaluated for the capture of converter secondary emissions involves the use of a secondary hood system consisting of a fixed enclosure with an air curtain. In January, 1983, EPA conducted a test program designed to evaluate the effectiveness of the capture of secondary emissions by the prototype fixed-enclosure-with-air-curtain system at the ASARCO-Tacoma smelter. This system was determined to be representative of a capture system which could be used at all smelters. The capture efficiency of the system was evaluated by performing a gas tracer study and visual observation. The gas tracer was released inside the boundaries of the fixed enclosure, and the amount of the gas tracer in the exhaust gases was measured in the ducting downstream of the enclosure receiving hood. The capture efficiency was then calculated by a material balance of the inlet and outlet tracer gas mass flow rates. Based on the results of this test program, the ovrall average capture efficiency of the fixed-enclosure-with-air-curtain system was determined by EPA to be 95 percent.

Capture of converter secondary emissions by building evacuation is accomplished by controlling the airflow patterns within the building housing the converter and by maintaining a sufficient air change or ventilation rate. In theory, EPA believes a building evacuation system should be capable of achieving at least 95 percent capture of secondary emissions. However, the building evacuation systems in use have not demonstrated this level of control. Building evacuation is presently being used at ASARCO's primary copper smelter located in El Paso, Texas, to capture secondary emissions from the converters. While preventing the venting of secondary emissions to the ambient air outside the building, use of the building evacuation system at the ASARCO-El Paso smelter has resulted in elevated concentrations of inorganic arsenic, lead, and SO_2 inside the building, in addition to excessive heat buildup. To alleviate these unacceptable working conditions, building openings have been increased, and ventilators designed for emergency use have been operated routinely. Consequently, the building evacuation system at the ASARCO-El Paso smelter achieves a capture efficiency less than 95 percent.

Slag Tapping—Local ventilation techniques for slag tapping operations are very similar to those used for matte tapping. EPA observed furnace slag tapping operations at the ASARCO-Tacoma smelter at both the tap port and the slag launder to slag pot transfer point using EPA Methods 22 and 9. The performance demonstrated by the matte tapping controls at ASARCO-Tacoma suggests that a properly designed and operated ventilation system applied to slag tapping operations should be capable of achieving at least 90 percent capture.

Collection of Inorganic Arsenic Emissions.

As discussed previously, the two most important factors affecting the collectability of inorganic arsenic emissions are the operating temperature of the control device and the concentration of arsenic in the exhaust gas stream. The temperature of the offgas stream determines the amount of inorganic arsenic which can exist as vapor. The concentration of inorganic arsenic compared to the saturation vapor pressure at the offgas temperatue determines the quantity of inorganic arsenic which can condense and potentially be captured in a particulate control device.

Several methods were evaluated for cooling the converter process offgas at the Kennecott-McGill smelter. These methods included tempering with dilution air, radiative cooling, and evaporative cooling. Each method has its advantages and disadvantages. Dilution air is the simplest method. However, it may be uneconomical as the amount of dilution air required may result in a two- to four-fold increase in gas volume to be treated and, thus, an increase in the size and cost of the collection device and fan applied. In addition, dilution air lowers the concentration of arsenic in the gas stream, thus increasing the amount of arsenic which can exist in the vapor phase. Radiative cooling relies on heat loss due to natural convection and radiation to achieve cooling. The major drawback to this method is limited flexibility for temperatue control. Evaporative cooling is relatively simple and requires little space. The major drawback to this method is the potential for corrosion. Which method, or combination of methods, is used to achieve cooling depends on the specific circumstances.

In contrast to process offgases, secondary emission streams are relatively lower in temperature, seldom having a temperature higher than 93° C (200° F). At this low temperature, further cooling of the secondary emissions would have an insignificant effect on the amount of inorganic arsenic which could be collected by the control device. Therefore, additional gas cooling prior to collection is not required for secondary inorganic arsenic emissions.

Converter process inorganic arsenic emissions may be effectively collected through the use of baghouses, electrostatic precipitators, or venturi scrubbers if emissions are sufficiently precooled. Baghouse collectors (fabric filters) have historically achieved a high collection efficiency over a broad range of applications, although never specifically for control of converter offgases. Single-stage electrostatic precipitators are widely used in the primary copper industry for the control of process particulate emissions from converter operations. Both wire-in-plate and wire-in-tube types are used. They are generally, however, operated at elevated temperatures, usually at 200° C to 340° C (400° F to 650° F). The application of venturi scrubbers at primary copper smelters is limited to a few smelters where scrubbers are used to augment process gas stream precleaning and cooling prior to acid manufacturing. High operating costs and water handling problems make their use less desirable than other control devices.

The concentration of arsenic in the gas stream is very important in determining achievable arsenic emission reductions. To achieve any arsenic trioxide emission reduction by condensation, the quantity of arsenic trioxide in the gas stream must be sufficiently high so that the resultant arsenic trioxide concentration at the control device operating temperature exceeds the predicted saturation concentration. The concentration of inorganic arsenic in the converter offgases from the Kennecott-McGill smelter exceeded the saturation concentration at a temperature of 121° C. Calculations indicated that over half of the arsenic present was in the particulate state.

The effect of the overall collection efficiency of the control device on achievable arsenic emission reduction is self-evident; the higher the efficiency for particulate matter, the higher the efficiency for arsenic.

To evaluate the performance capabilities of various collection devices on process emissions, EPA conducted emission source tests on process gas streams from roasters, smelting furnaces, and converters. Baghouse, electrostatic precipitator (ESP), and venturi scrubber collection systems were evaluated. Based on the test results for the collection efficiency of baghouses, electrostatic precipitators,

and venturi scrubbers, EPA concluded that these three control devices, when applied to process arsenic emission sources, are equivalent in performance. Given sufficiently high arsenic concentration in the offgas and sufficiently low offgas temperature, control efficiencies for inorganic arsenic in excess of 97 percent can be achieved.

Captured secondary inorganic arsenic emissions may be effectively collected through the use of baghouses, electrostatic precipitators, and venturi scrubbers. Only three domestic copper smelters use baghouse or ESP collection devices exclusively for secondary emissions. No presently operating primary copper smelter uses a venturi scrubber for the collection of secondary emissions. There is no reason to believe that a venturi scrubber system could not be installed to effectively collect secondary inorganic arsenic emissions, but high operating costs and water handling problems associated with the use of venturi scrubbers make their use less desirable than other devices.

To help evaluate the performance of collection devices used to collect secondary inorganic arsenic emissions, EPA conducted tests on the baghouse at ASARCO-El Paso used to treat combined converter and anode furnace secondary emissions. The results of these tests are summarized below.

Secondary emissions from converters and anode furnaces at the ASARCO-El Paso smelter are captured by building evacuation. Inlet and outlet emission measurements for inorganic arsenic were made by EPA at the El Paso baghouse during converter operations. Tests were conducted only when one or more converters were in operation. The test results indicated an average inorganic arsenic removal efficiency of 96.2 percent, with a range (in three runs) from 94.5 to 99.1 percent.

In summary, baghouses, electrostatic precipitators, and venturi scrubbers are comparable in terms of secondary inorganic arsenic emission reduction performance. However, due to lower inlet loadings associated with secondary emissions in general, it is expected that collection devices used for secondary emissions streams will not always achieve high inorganic arsenic collection efficiencies, because of the lower arsenic concentrations in these gas streams.

Selection of Regulatory Baseline

In selecting the basis of the proposed standards, it was first necessary to establish the regualtory baseline. The regulatory baseline represents no additional regulatory action. In other words, the baseline alternative describes the industry in the absence of a NESHAP arsenic regulation. The baseline alternative provides the basis for computing the incremental impacts associated with each of the regulatory alternatives selected for consideration.

The regulatory baseline was selected as including only those existing air pollution controls installed before the court order (January 13, 1983) or required by existing legal actions. EPA realizes that it may be necessary for some smelters to install additional controls in the future to meet other Clean Air Act or OSHA requirements. However, given the uncertainty of future deadlines concerning controls required under OSHA or the nonferrous smelter order (NSO) program, it was not possible to anticipate, for purposes of this analysis, what controls would be required or when they would have to be installed.

Three smelters (Phelps Dodge-Ajo and Morenci, and ASARCO-Hayden) currently are operating under consent decrees to install new furnace configuration and acid plant control equipment for SO_2 removal. Final compliance dates for these consent decrees have been established as 1985. Since these controls are mandated by the court and final compliance will be in the near future, these controls were considered as part of the regulatory baseline.

In addition, the Kennecott-Hurley smelter is currently modernizing its facilities. This work has already begun and is expected to be completed at about the same time as the smelters operating under a consent decree. For these reasons, the smelter configuration, after modernization, was selected as part of the regulatory baseline. Chapter 4 of the BID for this source category explains in detail the process and control equipment considered in the regulatory baseline.

Regulatory Alternatives

Following the definition of the regulatory baseline, designated as Alternative I, four other regulatory alternatives were defined for the low-arsenic-throughput smelters. These alternatives represent application of inorganic arsenic controls independently on various emission points at the smelters and are characterized by the control equipment that would be required (beyond what is required to meet baseline requirements) to meet these levels of control.

Alternative II would require the control of process inorganic arsenic emissions. This alternative affects only one smelter where additional inorganic arsenic removal is predicted (Kennecott-McGill). This alternative is based on the use of flue gas cooling followed by a particulate control device (baghouse, ESP, or scrubber) to collect process arsenic emissions. Under this alternative, an adequate particulate control device operating at less than 121° C (250° F) would be required to be installed on the converter process offgases at the Kennecott-McGill smelter.

Alternative III would require the capture and collection of secondary inorganic arsenic emissions from converter operations. This alternative is based on the use of a secondary hood system or equivalent for the capture of secondary emissions and a particulate control device (baghouse or an equivalent technology) for the collection of secondary inorganic arsenic emissions from the converters.

Alternative IV would require the capture of slag tapping secondary emissions and the collection of secondary inorganic arsenic emissions from matte tapping and slag tapping operations. Under this alterantive the capture of the slag tapping secondary emissions would be accomplished using localized ventilation hoods. Collection of the secondary emissions would be accomplished in a particulate control device (baghouse or an equivalent technology).

Selection of Best Available Technology

Alternative II would require cooling and particulate collection for the process emissions from the converters at the Kennecott-McGill smelter. As discussed earlier in the adequacy determination, the concentration of inorganic arsenic in the reverberatory furnace offgases at Kennecott-McGill is well below the saturation concentration at 121°C, resulting in no predicted arsenic collection from the furnace gas stream, even with cooling to 121°C prior to passage through the existing ESP. The analysis of this alternative therefore assumed use of evaporative cooling to cool the converter offgases to 121°C and installation of an electrostatic precipitator for the collection of particulate arsenic emissions. Calculations of the predicted inorganic arsenic concentration indicated that about 60 percent of the arsenic in the offgases would be in particulate form at the reduced temperature. Assuming the ESP would achieve 96 percent reduction of the particulate arsenic, and overall inorganic arsenic emission reduction of 57 percent was predicted (161 Mg As/yr).

The costs associated with these controls would be about $9.8 million

capital investment and an annualized cost of about $4.1 million. The economic analysis of Alternative II indicated a 45 to 150 percent reduction in profitability (the latter case indicating a net operating loss) for the Kennecott-McGill smelter if the converter process controls were installed and the costs were absorbed by the company. If the costs could be passed through, copper prices would have to be raised 10 to 15 percent. Considering these impacts, EPA's analysis indicated Kennecott-McGill would close rather than install the controls. EPA has concluded that the cost and economic impact of additional controls for the converter process emissions at the Kennecott-McGill smelter are unreasonable and that such controls are beyond BAT. Therefore, the exiting process controls at the Kennecott-McGill smelter are considered BAT for that particular smelter. In addition, arsenic emissions which are discharged to the atmosphere through stacks are subject to much greater dispersion than the ground-level secondary emissions.

It should be pointed out that this BAT decision is based primarily on the economic analysis performed for the Kennecott-McGill smelter and the conclusion that this smelter would likely close if required to install process controls. Thus, while multiclones, when considered from a technical perspective, are clearly not the best possible controls, the Agency believes that multiclones are the best available technology considering cost at this smelter. The Agency recognizes that this decision serves to perpetuate any economic dispartiy which results from the use of process controls on some smelters and not on others. However, the Agency does not believe that elimination of such inequity is an appropriate purpose of a NESHAP.

Alternative III would require the capture of secondary emissions from converter operations and the collection of the emissions in a particulate control device (baghouse or equivalent). As noted earlier, the converter is the largest source of secondary inorganic arsenic emissions at the copper smelters. None of the existing smelters currently has best controls installed for limiting secondary inorganic arsenic emissions from converters. Therefore, the cost and environmental impacts of installing a secondary hood system consisting of a fixed enclosure and air curtain were evaluated for all 14 smelters. The smelters were ranked as to their potential to emit secondary inorganic arsenic emissions from the converters (see Table III-1). The analysis indicates that significant emission reduction is achievable at a reasonable cost for the six smelters with the greatest potential inorganic arsenic emissions. The economic analysis indicates that the imposition of controls on the Kennecott-McGill smelter would cause serious reductions in profitability (12 to 40 percent). It should be noted, however, that this analysis is necessarily limited and cannot include all factors known to the company. However, considering the cost of converter controls alone, with no other control costs required, the analysis does not predict closure at Kennecott-McGill.

TABLE III-1. ENVIRONMENTAL AND COST IMPACTS ASSOCIATED WITH SECONDARY INORGANIC ARSENIC EMISSION CONTROL SYSTEMS FOR CONVERTER OPERATIONS

Smelter	Potential arsenic emissions, Mg/yr	Arsenic feed rate to converters, kg/h	Baseline arsenic emissions, Mg/yr	Predicted arsenic emission reduction, Mg/yr	Annualized control costs, $1,000	Cost per unit emission reduction, $/Mg As
ASARCO-El Paso	28.0	28.9	27.5	18.9	307	16,200
ASARCO-Hayden	58.5	97.1	30.1	24.9	408	16,400
Kennecott-McGill	45.9	41.6	45.9	41.6	2,685	64,800
Kennecott-Garfield	7.7	19.2	7.7	7.0	1,300	185,400
Phelps Dodge-Morenci	6.9	9.7	6.9	6.3	1,908	302,900
Kennecott-Hayden	6.5	7.2	6.5	5.9	1,982	335,900
Phelps Dodge Douglas	4.3	4.2	4.3	4.0	2,943	710,800
Phelps Dodge-Ajo	2.6	4.1	2.6	2.3	1,562	679,100
Inspiration-Miami	1.7	5.4	1.7	1.6	2,943	1,777,000
Phelps Dodge-Hidalgo	1.2	2.2	1.2	1.1	1,745	1,586,000
Tennessee Copper-Copperhill	0.7	0.7	0.7	0.6	1,278	2,130,000
Magma-San Manuel	0.5	0.6	0.5	0.45	3,979	8,842,000
Kennecott-Hurley	0.5	0.78	0.5	0.46	2,296	5,861,000
White Pine	0.3	0.5	0.3	0.27	1,278	4,733,000

At the remaining eight smelters, which have lower potential secondary inorganic arsenic emissions from the converters, the costs of the controls with respect to the emission reduction achievable are very high (cost effectiveness ranging from about $700,000 per megagram arsenic reduced to over $8 million per megagram arsenic reduced). In addition, the analysis indicates that the imposition of controls on the remaining eight smelters would close at least two (Phelps Dodge-Douglas and Tennessee Copper-Copperhill), and the affordability was questionable for three more. Therefore, EPA has concluded that the costs and economic impacts are disproportionate to the emission reduction benefits for these eight smelters and that BAT would not include converter controls for these eight facilities.

In establishing this cutoff between the group of six smelters with the greatest potential converter fugitive emissions and the group of eight with lower potential emissions, the Agency considered emission rates, emission reduction potential, control costs, and the economic impacts of controls. This analysis led to the clear conclusion that the additional control is reasonable for the smelters with the highest potential emissions and that control is unreasonable (considering the small benefit) for smelters with the lowest potential emissions. The analysis did not, however, provide a clear, objective formula for establishing the precise point at which costs and other impacts become unreasonable relative to the emission reduction benefits. Therefore, the cutoff being proposed reflects the Agency's best judgment of BAT, based on consideration of the factors which are relevant to this decision and most particularly on the Agency's judgment that arsenic emissions should be minimized. The Agency recognizes that others may have different views on where an appropriate cutoff, if any, should be made and is specifically requesting comments on this.

To ensure that the proposed standards would be based only on those sources where additional controls would represent BAT, a cutoff expressed in objective measurable terms was sought to exclude the eight smaller emitters discussed above. The parameter

selected is the total arsenic feed rate to the converters. The potential inorganic arsenic emissions from the converters is closely related to the arsenic feed rate to the converters. To obtain the arsenic feed rate, a grab sample of the feed materials to the converters would be required daily with subsequent analysis of a monthly composite sample for inorganic arsenic using Method 108A. Measurement of this parameter does not present a burden since the smelters monitor the quality of the converter feed for production purposes. Therefore, a cutoff based at the level of 6.5 kg/h arsenic feed rate was selected. This feed rate would be calculated using the average percent arsenic in the converter feed materials and the feed rate of these materials.

Establishing the cutoff on the basis of arsenic input to the converters also provides the potential opportunity for the smelters to use lower arsenic ores and thereby avoid the need for converter controls. EPA has not examined the extent to which this practice may be possible but realizes that this possibility is limited by contract, ownership, and physical proximity to ore deposits. Nevertheless, this does provide a means for reducing emissions which is possibly less expensive than use of control technology.

Alternative IV would require the capture of fugitive emissions from slag tapping operations using localized ventilation techniques (hooding) and the collection of the emissions from both matte and slag tapping operations in a particulate control device (baghouse or equivalent). Again the smelters were ranked as to their potential to emit secondary inorganic arsenic emissions from matte and slag tapping operations (see Table III-2). The analysis indicates that the costs are not unreasonable and the potential emission reductions are greatest for the four smelters with the greatest potential to emit secondary inorganic arsenic emissions. The analysis also indicates that seven of the remaining ten smelters would experience very high costs associated with the small amount of emission reduction ($640,000/Mg As to over $6 million/Mg As). Therefore, EPA concluded that, for the four smelters with the greatest potential to emit, BAT is additional controls, and, for the ten remaining smelters, BAT is no additional controls.

TABLE III-2.—ENVIRONMENTAL AND COST IMPACTS ASSOCIATED WITH SECONDARY INORGANIC ARSENIC EMISSION CONTROL SYSTEMS FOR MATTE AND SLAG TAPPING OPERATIONS

Smelter	Potential arsenic emissions, Mg/yr	Arsenic process rate,[1] kg/h	Baseline arsenic emissions, Mg/yr	Predicted arsenic emission reduction Mg/yr	Annualized control costs, $1,000	Cost per unit emission reduction, $/Mg As
ASARCO-Hayden	13.9	198.0	1.8	0	0	
ASARCO-El Paso	6.5	102.1	1.2	0.4	153	382,500
Kennecott-McGill	4.5	53.4	4.5	3.9	257	65,900
Kennecott-Garfield	2.0	48.7	2.0	1.7	514	302,400
Phelps Dodge-Morenci	0.9	10.5	0.9	0.8	514	642,500
Kennecott-Hayden	0.9	9.4	0.9	0.8	257	321,300
Inspiration-Miami	0.8	19.5	0.8	0.7	261	372,900
Phelps Dodge-Douglas	0.6	10.2	0.4	0.35	514	1,469,000
Phelps Dodge-Ajo	0.6	14.2	0.6	0.52	257	494,300
Phelps Dodge-Hildalgo	0.2	4.3	0.2	0.17	257	1,512,000
Kennecott-Hurley	0.1	1.6	0.1	0.08	265	3,313,000
Tennessee Copper-Copperhill	0.09	1.1	0.09	0.07	257	3,671,000
Magma-San Manuel	0.09	1.0	0.09	0.08	54	6,425,000
White Pine	0.05	0.8	0.05	0.04	257	6,425,000

[1] Combined arsenic process rate in both the matte and slag.

As in the case of the converter secondary emission cutoff, EPA selected a parameter which would objectively differentiate between the two groups of smelters. The arsenic content of the matte and slag are directly related to the quantity of secondary inorganic arsenic emissions. Because it is likely that emissions from matte and slag tapping operations would be combined into one collection system, a cutoff based on the combined arsenic content of the matte and the slag was selected. This approach was considered reasonable since only daily grab samples of matte and slag would be required with arsenic analysis performed on a monthly composite sample using Method 108A. The arsenic content would be calculated using the percent arsenic in the matte and slag and the matte tap and slag tap rates. The cutoff selected to exclude smaller sources where costs become unreasonable was 40 kg/h total arsenic in the matte and the furnace slag. Additional standards for requiring slag tapping emissions capture will not be necessary since all smelters operating above the matte and slag tap cutoff already have installed localized hoods considered to be BAT. It should be noted that using this cutoff would require the Kennecott-McGill smelter to install collection equipment for matte and slag tapping operations. The imposition of matte and slag tap controls in addition to converter controls at the Kennecott-McGill smelter increases the cost impacts at this smelter and pushes them closer to closure.

The following paragraphs discuss the energy and environmental impacts associated with the selection of BAT. By applying fixed enclosures with air curtains and particulate control technologies with efficiencies of 95 percent and 96 percent, respectively, to converter secondary emissions (91.2 percent overall reduction), and particulate control technologies with efficiencies of 96 percent to captured matte tap and slag tap secondary emissions at the affected smelters, a total emission reduction associated with the proposed standards of 111 Mg/yr of arsenic (from 134 Mg secondary emissions to 23 Mg secondary emissions) is achieved.

Standards based upon BAT will require the use of approximately 6.4 MW of electricity beyond the baseline energy requirements for the affected low-arsenic-throughput smelters.

With respect to solid waste impacts, standards based upon BAT would result in approximately 11,100 Mg per year of additional solid waste beyond baseline for the affected low-arsenic-throughput smelters. This quantity is not signifcant in terms of the total solid waste currently generated annually at these smelters (estimated at 3.2 million Mg).

As all the control technologies selected involve dry control systems, there will be no direct water pollution impact. If scrubbers were used, secondary water pollution impacts

might result if the arsenic-containing dusts are disposed of along with acid plant slurry. However, no adverse water pollution impact is anticipated since existing regulations require control of these wastes.

EPA has considered each of the impacts cited above and concludes that they are reasonable in light of the emission reduction achieved.

Consideration of Risk Remaining After BAT and Selection of the Level of the Standard

With the implementation of converter controls for smelters with a total arsenic feed to the converter of 6.5 kg/h or greater and the implementation of matte and slag tap controls for smelters with a combined arsenic process rate of 40 kg/h or greater in the matte and the slag, BAT would be in place at all smelters. EPA estimated the health risk remaining after application of BAT to all of these smelters and examined the residual risk to determine whether the risk is unreasonable in view of the health risk and other impacts that would seresult if a more stringent regulatory alternative were selected as BAT.

The health risk is expressed by the estimated number of incidences of cancer due to inorganic arsenic exposure in the population distributed around the affected smelters. For the current level of inorganic arsenic emissions from the smelters, the annual cancer incidence is estimated to range from 0.1 to 1.6 incidence per year. With BAT in place at these smelters for all of the significant inorganic arsenic emission points, the estimated annual cancer incidence would be reduced to a range of 0.04 to 0.64 incidence per year. Application of BAT would reduce the estimated maximum lifetime risk from exposure to airborne inorganic arsenic from a range of 43 in 10,000 to 690 in 10,000 to a range of 9.4 in 10,000 to 150 in 10,000. The estimated maximum lifetime risk represents the probability of a person contracting cancer who has been continuously exposed during a 70-year period to the maximum annual inorganic arsenic concentration due to inorganic arsenic emissions from the low-arsenic-throughput smelters.

Regulatory alternatives beyond BAT were examined by EPA for inorganic arsenic emission points at three categories of smelters: (1) smelters where additional controls for secondary emissions from converter operations, and matte and slag tap operations would be installed to achieve BAT; (2) smelters where additional controls for only secondary emissions from converter operations would be installed to achieve BAT; and (3) smelters where BAT is already in place for all sources, and no additional controls would be required to achieve BAT.

There are four smelters (ASARCO-El Paso, ASARCO-Hayden, Kennecott-McGill, Kennecott-Garfield) in the first category. Implementation of converter controls and matte and slag tap controls for secondary emissions would result in BAT for these sources. The EPA analysis indicated that except in the case of Kennecott-McGill, there were no demonstrated technologically based alternatives for further reduction of inorganic arsenic emissions for these smelters short of shutdown. The alternative of flue gas cooling for converter process controls at Kennecott-McGill was evaluated previously. Although this technology would result in approximately 60 percent reduction in converter process arsenic emissions, the associated costs are predicted to result in closure. There is then, in effect, no alternative for beyond BAT reduction of inorganic arsenic emissions from the Kennecott-McGill smelter short of closure. Shutdown of these four smelters would reduce the estimated residual cancer incidence for the source category from a range of 0.04 to 0.64 incidence per year to 0.01 to 0.23 incidence per year; however, this would result in the loss of about 2,000 jobs.

There are two smelters (Kennecott-Hayden, Phelps Dodge-Morenci) in the second category. Implementation of converter controls for secondary emissions would result in achieving BAT for these sources. Addition of matte and slag tap controls would have virtually no effect on the residual risk reduction estimate and would impose additional capital and annualized costs($2.68 million and $0.77 million, respectively). Addition of flue gas cooling at Kennecott-Hayden would result in no additional arsenic emission reduction, and, therefore, no reduction in estimated residual risk.

The remaining eight smelters are in the third category, where the analysis concluded that BAT was currently in place at these smelters. Alternatives beyond BAT considered for these smelters were additional process controls at the Magma-San Manuel, Phelps Dodge-Douglas, and White Pine smelters, and the addition of converter, and matte and slag tap secondary emission controls at all eight smelters. The EPA analysis indicated that no additional arsenic emission reduction could be achieved by requiring flue gas cooling at Phelps Dodge-Douglas, Magma-San Manuel and White Pine so there would be no reduction in estimated residual risk. Requiring secondary emission controls for converter operations at all eight smelters would result in a reduction of estimated cancer incidence from a range of 0.04 to 0.64 incidence per year to a range of 0.03 to 0.55 incidence per year. Estimated maximum lifetime risk would be reduced from a range of 9.4 in 10,000 to 150 in 10,000 to a range of 7.5 in 10,000 to 120 in 10,000. However, the imposition of these controls would close at least two smelters and the viability of three more is questionable. Requiring secondary emission controls for matte and slag tap at all eight smelters would result in no reduction of estimated residual risk of cancer incidence.

An alternative to reducing inorganic arsenic in the emission offgases is to reduce inorganic arsenic in the feed material to the smelter. However, reducing the arsenic content of the feed materials prior to the smelting process through physical or chemical means has not been technologically demonstrated for pyrometallurgical smelters.

In summary, EPA conluded that implementation of any alternatives beyond BAT would mean closure of 4 smelters and use of controls more effective than BAT at the remaining 10 smelters. These beyond BAT alternatives reduce the estimated maximum lifetime risk to a range of 7.5 in 10,000 to 120 in 10,000 and the estimated annual cancer incidence to a range of 0.008 to 0.12. However, imposition of controls more effective than BAT would likely close 2 of the 10 smelters and the viability of 3 more is questionable. At smelters where controls more effective than BAT could be applied without causing closure, the resultant reduction in risk would be negligible. Considering the relatively small reduction in risk that would be possible by alternatives beyond BAT, and the very high costs and economic impacts of these alternatives, EPA concluded that the estimated residual risks associated with BAT are not unreasonable. Therefore, the proposed standards are based on BAT.

Alternative Regulatory Strategies

EPA recognizes that the policy upon which the proposed decision is based gives limited weight to information on exposure and health risks in determining BAT and gives substantial weight to the economic feasibility of installing technologically available emission controls. For example, the degree of public exposure to inorganic arsenic from low-arsenic copper smelters varies significantly from plant to plant. This is because the BAT being proposed for this source category is based primarily on the economic and technical feasibility of

controlling smelters with varying arsenic feed rates. Because it is more cost-effective on a dollars per megagram basis to control smelters with higher arsenic input levels, EPA is proposing to require secondary emission controls on converters only for existing smelters with an inorganic arsenic feed rate of 6.5 kg/h or greater. Since some smelters with arsenic feed rates lower than 6.5 kg/h are located in areas with relatively high population while other smelters with arsenic feed rates greater than 6.5 kg/h are located in areas with relatively low populations, EPA recognizes that its method for determining BAT may result in the lack of controls on certain smelters that pose greater estimated health risks than some of the smelters that the Agency is proposing to regulate. The Agency therefore requests public comment on the degree to which information on exposure and public risks should be used to establish BAT.

EPA is considering two alternatives for using this information to determine BAT for low-arsenic primary copper smelters. As detailed below, these are subdividing source categories according to (1) population density (e.g., defining high and low population density source categories), and (2) estimated before-control cancer incidence rates and maximum individual risk. Once EPA has adopted a specific set of population exposure categories, the Agency would establish BAT for sources in each exposure category and then consider the residual risk. The following discussion describes how these could be applied and includes cutoff criteria that illustrate the possible application to low-arsenic copper smelters. EPA requests comments on the approaches outlined below and, although the cutoffs which are presented are for illustrative purposes, comments are also requested on these or other cutoffs which may be appropriate. Comments received will be considered by the Agency both in making final decisions on this standard and by an agencywide task force on toxics integration which is considering a unified Agency strategy on regulation of toxic chemicals.

Population Density Approach

Under this alternative, EPA would subdivide the source category on the basis of population density before determining BAT. The advantage of this approach is that a stricter standard could be applied to plants where potential exposures, and thus potential threats to public health, are greater.

Under this approach, EPA would first subdivide the source category according to the population living within some distance of the plant. EPA is considering defining this distance as 20 kilometers around each copper smelter. Up to this distance dispersion models used to calculate concentrations are reasonably accurate. At further distances they are less reliable and predict only very small concentrations of inorganic arsenic. EPA would then subdivide each source category into population density subcategories. For example, low arsenic copper smelters would be subdivided into high population density and low population density smelters. EPA is considering defining the high/low population density cutoff as 10,000 people using the most recent reasonably available population census tract data. BAT would be defined for both high and low density population categories.

High Population Density—For high population density low arsenic copper smelters, EPA would consider requiring secondary inorganic arsenic control systems for converter operations at smelters with arsenic feed rates greater than 25 kg/h. According to the information contained in the background information documents (BID's), this would result in controls at the ASARCO-El Paso smelter. EPA is also considering requiring secondary inorganic arsenic emission systems for matte and slag tapping operations at smelters in this subcategory where the combined arsenic process rate in both the matte and slag operations exceeds 15 kg/h. This would result in controls on the ASARCO-El Paso, Kennecott-Garfield, and Inspiration-Miami smelters.

Low Population Density—For low population density low-arsenic copper smelters, EPA is considering requiring secondary emission control systems for converter operations at smelters with feed rates greater than 35 kg/h. This would result in controls on the Kennecott-McGill and ASARCO-Hayden smelters. EPA is also considering requiring secondary emission control systems at matte and slag tapping operations at smelters in this subcategory when the combined process rate exceeds 35 k/h. This would result in controls on the Kennecott-McGill and ASARCO-Hayden smelters.

Cancer Incidence And Health Risk Based Approach

A second alternative would be for EPA to make more explicit use of both before-control maximum individual risk and estimated incidence of cancer in the exposed population in subdividing these source categories. As stated earlier, maximum individual lifetime risk is the probability of someone contracting cancer who is continuously exposed to maximum annual average arsenic concentration during an entire lifetime (70 years). Cancer incidence is a summation of all the risks to people living within 20 kilometers of a source divided by 70 to yield expected cancer incidences per year.

The major disadvantage in this approach is the great uncertainty surrounding health risk estimates. One must make numerous assumptions when producing quantitative estimates of public health risks. More particularly, factors such as meteorology, terrain, population distribution, plant characteristics, reentrainment of inorganic-arsenic-containing dust, and other site specific factors all affect the extent of public exposure to arsenic. Moreover, individual characteristics such as physiology, physical activity level, activity patterns, and the effects of exposures to other substances alter the sensitivity of individuals to inorganic arsenic. In order to estimate exposure effects, EPA must make a considerable number of simplifying assumptions that may well affect the accuracy of the final risk estimates. These assumptions and the methodologies are laid out in the background information documents listed in the beginning of this preamble.

Nevertheless, risk information, whatever its limits, is the information that bears most directly on the harms EPA seeks to avoid. The approach EPA now follows relies on use of this information in the Agency's analysis of residual risk when deciding whether controls beyond BAT are appropriate. The Agency requests comment on the appropriateness of using such information in subdividing categories for the purposes of establishing BAT.

If this approach were followed, the Agency would subdivide the low-arsenic copper smelters into higher risk and lower risk subcategories. For instance, if the before-control maximum individual risks and estimated cancer incidence rates from a smelter exceeded some predetermined levels, the smelter would be placed in the higher risk category. If they did not, it would be placed in the lower risk category. BAT would then be defined for each subcategory.

EPA would determine the high/low risk cutoff by jointly considering maximum individual risk and cancer incidence. That is, if the before-control maximum estimated individual risk level for a particular plant were 10^{-5}, the estimated annual cancer incidence rate would have to exceed some value, e.g. 0.14, in order for the plant to fall into the higher risk category. For a plant imposing a higher estimated maximum individual risk, say 10^{-4}, the estimated annual cancer incidence rate necessary

to place it in the higher risk category might be lower, e.g. 0.014. Theoretically, for the higher maximum individual risk levels, the Agency could set the estimated cancer incidence level in such a way that even one person at that high exposure would cause a plant to be regulated. For instance, if the before-control estimated individual risk for a particular plant is 10^{-2}, the before-control estimated annual cancer incidence level could be set as low as 0.00014 (10^{-2} divided by 70) so that a single individual having near that source at a 10^{-2} risk would place it in the higher risk category.

For purposes of illustration only, EPA presents the following possible cutoffs. These are not the product of any particular analytical methodology, although they appear to provide defensible results when applied to low-arsenic-feed smelters. They are offered primarily to assist commenters in focusing on the new approaches suggested.

If the maximum individual risk is greater than:	and	The expected annual cancer incidence is greater than:	Then	The smelter would be classified "higher risk"
10^{-1}		0.0014		
10^{-2}		0.0014		
10^{-3}		0.0140		
10^{-4}		0.0140		
10^{-5}		0.1400		
10^{-6}		1.4000		

The Administrator would like to reiterate that these numbers are presented only for illustrative purposes. The Administrator recognizes that the selection of these numbers should involve public discussion.

EPA's analysis indicates that using these cutoffs would result in the Kennecott-McGill, ASARCO-Hayden, Inspiration Miami, ASARCO-El Paso, and Phelps Dodge-Ajo smelters being classified "higher risk" while all other smelters would be "lower risk."

BAT for higher risk smelters would be defined as secondary inorganic arsenic control systems for converter, matte tapping, and slag tapping operations. BAT for lower risk smelters would be the existing level of control.

If EPA were to follow this approach, the final rule would probably specify the unit risk number, dispersion model[s] and modeling assumptions, and method[s] for establishing the numbers and locations of exposed persons that would be used to determine maximum individual risk and expected annual cancer incidence for each smelter.

Selection of Format of Proposed Standards

Under the authority of Section 112, a NESHAP must, whenever possible, take the format of a numerical emission limit. Typically, an emission limit is written in terms of an allowable mass emission rate (mass of pollutant per unit time) or an allowable concentration (mass of pollutant per volume of gas). In some instances, a process weight limit (weight of pollutant per unit of product or input) or a minimum percent emission reduction of pollutant (control system collection efficiency) is used. All of these types of standards require the direct measurement of emissions to determine compliance.

However, in certain instances, numerical emission limits are not possible. Section 112(e)(2) recognizes this situation by defining two conditions when it is not feasible to prescribe or enforce an emission limit. The conditions are: (1) when the pollutants cannot be emitted through a conveyance designed and constructed to emit or capture the pollutant; or (2) when the application of a measurement methodology is not practicable due to technological or economic limitations. In such instances, Section 112(e)(1) authorizes design, equipment, work practice, or operational standards.

Mass rate, concentration, process weight, and percent emission reduction emission limits for the capture of secondary inorganic arsenic emissions from converter operations are not considered feasible. Opacity data are available which describe the performance of fixed enclosures with air curtains over a limited range of operating conditions. However, these data are not considered to represent a sufficient basis for establishing emission standards which must be achieved at all times. Therefore, the proposed standards for the capture of secondary emissions from converter operations will be set forth in terms of equipment and work practice requirements.

Secondary inorganic arsenic emissions vary due to the changes in the arsenic content of the feed and other process variables. Therefore, if standards were to be set specifically for arsenic collection for secondary emission streams, an efficiency standard would appear to be a logical choice to assure the application of BAT in all cases. However, the concentration of arsenic in secondary emissions gas streams could be very low. It is not possible to guarantee that a consistently high collection efficiency for arsenic could be attained over the entire range of arsenic concentrations which might occur in secondary emissions gas streams. For this reason, an efficiency standard cannot be set which would both be achievable and assure the application of BAT for secondary inorganic arsenic control for all normal operating conditions.

As an alternative to standards specifically for arsenic, standards for total particulate (which would include arsenic particulate) were considered for the collection of secondary emissions. Secondary emission gas streams are cool enough so that the inorganic arsenic in the gas stream should exist and be collectable as particulate. In addition, while the arsenic fraction may vary, total particulate emissions are relatively constant in terms of concentration, thus making it possible to select a standard which would require the use of BAT for arsenic regardless of variations in the arsenic content of the feed. Such a standard achieves the result of minimizing inorganic arsenic emissions by requiring use of the best available technology. For these reasons, standards expressed as concentration of total particulate were selected for the collection of secondary emissions from matte and slag tapping, and converters.

Selection of Emission Limits and Equipment Specification

As described previously, the proposed standards for smelters will require the application of secondary hood systems to capture converter secondary emissions. Baghouses, or equivalent control technologies, will be requied to collect the captured secondary emissions from matte and slag tapping, and converters. EPA has determined that the combination of these technologies represents the best available technology (BAT) for limiting inorganic arsenic emissions from primary copper smelters comprising the low-arsenic-throughput smelter source category, considering cost, economic, and energy impacts. The proposed standards are, therefore, designed to limit organic arsenic emissions to levels attainable through the installation and proper use of these technologies.

The proposed standards for the capture of secondary arsenic emissions from converters are set forth in terms of equipment and work practice requirements. The proposed equipment specification reflects the prototype secondary hood air curtain system installed at the ASARCO-Tacoma smelter. The proposed work practice standards are based on EPA's observation or work practices at ASARCO-Tacoma that significantly impact the amount of secondary

emissions that are captured by the secondary hood system. The equipment specification and work practice standards proposed for the low-asenic-throughput smelters are identical to those proposed for high-arsenic-throughput smelters. A detailed description of these equipment and work practice requirements can be found in Part II of this preamble under "Selection of Emission limits and Equipment Specifications."

The proposed standards for secondary emission collection systems are based upon the performance of baghouses. As described under "Control Technology," EPA believes that a properly designed and operated ESP or wet scrubber would also be capable of achieving this level of performance. The emission limit for secondary emissions being proposed is 11.6 milligrams of particulate matter per standard cubic meter (0.005 grains particulate matter per standard cubic foot) measured at the outlet of the collection device. This standard is applicable to secondary emissions from matte and slag tapping, and converter operations. The performance test method to be used for the emission standard is EPA Reference Method 5, which measures both inorganic arsenic and other particulate emissions at 121° C (250° F).

The limit of 11.6 mg/dscm (0.005 gr/dscf) for secondary emissions is based upon data obtained using Method 5 on the secondary emission control system at ASARCO-El Paso. The performance of this system and the test results are described under "Control Technology" and are presented in Appendix C of the BID for this source category.

Optimization Of Secondary Hood Air Curtain System

It is intended that the installation of equipment specified in the proposed standards for the capture of converter secondary emissions will give the owner or operator of each affected converter the capability of reducing emissions to a level consistent with the application of BAT. In developing the equipment specifications, the Administrator has been specific for some requirements as in the case of fan horsepower capacity, and more general for others, such as the dimensions of the secondary hood. Some of the requirements are general because unless there are any new smelters, which is considered unlikely, each installation will be a retrofit; that is, each air curtain secondary hood system will have to be custom designed to fit each existing converter. Due to space limitations, existing pollution control equipment already in place and other considerations, the exact configuration of each secondary hood with air curtain system installed will vary from smelter to smelter.

Beyond hood configuration, the performance of each air curtain secondary hood system will depend on a balance of several other parameters, including the dimensions of the air curtain slot, the velocity of air through the slot, and the distance from the slot to the offtake. These parameters are adjustable in the sense that they can be altered in a relatively short time and at relatively small cost. It is expected that after the initial installation of each air curtain secondary hood system, there will be a "shakedown" or optimization period during which the proper balance of system parameters will be determined for each particular installation.

For every air curtain secondary hood installation, there will be an optimum set of operating conditions, beyond which further "fine tuning" of the system will not result in increased capture efficiency. Section 112(e)(1) of the Clean Air Act states, in part, that if the Administrator promulgates a design or work practice standard, "he shall include as part of such standard such requirements as will assure the proper operation and maintenance of any such element of design or equipment." "Proper operation" of an air curtain secondary hood system includes operating the system as close to optimum conditions as possible, and the owner or operator would be required to do so under the proposed standards. It is not the Administrator's intent, however, to require the owner or operator to operate a system beyond optimum conditions (i.e., at flow rates and power requirements that do not achieve additional capture) or to prevent operational changes that may not affect the capture efficiency of the system.

Authority for determination of the optimum conditions for each air curtain secondary hood system installed to meet the proposed standards would vest with the Administrator. Due to the variables involved, and the fact that each installation will be site specific, it is not possible for the Administrator to prescribe in advance what will constitute optimum operating conditions for each air curtain secondary hood installation. Objective techniques, such as the tracer study used to evaluate the air curtain secondary hood system on the No. 4 converter at the ASARCO-Tacoma smelter, are available to help determine capture efficiency. However, a final determination of whether a system has truly been optimized, or if not, what steps should (or could) be taken to improve it, will largely be a matter of judgment.

One approach the Administrator is considering as a method for determining optimum conditions for each air curtain secondary hood installation would be to have each system evaluated by a panel of persons with expertise in assessing visible emissions of air pollutants. The panel could be comprised of 3 or more persons, including representatives of industry, EPA, and local air pollution control agencies.

The panel would evaluate each air curtain secondary hood as follows: (1) the panel would review the plans and specifications of the system prior to installation; (2) the panel would agree on initial operating conditions for the system; (3) the panel would observe the operation of the system during each mode of converter operation under the initial operating conditions. Estimates of the capture effectiveness achieved, based on visual observations, would be recorded by each panel member for each mode of operation. In addition, comments on the minimum and maximum capture effectiveness achieved, the duration, location and density of visible emissions observed, and a qualitative assessment of the volume of the emissions escaping capture (e.g., light, moderate, heavy, etc.) would be recorded; (4) based on this initial evaluation, the panel would agree on what modifications would be needed to further optimize the operation of the air curtain secondary hood; and (5) the panel would again view the system (as in 3) after modification to compare its performance to pre-modification performance. After this, steps 4 and 5 would be repeated as needed until there was agreement among the panel members that the system had been optimized. The panel would then recommend a set of optimum operating conditions for that system to the Administrator along with documentation of their evaluation. In the event of disputes, panel members would submit separate recommendations. The Administrator would make a final determination of the optimum conditions based on the panel's recommendation and supporting documentation.

If, subsequent to a determination that a system has been optimized, an owner or operator proposes to make an additional modification to the system, the panel would again be convened and would observe the system both before and after the change as prescribed in (3) above. The modification could be approved by the Administrator if the panel found it did not reduce capture efficiency.

The Administrator believes this approach would assure that the air curtain secondary hood system is designed and operating conditions established which will minimize secondary inorganic arsenic emissions to the greatest extent possible, but would also allow the owner or operator to make modifications to the system that would not reduce capture efficiency. The public is invited to comment on the need to evaluate the optimization of each air curtain secondary hood system and on the panel approach being considered by the Administrator.

Equivalent Systems for the Capture of Secondary Emissions From Converter Operations

Although the equipment specified in the proposed regulation for the capture of secondary emissions from converter operations is an air curtain secondary hood system, it is not EPA's intention to preclude the use of other capture systems that may be as effective as the air curtain secondary hood system. Under Section 112(e)(3) of the Clean Air Act, if a design, equipment, work practice or operational standard is promulgated, the Administrator is authorized to approve an alternative means of emission limitation if it will achieve a reduction at least equivalent to the means specified in the regulation. The Administrator anticipates that the promulgated standards for both high- and low-arsenic throughput copper smelters will include provisions under which a source owner may obtain approval for the use of an alternative capture system. Approval would be based on demonstration that the alternative system is equivalent or superior to the air curtain secondary hood system in terms of capture efficient for secondary inorganic arsenic emissions. Demonstration of equivalency would have to be by a method approved by the Administrator and designed specifically for the system to be evaluated.

As previously indicated, the prototype air curtain secondary hood system installed on converter No. 4 at the ASARCO-Tacoma smelter is the basis for the equipment specifications in the proposed standards. The performance of the ASARCO-Tacoma system was evaluated by EPA in January 1983. The techniques used to evaluate the ASARCO system included (1) a tracer mass balance, (2) opacity measurements with a transmissiometer, and (3) visual observation. Details of the evaluation program are discussed in the report, "Evaluation of an Air Curtain Hooding System for a Primary Copper Converter—ASARCO, Inc., Tacoma, Washington."(15)

Although problems were encountered with transmissiometer readings, the results of the tracer study and visual observations provided a basis for judging the capture efficiency of the system. In the tracer study, a suitable tracer (sulfur hexafluoride) was quantitatively injected at various points within the air curtain control area during all modes of converter operation. By combining the measurements of the tracer concentration at a sampling point downstream of the secondary hood suction plenum with flow rate measurements, it was possible to calculate the amount of tracer captured by the air curtain and suction plenum. The capture efficiency was then calculate from the amount of tracer injected and the amount captured. The tracer study indicated an overall average capture efficiency of the ASARCO-Tacoma system of 95 percent.

Throughout the tracer study, visual observations of the ASARCO-Tacoma air curtain secondary hood system were also made by EPA and local agency personnel. System performance was characterized by a variety of visual indicators, including the duration and opacity of fume spillage from the hood and an assessment of the capture effectiveness achieved. In general, the observation logs showed that the visual assessments of capture effectiveness correlated with the average collection efficiencies determined by the tracer technique. Lighting, background conditions, and occasional viewing obstructions (such as the overhead crane) caused problems during the observation of the hood during some modes of converter operation. The capture effectiveness of the system was most viewable during charging operations and although the system's capture effectiveness varied depending on mode of converter operation, it was felt that the capture effectiveness observed during charging was a good indicator of the system's overall performance.

The Administrator believes that both the tracer technique and the use of visual observations may also be suitable methods for evaluating the performance of alternative capture systems to determine equivalency. Specifically, the Administrator believes it would be reasonable to consider an alternative capture system equivalent to a secondary hood with air curtain system if the results of a tracer study designed specifically for that system showed an overall average capture efficiency of 95 percent or greater. With regard to visible emission observations, the Administrator believes that an alternative system may be equivalent to a secondary hood with air curtain system if no visible emissions were seen to escape the capture system during converter charging.

The public is invited to comment on the possible use of these techniques to determine equivalency and also to suggest any other techniques that may be effective.

Selection of Monitoring Requirements

This section discusses the selection of the proposed monitoring requirements. The purpose of monitoring is to determine whether or not the equipment used to control arsenic emissions is properly operated and maintained to meet the proposed emission standards. Authority for these proposed monitoring requirements is found in Section 114 of the Clean Air Act which authorizes the Administrator to require monitoring equipment or methods for the purpose of determining violations of standards proposed under the Clean Air Act. In addition, all monitoring data would be maintained in such a manner so as to be accessible to the Administrator and his authorized personnel.

The performance of the equipment used to capture the secondary emissions from the converter operations is highly dependent on flow rate. If the flow rate is not measured, it is not possible for either the operator or EPA to determine whether the equipment is properly operated and maintained. Therefore the proposed standards require continuous monitoring of the time and air flow rate through the air curtain system, and keeping a log of times for each of the converter operations. This would allow correlation of recorded gas flow rates with the corresponding converter operation.

To help the Administrator determine whether each secondary hood system is being properly operated and maintained, measured air flow rates would be compared to source specific reference values for each converter operating mode. To establish source specific air flow reference values, the owner or operator would determine the flow rates which correspond to each converter operating mode while the secondary hood system is operating under optimum conditions.

Monitoring performance of the collection device for secondary emissions is important to the operator and EPA to determine whether the collection equipment is properly operated and maintained. One alternative to monitoring the

performance of the collection device is to periodically test the collection device using EPA Reference Method 5. However, this alternative is not considered reasonable. Continuous monitoring of opacity or an operating parameter of the collection device may be used to indirectly monitor performance by indicating whether or not the collection device is operating in the same manner as when it demonstrated compliance. Of these two alternatives, monitoring opacity is thought to be somewhat simpler to apply. The recommended monitoring requirement for the collection of secondary emissions is to continuously monitor opacity using a transmissometer.

To implement this monitoring requirement, it would be necessary to establish a reference opacity level against which future performance of the control system could be compared. To establish the source-specific reference opacity level, the owner or operator of the source would be required to conduct continuous opacity monitoring during the emission test. The opacity monitoring results would be reduced to 6-minute averages, and the opacity level would be established at the 97.5 percent upper confidence level of a normal or log normal (whichever is more representative) distribution of the 6-minute average opacity values. This opacity level would be the basis for determining whether the collection device is continuously performing effectively. Any monitored opacity reading above the emission test opacity reading would indicate that the collection device may no longer be meeting the proposed total particulate emission limit. A Method 5 test could then be performed to determine compliance.

Selection of Emission Test Methods

The emission test method selected to determine compliance with the proposed standard for the collection of secondary emissions is EPA Reference Method 5. This test method measures particulate emissions (both inorganic arsenic and other particulates) collected at 121°C (250°F). (For a full discussion of this method, see Appendix A, 40 CFR 60.) As was noted and explained earlier, it is necessary to measure total particulate matter rather than just inorganic arsenic for secondary emissions. Therefore, EPA Reference Method 108 is inappropriate and was not considered.

Reporting and Recordkeeping Requirement

Owners and operators of sources covered by the proposed standard would be subject to the reporting and recordkeeping requirements of the proposed standards, as well as those prescribed in the General Provisions (Subpart A) of 40 CFR Part 61. Under § 61.10 of the General Provisions, an initial report from each existing source is required to be submitted within 90 days of the effective date. For purposes of determining initial applicability, the proposed standards for low-arsenic throughput smelters specify that the initial report required in § 61.10(a) will include information on the weight percent inorganic arsenic in the total smelter charge, the converter arsenic charging rate, and the smelting furnace arsenic tapping rate. The proposed standards further require that each month the computation of a rolling annual coverage of the inorganic arsenic content of the total smelter charge, the converter arsenic charging rate, and the smelting furnace arsenic tapping rate be made and that the monthly computations be recorded and kept on site for at least 2 years. These monthly computations would have to be reported to EPA on an annual basis to ensure that applicability with respect to the standards had not changed.

Under Section 114, the Administrator is authorized to establish reporting requirements to determine whether there is a violation of standards proposed under the Clean Air Act. Concern as to whether the systems for the control of arsenic emissions are continuing to meet the proposed standards would primarily arise when monitoring showed opacity levels in excess of those determined during the compliance demonstration or air flow rates that vary significantly from those established during the optimization procedures. Therefore, in determining the necessary reporting requirements, it was considered reasonable to require reporting only when such "excess emission" conditions exist. Reporting of these excess emission conditions would be required on a semiannual basis. Currently, there are no existing sources, besides the copper smelters, which collect any of this information. In addition, there are no reporting requirements by other governmental agencies for this type of information which would result in overlapping data requirements. The types of information to be included in the reports are discussed below.

For the converter secondary hood system, each semiannual report would indicate: (1) the reference air flow rates established for each converter operating mode, and (2) a record of air flow rates for each day when the air flow rates are less than 20 percent of the corresponding reference air flow rate values.

For the collection devices for secondary emissions, each semiannual report would provide: (1) a record of transmissometer readings for each day on which the opacity exceeded the opacity limit determined at the time the collection device demonstrated compliance, at any time of the day; and (2) the values of the emission test opacity limits.

Impacts of Reporting and Recordkeeping Requirements

EPA believes that these reporting and recordkeeping requirements are necessary to assist the Agency in (1) identifying sources, (2) observing the compliance testing and demonstration of monitoring devices, (3) determining inital compliance, and (4) enforcing the standard after the initial compliance determination.

The Paperwork Reduction Act (PRA) of 1980 (Pub. L. 96-511) requires that the Office of Management and Budget (OMB) approve reporting and recordkeeping requirements that qualify as an "information collection request" (ICR). For the purposes of accommodating OMB's review, EPA uses 2-year periods in its impact analysis procedures for estimating the labor-hour burden of reporting and recordkeeping requirements.

The average annual burden on low-arsenic-throughput copper smelters to comply with the reporting and recordkeeping requirements of the proposed standards over the first 2 years after the effective date is estimated to be 15,200 person-hours.

Regulatory Flexibility Analysis

The Regulatory Flexiblity Act of 1980 (RFA) requires that differential impacts of Federal regulations upon small business be identified and analyzed. The RFA stipulates that an analysis is required if a substantial number of small businesses will experience significant impacts. Both measures, substantial numbers of small businesses and significant impacts, must be met to require an analysis. If either measure is not met then no analysis is required. Twenty percent or more of the small businesses in an affected industry is considered a substantial number. The EPA definition of significant impact involves three tests, as follows: one, costs of production rise 5 percent or more, assuming costs are *not* passed onto consumers; or two, annualized investment costs for pollution control are greater than 20 percent of total

capital spending; or three, costs as a percent of sales for small entities are 10 percent greater than costs as a percent of sales for large entities.

The Small Business Adminstration (SBA) definition of a small business for Standard Industrial Classification (SIC) Code 3331, Primary Smelting and Refining of Copper, is 1,000 employees. The 14 low-arsenic-throughput smelters are owned by seven companies. All seven have more than 1,000 employees. Therefore, none of the seven companies meets the SBA definition of a small business and thus no regulatory flexibility analysis is required.

IV. INORGANIC ARSENIC EMISSIONS FROM GLASS MANUFACTURING PLANTS

Proposed Standard

The proposed standard would limit the amount of inorganic arsenic emitted from glass melting furnaces to levels achievable by best available technology (BAT). The Administrator has determined that BAT for glass melting furnaces that emit greater than 0.40 Mg (0.44 ton) per year of arsenic uncontrolled is the use of an electrostatic precipitator (ESP) or fabric filter. The application of BAT for these furnaces represents at least a 90 percent reduction in the amount of arsenic that would otherwise be emitted. The Administrator has also determined that for furnaces that emit 0.40 Mg (0.44 ton) per year or less arsenic uncontrolled, the cost of applying add-on control devices is disproportionate to the emission reduction that would result, and, therefore, that BAT for these furnaces is no control. Consequently, the proposed standard would require each owner or operator of a source to either reduce emissions to levels achievable by an ESP or fabric filter, or to maintain uncontrolled (i.e., preceding an add-on control device) arsenic emission levels at 0.40 Mg (0.44 ton) per year or less.

The source which would be covered by the proposed standard is each glass melting furnace that uses arsenic as a raw material. The proposed standard would exempt pot furnaces. The proposed standard would not explicitly exempt any other furnace type; however, it is expected that all-electric melting furnaces, hand glass melting furnaces, and small (i.e., less than 4.55 Mg (5.00 tons) per day capacity) furnaces would be able to comply with the proposed standard without having to use an add-on particulate control device since it is believed that the uncontrolled arsenic emissions from these furnaces would not exceed 0.40 Mg (0.44 ton) per year. This belief is based on limited information about these furnace types. Therefore, comments are specifically requested on this subject.

Each owner or operator choosing to comply with the proposed standard by reducing arsenic emissions to levels achievable by an ESP or fabric filter would be required to meet an emission limit expressed in terms of particulate matter. The emission limits would be expressed in terms of particulate matter because particulate matter levels accurately reflect the performance of ESP's and fabric filters in reducing arsenic emissions. The particulate emission limits would vary according to the different categories of glass and would be expressed as grams of total particulate matter (as measured by Reference Method 5) per kilogram of glass produced. These proposed particulate emission limits are presented in Table IV-1:

TABLE IV-1. EMISSION LIMIT

(g of particulate-kg of glass produced)

Glass category	Furnace fired with gaseous fuel and all-electric melters	Furnace fired with liquid fuel
Container glass	0.100	0.130
Pressed and blow glass:		
Borosilicate	.500	.650
Soda-lime and lead	.100	.130
Other than borosilicate, soda-lime, and lead	.250	.325
Wool fiberglass	.250	.325
Flat glass	.225	.225

For furnaces simultaneously firing both gaseous and liquid fuel, the applicable limit would be determined by prorating the limits for gas- and liquid-fuel-fired furnaces based on the proporation of gas and liquid fuel used.

The proposed standard would require each owner or operator choosing to comply with the particulate emission limits to demonstrate compliance with these limits by conducting an emission test using EPA Reference Method 5, "Determination of Particulate Emissions from Stationary Sources." These owners or operators would also be required to monitor opacity continuously. The proposed standard does not include an opacity limit, but instead prescribes procedures for each owner or operator who must monitor opacity to establish a source-specific opacity level. This level would be viewed as indicative of a properly operated and maintained control device. The owner or operator would be required to maintain records of the opacity monitoring results and to report every 6 months if opacities in excess of the source-specific level occurred during the preceding 6-month period. Reports of excess opacity would not be used to cite a source in violation of the standard, but would serve, instead, to alert enforcement personnel that the control device may not be operated and maintained properly.

The proposed standard would require each owner or operator choosing to comply with the standard by maintaining uncontrolled (i.e., preceding an add-on control device) arsenic emission levels at or below 0.40 Mg (0.44 ton) per year to demonstrate compliance by measuring the arsenic emissions from the furnace using EPA Reference Method 108, "Determination of Particulate and Gaseous Arsenic Emissions." The results of this measurement would be used along with estimates of the anticipated production of arsenic-containing glass over the next 12-month period to estimate the annual arsenic emission rate. The proposed standard would require that 6 months after the initial compliance demonstration, and every 6 months thereafter, each owner or operator calculate what the arsenic emissions were during the preceding 6-month period based on the actual glass production rate during that period. If this calculation reveals that arsenic emissions during the preceding 12-month period (or 6-month period, in the case of the first 6-month calculation) exceeded 0.40 Mg (0.44 ton), then the source was in violation of the standard and the owner or operator must report this fact to the administrator within 10 days.

In addition to requiring a calculation of the arsenic emission rate for the preceding 6-month period, the proposed standard would require that every 6 months each owner or operator estimate arsenic emissions over the next 12-month period. If this estimate indicates that arsenic emissions will exceed 0.40 Mg (0.44 ton) during the 12-month period, then the owner or operator must demonstrate compliance with the particulate emission limits, and, within 10 days, give written notice to the Administrator of when the Method 5 emission test will be conducted. The proposed standard would also require that the owner or operator maintain records of all measurements and calculations made to estimate arsenic emissions.

Summary of Health, Environmental, Energy, and Economic Impacts

The impacts presented are based on an analysis of the glass melting furnaces that EPA has identified as using arsenic as a raw material and for which EPA has arsenic emissions data. There are 32 such furnaces. The available data show that five of these furnaces emit arsenic

at uncontrolled levels at or below 0.40 Mg (0.44 ton) per year. Thus, it was assumed that these furnaces would not need to install add-on control devices to comply with the standard. Of the remaining 27, 13 are already controlled by either ESP's or fabric filters, and company representatives have indicated that these controls can achieve the proposed particulate emission limits. Therefore, the impact analysis assumes that 14 furnaces would need to install add-on controls to comply with the proposed standard.

It is presumed that there are more arsenic-using furnaces than the 32 that were included in the impact analysis. However, insufficient information about location, size, ownership, and emissions were available on these furnaces to include them in the analysis. It is believed, though, that the arsenic emissions from the arsenic-using furnaces that are included in the analysis represent the majority of the arsenic emissions from glass melting furnaces. Moreover, it is believed that these furnaces account for most of the furnaces that would have to install add-on particulate control devices to comply with the proposed standard. The arsenic-using furnaces that are not included in the impact analysis are believed to be mostly pot furnaces, all-electric furnaces, and fossil-fuel-fired furnaces (other than pot furnaces) used to produce handmade glass products. Pot furnaces are exempt from the proposed standard and, as mentioned earlier, it is considered unlikely that either of the other two furnace types would have uncontrolled (i.e., preceding an add-on control device) arsenic emissions greater than 0.40 Mg (0.44 ton) per year.

The impact analysis also does not consider impacts on new glass melting furnaces. This is because, in the absence of the proposed standard, new glass melting furnaces would need to install add-on particulate control devices as a result of being subject to the new source performance standard (NSPS) for glass manufacturing plants. Though the NSPS exempts all-electric furnaces, hand glass melting furnaces, and small [ie., less than 4.55 Mg (5.00 tons) per day capacity] furnaces, it is believed that these furnace types could comply with the proposed standard without having to install add-on control devices.

The proposed standard would reduce total inorganic arsenic emissions from the 32 glass melting furnaces from the current level of 36.7 Mg (40.4 tons) per year to 4.7 Mg (5.2 tons) per year. As a result of this reduction in arsenic emissions, it is estimated that, nationwide, the number of incidences of cancer resulting from exposure to arsenic emissions from glass manufacturing plants would be reduced from a range of 0.073 to 1.17 incidences per year to a range of 0.013 to 0.210 incidence per year. The proposed standard would reduce the estimated maximum individual lifetime risk from exposure to airborne arsenic from a range of 6.4 in 10,000 to 100 in 10,000 to a range of 0.97 in 10,000 to 15.6 in 10,000. The maximum individual lifetime risk represents the probability of someone contracting cancer who has been exposed continuously during a 70-year period to the maximum annual arsenic concentrations due to the arsenic emissions from glass manufacturing plants.

The proposed standard would achieve the reduction in nationwide arsenic emissions with small adverse impacts on other aspects of the environment. The control devices which would be used to meet the standard do not produce wastewater effluents. Most of the arsenic-containing particulate matter collected would be recycled to the furnace. That which could not be recycled would be subject to disposal requirements under the Resource Conservation and Recovery Act (RCRA) and would represent an industry-wide increase of 67 Mg (74 tons) in the amount of solid waste generated under current conditions.

The energy impact of the standard would be minimal. The electricity requirements of the add-on particulate controls for all the affected furnaces amount to about 3,400 megawatt-hours per year or about a 1 percent increase in the total energy requirements of all the affected furnaces.

The capital and annualized costs to install and operate an add-on control device for a 100-ton-per-day furnace would be $2.6 million and $494,000, respectively. Based on the costs of applying add-on control devices to the 14 existing furnaces that are expected to have to install add-on control devices, total industry-wide capital and annualized costs would be $27.4 million and $4.9 million, respectively. If the control costs are passed on to the consumer in the form of product price increases, the price increases for the 14 furnaces are estimated to range from 0.04 to 3.1 percent. This estimate assumes that only the price of the arsenic-containing glass product would be increased to absorb the control costs. If control costs were absorbed by the glass producer, declines in the profits on the sales of the arsenic-containing glass were estimated to range from 2.1 to 10.0 percent for 12 of the 14 furnaces. The remaining two furnaces, from which arsenic-containing glass is only a part of the annual glass production, were estimated to have profit declines of 44.6 and 68.6 percent. These impacts were calculated assuming that the control costs are charged only to the arsenic-containing glass. To the extent that the control costs would be spread over all the glass produced at these furnaces, the profit impacts would be less.

Rational

Selection of Source Category

Glass manufacturing plants are among the nine categories of stationary sources of inorganic arsenic emissions that were identified as potentially posing significant risks to public health. An estimated 36.7 Mg (40.4 tons) of inorganic arsenic is emitted each year from glass melting furnaces at glass manufacturing plants.

Arsenic is currently used in only a small fraction of all the glass manufactured in the U.S., primarily as a fining agent and to provide certain properties to the glass. In 1978 there were 129 glass-producing companies which together operated 338 individual plants. As of May 1983, 15 plants were identified by EPA as using arsenic. These 15 plants are operated by 5 companies in 8 states and contain at least 32 furnaces that use arsenic. The use of arsenic in glass production declined 80 percent between 1968 and 1981. However, further declines are not anticipated unless additional substitutes for arsenic can be found.

Glass manufacturing plants are usually categorized into one of four general sectors: flat glass, container glass, pressed and blown glass, and wool fiberglass. Although the currently known use of arsenic is mostly confined to the pressed and blown glass sector, the potential for arsenic use remains in other sectors. Arsenic is not known to have ever been used as raw material in the wool fiberglass sector. However, until a few years ago, arsenic was used as a raw material in the container and flat glass sectors. Even though most of the plants in these sectors have stopped using arsenic and industry representatives state that there is no technical need for the use of arsenic in these sectors, the EPA is not certain that arsenic use in these sectors has been completely eliminated or will not be used in the future. Therefore, the source category was not defined to exclude any of the four sectors.

There are no existing regulations designed to control ambient

concentrations of arsenic. However, some State particulate matter regulations have resulted in the use of add-on control devices that effectively reduce particulate emissions and, consequently, arsenic emissions that are in particulate form. For example, the 13 existing arsenic-using furnaces that are controlled with electrostatic precipitators (ESP's) or fabric filters account for less than 2 percent of the arsenic emitted by the 32 known arsenic-using furnaces.

In the absence of a standard, the estimated maximum individual lifetime risk of contracting cancer would range from 6.4 in 10,000 to 100 in 10,000 for the most exposed individuals. Maximum individual lifetime risk is the probability of someone contracting cancer who is continuously exposed to the maximum annual average arsenic concentration during an entire lifetime (70 years). Additionally, in the absence of a standard there would be an estimated 0.073 to 1.17 cancer incidences per year due to arsenic emissions from glass manufacturing plants. As discussed in Part I, because there is considerable uncertainty in the assumptions and methodology used to quantify the health impacts, these estimates should not be construed as accurate, absolute values, and should be used for comparison purposes only.

Based on the magnitude of arsenic exposures from this source category, the resulting estimated maximum individual lifetime risks and estimated incidence of cancer in the exposed population (including consideration of the uncertainties associated with these quantitative risk estimates), and the availability of control technology to reduce arsenic emissions, EPA finds that arsenic emissions from glass manufacturing plants create a significant risk of cancer and that development of a national emission standard under Section 112 of the Clean Air Act is warranted for this source category.

Selection of Emission Points to be Covered by the Standard

Glass manufacturing involves three basic steps: raw material handling and mixing; melting; and forming and finishing.

In the first step, the raw materials, such as sand and soda ash, are received, unloaded, and mixed according to the desired product recipe. Although the potential for fugitive emissions from the handling and mixing of these dry products is high, owners and operators of glass manufacturing plants have responded to standards promulgated by the Occupational Safety and Health Administration (OSHA) by implementing stringent controls. These controls, which are designed to protect employees from exposure to arsenic in the workplace, mainly involve the use of a liquid rather than a powdered form of arsenic. Where powdered arsenic trioxide is still used, handling and mixing operations are in enclosed areas, which are vented through fabric filters. With these controls in place, total emissions from the handling and mixing of raw materials amount to less than 1 percent of total glass industry emissions. Because the industry is uniformly practicing these effective fugitive controls, fugitive emissions from the handling and mixing step were not considered for further controls.

After the raw materials are mixed, they are introduced into the melting furnace, where at temperatures of 1500° to 1700°C they are transformed into a uniform bed of molten glass. Virtually all of the air pollutants, including arsenic, from glass manufacturing plants are generated in the melting furnace. These pollutants result from the combustion of the furnace fuel, usually natural gas, and from the physical and chemical reactions in the melting furnace.

The majority of the arsenic introduced into the melting furnace remains in the glass produced from the furnace. The amount retained varies according to several factors, such as the type of glass being manufactrued and the type of furnace. Data submitted by the industry indicate that the arsenic retained in the glass ranges from 70 to 99 percent. Most of the remainder of the arsenic is emitted in the combustion gases—either in a vapor state or, upon cooling, in the form of particulate matter—and is released through the furnace stack.

One of the factors that determines the amount of uncontrolled arsenic emissions is the type of furnace used. Most existing plants using arsenic as a raw material have either regenerative- or recuperative-type furnaces. Regenerative furnaces recover heat from combustion gases by alternating the use of two chambers of refractory heating material called checkerworks. By contrast, recuperative furnaces use one continuously operating, shell-and-tube heat exchanger for combustion air preheating. Both regenerative furnaces and recuperative furnaces melt raw materials by firing fossil fuels. The melting in some fossil-fuel-fired furnaces is augmented by the use of electricity. All-electric resistance melters are also used. Electric melting, which is more energy efficient than using fossil fuel and which currently accounts for about 10 percent of the glass melting, is believed to produce significantly lower levels of arsenic emissions than fossil-fuel-fired furnaces. However, the use of electric melting is limited to the production of certain types of glass.

Some furnaces melt glass in covered pots. These furnaces, termed "pot furnaces" contain one or more refractory vessels, called "pots," in which glass is melted by indirect heating. The openings to these pots are in the outside walls of the furnace and are covered with refractory stoppers during melting. Because the glass is sealed off from the furnace atomsphere, no material from the glass melt can escape from the furnace with the furnace exhaust. Therefore, pot furnaces, as described here, wold emit no arsenic emissions.

In addition to the arsenic emissions from the glass melting furnace, there is the potential for exposure to fugitive airborne arsenic particles from residue or slag which accumulates on the checkerworks of regenerative furnaces and from collected particulate matter (flue dust) at furnaces controlled by add-on control devices. This potential arises when the material is improperly disposed of and is reentrained as wind-blown fugitive particulate matter. Currently, the industry either recycles this material as a furnace feed or disposed of it as hazardous waste.

The third step involving potential emissions from glass manufacturing plants in the forming and finishing process. In this final step, the hot molten glass is extracted from the furnace and subjected to a variety of different forming methods including pressing; blowing in molds; and drawing, rolling, and casting. Then the formed glass is immediately conveyed to continuous annealing ovens to remove internal stresses by controlled cooling. As is the case in the first step, materials handling and mixing, the amount of total emissions, including arsenic, in this final step is negligible.

Based on current estimates of arsenic emissions from glass manufacturing plants, virtually all of the emissions from glass manufacturing plants are released from the glass melting furnace. Therefore, EPA selected the glass melting furnace as the only emission point to be covered by the proposed standard. Associated with this selection EPA designated "each glass melting furnace that uses arsenic as a raw material" as the "source" to which the proposed standard applies. However, EPA concluded that pot furnaces should be exempt from the proposed standard because, even though they may use

arsenic as a raw material, they do not emit arsenic.

Selection of Basis of Proposed Standard

The selection of the basis of the proposed standard involved first an identification of techniques for reducing inorganic arsenic emissions from new and existing glass manufacturing plants. This was followed by an identification of regulatory alternatives and an analysis of the environmental, energy, and economic impacts of each. Based on this analysis, the alternative representing best available technology (BAT) was selected. BAT is that technology, which in the judgment of the Administrator, is the most advanced level of control adequately demonstrated, considering economic, energy, and environmental impacts. For existing sources, BAT would not exceed the most advance level of control that at least most members of an industry could afford without plant closures. Following the selection of BAT, the process was carried a step further by examining the residual health risks remaining after application of BAT to determine whether they were unreasonable in view of the health benefits and costs that would result if a more stringent alternative than BAT were selected as the basis for the standard.

Identification of Emission Techniques

There are three basic approaches for reducing inorganic arsenic emissions from glass melting furnaces. These include (1) the use of add-on particulate collection devices, (2) the use of electric boosting or all-electric furnaces to reduce furnace emissions, and (3) the reduction or elimination of arsenic as a feedstock in the raw material batch.

A particulate collection device is an effective arsenic emission control device provided the arsenic is in particulate form. There are two forms of add-on control devices used to control particulate emissions from glass melting furnaces that use arsenic: electrostatic precipitators (ESP's) and fabric filters. Eleven of the 32 known arsenic-using furnaces use ESP's and 2 use fabric filters. Testing performed by the industry and the EPA has shown that both fabric filters and ESP's can reduce arsenic emissions by at least 90 percent.

Since arsenic in vapor form is not captured by a particulate control device, the effectiveness of a particulate control device in controlling arsenic emissions would be enhanced if vapor-phase arsenic were condensed to particulate form prior to entering the control device. Based on theoretical considerations, it would be expected that arsenic is emitted from glass melting furnaces as arsenic trioxide. The vapor pressure characteristics of arsenic trioxide suggest that in low-temperture gas streams there would be a smaller fraction of the total arsenic in the vapor phase than at higher temperatures. However, available data from EPA tests of particulate control devices on two glass furnaces that use liquid arsenic acid in the batch materials (rather than powdered arsenic trioxide) are contrary to the expected theoretical relationship between gas stream temperature and the amount of arsenic in the vapor phase.

At one plant, where the gas stream temperature was about 210°C (408°F), the concentration of arsenic in the inlet gas stream was such that all of the arsenic present would be expected to be in the vapor phase. However, less than 1 percent of the total arsenic was in the vapor phase, as evidenced by the fact that the control device (an ESP) was 99 percent efficient in reducing the arsenic emissions. At another plant, where the gas temperature within the control device was 138°C (280°F), the concentration of arsenic in the inlet gas stream was such that all the arsenic present would be expected to be in the vapor phase at the control device temperature, yet the control device (a fabric filter) was determined to be 93 percent efficient. Because these test data do not support the expected theoretical relationship between gas stream temperature and the portion of the total arsenic that is in vapor form, it is uncertain whether gas stream cooling would be effective in increasing the efficiency of particulate control devices in reducing arsenic emissions from glass melting furnaces. Although the expected theoretical relationship was not demonstrated on the two control devices used on glass furnaces that use liquid arsenic acid in the batch material, the relationship may be demonstrated at furnaces using powdered arsenic trioxide, because powdered arsenic trioxide may result in a substantial higher portion of arsenic in vapor form.

The second technique for reducing arsenic emissions from glass plants is through the use of an all-electric or electric boosted furnace. In an all-electric furnace no direct fossil fuel combustion is involved. Electric boosting is the term used to describe a method of glass melting in which an electric current is used to augment glass melting in a furnace firing gas or oil. For all-electric and electric boosted furnaces, heat is generated by passing an electric current through the molten glass. Because the heat is supplied internally to the glass, a higher percentage of the total energy supplied to the furnace is converted to usable heat.

The use of electricity can decrease the generation of emissions from the glass melting furnace. However, the percent reduction of arsenic emissions achieved by electric boosting is uncertain and may be variable. The EPA's estimates of the industry's uncontrolled arsenic emissions include the reductions achieved by electric boosting. For example, the furnace identified as having the highest arsenic emissions in the industry uses electric boosting. All-electric melters generally have much lower emissions than do fossil-fuel-fired furnaces because the surface of the melter generally is maintained at near ambient temperatures. This minimizes losses from vaporization and, accordingly, reduces emissions from the melter.

Even though there may be emission reductions achieved by electric boosting and all-electric melters, it is not technically possible to use electric boosting in all furnaces or to substitute all-electric melters for fossil-fuel-fired furnaces. Only certain types of glass have the electrical properties suitable for electric melting, and some glass formulations corrode the electrodes used in the all-electric melters. Therefore, EPA concluded that the use of electric boosting or all-electric melters is not a demonstrated control technique in the sense that neither electric boosting nor all-electric melters can be specified and evaluated for the purpose of developing standards.

The third approach to reducing or eliminating arsenic emissions from glass manufacturing plants is to reduce or eliminate the use of arsenic as a raw material for the glass being produced. The complete elimination of arsenic as a raw material appears to be feasible for the container, flat, and wool fiberglass categories. However, if certain specialty glasses in the pressed and blown category are to be continued to be produced, arsenic use must continue since there are currently no substitutes available. Arsenic use in the production of certain specialty glass has been reduced to the minimum amounts necessary to maintain the quality and quantity of products demanded by the market place. Therefore, to reduce arsenic use further or to eliminate it entirely would probably result in the elimination of the arsenic-containing products and, possibly, the shutdown of most or all existing furnaces using arsenic in the pressed and blown glass category. However, the EPA believes that there may be no technical barrier to the elimination of arsenic in the

production of glass in the other categories. Therefore, the EPA invites comments on the feasibility of eliminating arsenic use in the flat glass, container glass, and wool fiberglass categories.

Identification of Regulatory Alternatives

The EPA has considered the available emission reduction technique and identified three regulatory alternatives for reducing arsenic emissions from new and existing glass manufacturing plants.

Under Regulatory Alternative I, no national emission standard would be established for arsenic emissions from glass manufacturing plants. Therefore, under this alternative, no additional controls beyond those already mandated by other regulations (e.g., State implementation plans, NSPS) would be required. Regulatory Alternative I corresponds to the baseline level of control.

Regulatory Alternative II is based on the use of add-on particulate collection devices (ESP's or fabric filters) on glass melting furnaces and represents at least 90 percent arsenic emission control at these furnaces.

Regulatory Alternative III would ban arsenic emissions altogether. This could be accomplished either through the elimination of arsenic as a feedstock or through any method that assures complete retention of the arsenic in the glass. The EPA is not aware of any means of assuring that arsenic is completely retained in the glass. Therefore, it is believed that Alternative III would result in the elimination of arsenic as a feedstock and, possibly, the closure of many or all of the arsenic-using glass furnaces in the pressed and blown glass category.

Impacts of Regulatory Alternatives

The individual furnace impacts presented below are computed by applying the regulatory alternatives to various-sized hypothetical individual furnaces, called "model furnaces." The industry-wide impacts that are presented represent the aggregate impacts on the furnaces that EPA expects would be affected by each regulatory alternative. As discussed previously, EPA limited its impact analysis to those arsenic-using furnaces for which EPA has arsenic emissions data. There are 32 such furnaces; and, as discussed previously, it is believed that these furnaces represent the majority of the arsenic emissions from glass melting furnaces. Regulatory Alternative I would affect no furnaces. Regulatory Alternative II would necessitate that the 19 furnaces that emit arsenic and currently do not have add-on controls install add-on particulate controls to reduce arsenic. Regulatory Alternative III would affect all 32 furnaces that emit arsenic.

Environmental Impacts. Under Regulatory Alternative I there would be no change in environmental impacts. Arsenic emissions from arsenic-using furnaces would be about 36.7 Mg/yr (40.4 tons/yr). In addition, particulate emissions from these furnaces would be 960 Mg/yr (1,056 tons/yr).

Under Regulatory Alternative II, the arsenic emissions from existing arsenic-using furnaces would be reduced to approximately 4.3 Mg (4.8 tons) per year and particulate emissions would be reduced to 82 Mg/yr (90 tons-yr). No adverse water pollution impacts would occur since the add-on control devices do not produce wastewater. The arsenic-containing particulate matter collected by the add-on control device would increase the solid waste generated at a glass plant. However, it is a common practice in the industry to recycle the collected particulate matter back to the furnace thereby minimizing the potential solid waste impact of Regulatory Alternative II. To the extent that the collected particulate matter is not recycled, it is handled as a hazardous waste. Assuming that is would only be possible to recycle 90 percent of the particulate matter, it is estimated that 87 Mg (96 tons) per year would have to be disposed of under Alternative II. This represents an increase of 67 Mg (74 tons) in the amount of solid waste generated under baseline conditions.

Under Regulatory Alternative III, arsenic emissions from glass melting furnaces would be zero. If the industry were to respond to Regulatory Alternative III by closing down the existing arsenic-using glass furnaces, all air pollutants which would have been emitted from these furnaces would be eliminated. There would be little or no reduction in water quality since glass plants do not discharge effluent, and a small, positive solid waste impact would result. It was estimated that about 20 Mg of solid waste are currently disposed of per year by the existing arsenic-using glass manufacturing plants.

Energy Impacts. Regulatory Alternative I would have no energy impacts. The incremental energy impacts of Regulatory Alternative II above the baseline case result from the electrical requirements of the add-on control device and fans. The annual electric energy use of a particulate control device for a 100-ton-per-day furnace is estimated to be about 270,000 kilowatt-hours, or about 30 times the average annual consumption of a typical single family household. The total industry-wide energy impact under Regulatory Alternative II amounts to about 3.4 million kilowatt-hours per year based on use of add-on control devices. Regulatory Alternative III would result in a nationwide energy savings of 580,000 megawatt-hours per year if the industry were to respond to Alternative III by closing the 32 arsenic-using glass furnaces. However, these savings do not take into account the energy losses that may occur because of the absence of certain specialty glasses used in energy conservation and solar-energy collection.

Cost and Economic Impacts. Regulatory Alternative I would have no cost or economic impacts. The cost and economic impacts of Regulatory Alternative II are based on the costs of retrofitting ESP's , which are slightly more expensive than fabric filters. In this sense, the cost and economic impacts, which are quantified in this section, are worst-case estimates. The economic impacts of Regulatory Alternative III focus on those associated with the shutdown of the 32 arsenic-using furnaces.

The capital cost of Regulatory Alternative II for a 100-ton-per-day glass melting furnace would be about $2.6 million (all costs for 4th quarter 1982 dollars). The annualized costs of Regulatory Alternative II would be approximately $494,000 for this same size furnace. If this same furnace produced tableware or other machine-made consumerware and if these costs were passed through in the form of product price increases, it was estimated that the product price increases would be 0.5 and 0.4 percent for capacity utilization rates of 70 and 100 percent, respectively. If the glass manufacturer completely absorbed these costs, the decreases in profit on sales were estimated to be 5.1 and 3.1 percent for capacity utilization rates of 70 and 100 percent, respectively.

Worst-case economic impacts of Regulatory Alternative II were also analyzed. These impacts would be associated with individual arsenic-containing products and would occur at furnaces that produce these products as a limited part of their full production. The production of TV envelope tubes and borosilicate tubing were estimated to incur the most adverse impact, with impacts being particularly large at 25-ton-per-day furnaces that produce the particular product only 25 percent of the time. In the case of TV envelope tubes, if 100 percent of the control costs were passed through in the form of price increases for the TV envelope tube

product only, price increases of 13.3 percent were predicted. If these costs were completely absorbed and charged only to the TV envelope tube product, profit on sales were estimated to decrease by 114 percent. Similarly, for a 25-ton-per-day furnace that produces borosilicate tubing only 25 percent of the time, it was estimated that the cost of controls could result in a price increase of 8.2 percent assuming full cost pass-through. If the costs were completely absorbed by the manufacturer, the decrease in profit on sales was estimated to be 122 percent.

It is believed that these impacts represent worst-case impacts for hypothetical furnace size/product type combinations. No actual furnaces matching these cases and currently without add-on controls are known to exist. The arsenic-using furnaces that are known to produce TV envelope tubes are at least 100-ton-per-day furnaces and are already controlled by add-on control devices and, therefore, are not expected to be affected by Alternative II. Likewise, the arsenic-using furnaces that have been identified as producing borosilicate tubing are not expected to be affected by Alternative II because they are already controlled by add-on control devices.

The cost and economic impacts that are expected to result from Regulatory Alternative II are those expected for the 19 known arsenic-using furnaces that would need to install add-on control devices under Regulatory Alternative II. The industry-wide impacts, based on control of these 19 furnaces, are discussed below.

Industry-wide capital costs for Alternative II would be about $29.8 million and the annualized costs would be about $5.4 million. If these costs are passed through in the form of price increases, it is estimated that the price increases would range from 0.04 to 3.1 percent for the 19 furnaces expected to incur the cost of Regulatory Alternative II. If the costs are fully absorbed, decreases in profit on sales for these 19 furnaces are estimated to range from 2.1 to 68.6 percent. These impacts assume that the cost of control would be charged only to the arsenic-containing product. To the extent that glass producers would spread the control costs over all products produced by the affected furnace, the impacts would be less. Moreover, it is believed that the assumptions of full cost absorption or full cost pass-through are not valid, because it is expected that glass producers would balance cost absorption and price increases so that economic impacts are minimized.

If the industry responded to Regulatory Alternative III by closing all existing arsenic-using furnaces, the economic impacts would be significant. It is estimated that these furnaces produce products which are valued at $1.9 billion annually and provide jobs for about 30,000 workers. Communities relying on the plants containing these furnaces would be adversely affected by the layoffs and lost tax revenues. Other impacts are very difficult to quantify and include the possible loss of valuable products which currently make use of glass containing arsenic. Regulatory Alternative III is not expected to affect furnaces that produce container glass, flat glass, and wool fiberglass because it is believed that arsenic is not being used in the production of these glass types.

Selection of Best Available Technology

In selecting best available technology (BAT) for new and existing glass melting furnaces, EPA examined the regulatory alternative to determine the most advanced level of control adequately demonstrated considering the economic, energy, and environmental impacts and technological problems associated with retrofit. The EPA first considered the most stringent option, Regulatory Alternative III, which would ban arsenic emissions from glass melting furnaces. As discussed previously, the only apparent means of meeting this alternative is to eliminate arsenic as a feedstock. Thus, the arsenic-containing specialty glass products would be eliminated and, in the worst case, the existing arsenic-using glass melting furnaces would be forced to close. Since it is estimated that these furnaces produce products valued at $1.9 billion annually and provide about 30,000 jobs, the economic impact of furnace closure would be significant. In addition, the loss of the specialty glass products would have indirect adverse impacts that are difficult to quantify. Given the direct and indirect adverse economic impacts of furnace closure, the EPA rejected Alternative III as BAT and next considered Regulatory Alternative II.

Regulatory Alternative II would result in at least 90 percent reduction of arsenic emmissions from affected glass melting furnaces. However, because of the differences among furnaces, particularly the differences in uncontrolled arsenic emissions rates, EPA examined the effect of these differences on the cost impacts and emission reduction benefits of Alternative II. This examination led to the decision that furnaces that emit 0.40 mg (0.44 ton) or less arsenic per year uncontrolled (i.e., preceding an add-on control device) should be excluded from the requirement to achieve 90 percent control of arsenic emissions. This decision is based on EPA's conclusion that the cost of add-on controls for such furnaces is unreasonable considering the small emission reduction that would be gained by controlling them.

The EPA arrived at this conclusion after examining the arsenic emission reductions that would be acheived by add-on control devices installed on each of the 19 existing arsenic-using furnaces that do not already have add-on controls. As shown in Table IV-2 which lists the furnaces in order of decreasing emissions, the magnitude of uncontrolled arsenic emissions from each furnace and the emission reduction achieved by controlling each furnace become relatively small near the bottom of the list. Nothing this and the fact that the annualized cost of controlling each furnace remains relatively constant regardless of the magnitude of emissions from the furnace, EPA conclude that as the emissions from furnaces become smaller, the cost of controlling the furnaces becomes unreasonable considering the emission reduction achievd. Therefore, EPA decided that it was reasonable to establish an emission level whereby furnaces that emit at or below this level would be excluded from the 90 percent control requirement, which necessitates the use of an add-on control device. In EPA's judgment this level is 0.40 Mg (0.44 ton) per year. The cost-effectiveness of control at this level is $795,000 per megagram. With an exclusion at this level, 99.5 percent of the total potential emission reduction would be achieved by installing add-on control devices on the 14 furnaces that emit more than 0.40 (0.44 ton) per year.

TABLE IV-2. EMISSION AND COST ESTIMATES FOR THE 19 UNCONTROLLED ARSENIC-USING FURNACES

Existing furnaces without add-on control devices	Uncontrolled arsenic emissions, Mg/yr	Emission reduction achievable by add-on control device, Mg/yr	Cumulative emission reduction as percent of total potential emission reduction (percent)	Annualized cost of add-on control device (dollars)	Cummulative annualized cost as percent of total potenbal annualized cost (percent)	Cost per unit emission reduction $/Mg
1	15.20	13.68	42.50	494,000	9.16	36,100
2	3.35	3.02	51.88	339,000	15 45	112,300
3	3.09	2.78	60.52	368,000	22.27	132,400
4	3.09	2.78	69.16	342,000	28 61	123,000
5	1.99	1.79	74.72	348,000	35.06	194,000
6	1.83	1.65	79.85	494,000	44.22	299,400
7	1.82	1.64	84.95	226,000	48.41	137,800
8	1.27	1.14	88.49	269,000	53 40	236,000
9	0.91	0.82	91.04	242,000	57.89	295,100
10	0.76	0.68	93.15	494,000	67.05	726,500
11	0.73	0.66	95.20	295,000	72 52	447,000
12	0.55	0.50	96.75	326,000	78.56	652,000
13	0.55	0.50	98.36	357,000	85.18	714,000
14	0.45	0.40	99.54	318,000	91.08	795,000
15	0.12	0.11	99.88	132,000	93.53	1,200,000
16						
17	[a]0.04	0.036	[b]99.99	348,000	[b]99.98	9,666,700
18						
19						

[a] Four furnaces vented to one stack.
[b] Total not equal to 100 percent due to round-off error.

In establishing this exclusion level between the group of furnaces with the greatest potential emissions and the group with lower potential emissions, the Agency considered emission rates, emission reduction potential, control costs, and the economic impacts of controls. This analysis led to the clear conclusion that control is reasonable for furnaces with the highest potential emissions and that control is unreasonable (considering the small benefit) for furnaces with the lowest potential emissions. The analysis did not, however, provide a clear, objective formula for establishing the precise point at which costs and other impacts become unreasonable relative to the emission reduction benefits. Therefore, the level being proposed reflects the Agency's best judgment of BAT, based on consideration of the factors which are relevant to this decision and most particularly on the Agency's judgment that arsenic emissions should be minimized. The proposed exclusion level would have the effect of extending the degree of control that is now in place at 13 of the 32 arsenic-using furnaces to 14 additional furnaces that are currently without add-on controls. EPA believes that this level would exclude all-electric furnaces and small hand glass furnaces. The Agency recognizes that others may have different views on where an appropriate cutoff, if any, should be made and is specifically requesting comments on the appropriateness of the level selected and on the validity of the data on which the selection was based.

In making this selection, the Administrator recognizes that certain products may be adversely impacted and that in certain cases, glass producers may discontinue production of these products or change this production to other furnaces. Also, while no closures have been predicted, the Administrator recognizes that the closure of one or more furnaces is not impossible. However, considering the extent to which controls are now used in the industry and the significant emissions from glass-melting furnaces, the Administrator has concluded that the degree of control reflected by Alternative II is BAT.

Consideration of Risk Remaining After BAT

After Regulatory Alternative II was selected as representing BAT, EPA examined the estimated health risks remaining after the application of BAT to determine whether they are unreasonable in view of the risk reduction and other impacts that would result if controls beyond BAT were selected.

After the application of BAT, it is estimated that there would be 0.013 to 0.210 cancer incidence per year due to arsenic emissions from existing arsenic-using glass furnaces. The estimated maximum individual lifetime risk to the most exposed population after the application of BAT would range from 0.97 in 10,000 to 15.6 in 10,000. Eliminating the 0.40 Mg (0.44 ton) per year exclusion level would not affect the estimated maximum lifetime risk and would have negligible effect on estimated cancer incidence. Therefore, Alternative III represents the only alternative that would significantly affect estimated maximum lifetime risk and estimated cancer incidence. Under Regulatory Alternative III, there would be zero arsenic emissions from glass melting furances and, therefore, no increased risk of cancer due to arsenic emissions from glass plants above that which would exist from exposure to other sources of arsenic emissions. However, under Regulatory Alternative III, there would be severe economic impacts resulting form potential furnace closures. Considering that the reduction in risk that is possible with Alternative III is small relative to the high costs of the elimination of the products derived from arsenic-using glass furnaces and the possible elimination of the jobs provided by these furnaces, EPA determined that the risks remaining after applying BAT are not unreasonable. The EPA concluded, therefore, that the proposed standard should be based on BAT (Regulatory Alternative II).

Though it was decided that the proposed standard should not ban arsenic emissions, EPA believes that there is no technical need for the use of arsenic in the container glass, flat glass, and wool fiberglass sectors, and is considering including in the final standard a ban on arsenic emissions from these three sectors. The EPA specifically requests comments on this subject.

Selection of Format of Proposed Standard

The decision by EPA that the proposed standard should be based on BAT means that the proposed standard should require the level of control achievable by BAT. It was determined that BAT is represented by Regulatory Alternative II, which means, in effect, that BAT for furnaces that emit greater than 0.40 Mg (0.44 ton) of arsenic per year uncontrolled (i.e., preceding an add-on control device) is the use of an add-on particulate control device, while BAT for furnaces that emit 0.40 Mg (0.44 ton) or less per year is no control.

Consequently, the proposed standard should require that a furnace either meet the level of control achievable by add-on particulate control devices or maintain uncontrolled arsenic emissions at 0.40 Mg (0.44 ton) per year or less. The selection of the format of the part of the standard that would require the level of control achievable by an add-on particulate control device is discussed in this section.

The level of control achievable by an add-on particulate control device could be described in terms of either the level of arsenic control achievable or the level of particulate matter control achievable. A format that would limit the amount of inorganic arsenic emitted was considered. However, among the various glass batch recipes, there is considerable variability in the arsenic emission levels due to variability in the amount of arsenic used in the feedstock and the amount of arsenic retained in the product glass. Therefore, if the arsenic emission limit were set high enough to allow for the maximum arsenic emissions level that would be expected for the variability observed, the standard may not result in each furnace being controlled to the BAT level. Some furnaces might be able to achieve the arsenic limit without installing an add-on particulate control device.

Using an efficiency format, which would require a percent reduction of arsenic emissions, the problem of the variability in the arsenic emissions level would be avoided. However, to demonstrate compliance with an efficiency standard, it is necessary to make emission measurements at both the inlet and outlet of the control device. Because measurements at two locations are necessary, the cost of demonstrating compliance with an efficiency format standard is higher than demonstrating compliance with other format types.

The EPA decided that a format that would limit the amount of particulate matter emitted would be a better approach to dealing with the variability of arsenic emission levels than an efficiency format. Because arsenic particulate matter is only a fraction of the total particulate matter emitted from a glass melting furnace, the variability that is observed in arsenic emission levels should not be observed in the levels of total particulate matter emitted from a furnace. Moreover, particulate emission levels accurately reflect the performance of add-on particulate control devices. Therefore, EPA decided that the format of the part of the proposed standard that would require the level of control achievable by add-on particulate control devices should be a particulate matter emission limit.

The regulation of inorganic arsenic through a particulate emission limit which necessitates the use of an add-on particulate control device is effective for reducing arsenic in the particulate form. However, as discussed in a previous section, arsenic in the vapor phase is not controlled by particulate collection devices. Since the vapor pressure characteristics of arsenic trioxide suggest that at lower temperatures there should be a smaller fraction of the total arsenic in the vapor phase than at higher temperatures, it initially appeared reasonable to consider establishing an upper limit for the temperature of the gas stream entering the control device. However, as discussed earlier, available test data on furnaces that use liquid arsenic acid in the batch material (rather than powdered arsenic trioxide) raise uncertainty about the effect of gas cooling on the arsenic control performance of particulate collection devices used on glass furnaces. These data showed that the fraction of total arsenic in particulate form was much greater than expected based on vapor pressure considerations. This may be due to the use of liquid arsenic acid, which may result in arsenic compounds that have a lower vapor pressure than arsenic trioxide. Based on the available date, EPA decided that the proposed standard should not specify an upper limit on the gas stream temperature. However, EPA plans to gather more information on the effect of temperature and type of arsenic (liquid arsenic acid or powdered arsenic trioxide) used in the batch material. Based on the new information EPA may require a temperature limit, the use of liquid arsenic acid, or both a temperature limit and the use of liquid arsenic acid in the final standard and is requesting comment on this subject.

It seems reasonable that any temperature limitation should apply only to those furnaces that would have to install add-on control devices to comply with the proposed standard. This is because estimates of the cost of installing a new add-on control device show that the total annualized costs of gas cooling followed by a particulate collection device are generally less than the total annualized costs of a control device alone. This lower annualized cost is due to the fact that gas cooling results in a smaller volume of gas to treat and thus reduces the required size of the particulate collection device. Thus, to the extent that limiting temperature results in capture of arsenic that would otherwise be emitted as vapor, this is accomplished at no extra cost at furnaces that would need to install control devices. For furnaces that already have an add-on particulate control device in place, retrofitting and operating a gas cooling system would increase the cost of control.

Selection of Emission Limits

After it was determined that the format for the proposed standard would be a particulate emission limit, the selection of specific particulate emission limits which would reflect BAT for each industry sector remained to be addressed by EPA.

Within the glass industry, there are several distinct industry sectors based upon the type of glass produced. The different glass types require distinct furnace sizes, furnace configurations, and operating conditions, and consequently, have different emission levels. Equally important, from a regulatory perspective, are the distinctions in the market conditions and product slates. These distinctions in economic conditions reflect differences in the ability of the various industry sectors to bear the costs of regulation. In the development of the glass manufacturing plant NSPS, these technical and economic conditions were taken into account in establishing emission levels reflecting best demonstrated technology (BDT) for six glass industry sectors. The BDT on which the NSPS is based is the same as the BAT that the EPA selected to serve as the basis of the proposed standards [i.e., the use of add-on particulate control devices (ESP's or fabric filters)]. Because of this and because EPA has determined that add-on particulate control devices used on existing glass furnaces can meet the NSPS emission limits, the proposed standard would establish the identical emission limits by industry sector established for the glass manufacturing plant NSPS promulgated on October 7, 1980 (45 FR 66742). Therefore, the proposed standard would set six different emission limits—one each for three of the four recognized industry sectors (container glass, flat glass, and wool fiberglass) and three within the pressed and blown sector. These six emission limits were further differentiated by the type of fuel used in the glass furnace. As for the glass manufacturing plant NSPS, oil-fired furnaces would be allowed a 30 percent increase over the limits established for gas-fired furnaces and all-electric furnaces (except for flat glass for which there is no differential). This difference

reflects the inherent emission contributions of the oil and gas fuels.

Demonstration of Compliance

An owner or operator who chooses to comply with the proposed standard by achieving the particulate emission limits, must demonstrate compliance by measuring particulate emissions using EPA Reference Method 5. This method is discussed in the "Selection of Emission Test Methods" section. The proposed standard would require that an owner or operator who wants to comply with the proposed standard by maintaining uncontrolled (i.e., preceding an add-on control device) arsenic emissions at or below 0.40 Mg (0.44 ton) per year, demonstrate compliance by measuring uncontrolled (i.e., preceding an add-on control device) arsenic emissions from the furnace using EPA Reference Method 108. This method is being proposed today and is discussed in the "Selection of Emission Test Methods" section. The proposed standard allows that another method be used if the Administrator determines it to be adequate for determining compliance. In addition, as provided under § 61.13 of the General Provisions of 40 CFR Part 61, the Administrator may waive the requirement for an emission test. It is intended that this waiver provision would allow an owner or operator who can clearly demonstrate through material balance or other non-test data that the annual uncontrolled arsenic emissions from a furnace do not exceed 0.40 Mg (0.44 ton) not to have to conduct an emission test. The results of the arsenic emission measurement would be used to develop a "measured arsenic emission factor" for the arsenic-containing glass type that was being produced while the Method 108 (or equivalent method) test was being conducted.

In addition, the proposed standard would require that the owner or operator perform a material balance calculation for the furnace operating conditions existing during the Method 108 (or equivalent method) test. This calculation would be used to develop a "theoretical arsenic emission factor." The ratio of the measured arsenic emission factor to the theoretical arsenic emission factor would be computed for use in estimating measured arsenic emissions as described in the following paragraphs.

For the initial demonstration that a furnace is in compliance with the proposed standard, the owner or operator would estimate the arsenic emissions from the furnace over the next 12-month period, using the measured arsenic emission factor that was developed for the arsenic-containing glass produced while the Method 108 test was conducted along with an estimate of the amount of this arsenic-containing glass that will be produced during the next 12-month period. If arsenic-containing glass types other than the type that was produced during the test are expected to be produced during the next 12 months, then the owner or operator would develop theoretical emission factors for these glass types based on material balance calculations. Then, by multiplying these theoretical emission factors by the ratio of the measured to theoretical emissions factor, measured arsenic emission factors would be computed for the other glass types. These emission factors would then be used, along with estimates of the amounts of the other glass types that will be produced during the next 12 months, to estimate arsenic emmissions for that period.

The proposed standard would require that 6 months after the initial compliance demonstration, and every 6 months thereafter, the owner or operator calculate and record what the level of uncontrolled arsenic emissions was during the preceding 6-month period. This level would be computed using one or more measured emission factors (depending on whether one or more arsenic-containing glass types were produced) and the known amounts of arsenic-containing glass that were produced during the period. For the purposes of these 6-month calculations, it would not be necessary to conduct a Method 108 test again. The measured emission factors would be computed, as discussed earlier, by multiplying theoretical emission factors by the ratio of the measured to theoretical emission factor that was calculated initially. If the 6-month calculation reveals that arsenic emissions during the preceding 12-month period (or 6-month period, in the case of the first 6-month calculation) exceeded 0.40 Mg (0.44 ton), then the source was in violation of the standard and the owner or operator must report this fact to the Administrator within 10 days of performing the calculation.

In addition to requiring a retrospective estimate of arsenic emissions for the previous 6-month period, the proposed standard requires that every 6 months the owner or operator estimate the uncontrolled arsenic emissions expected during the next 12-month period. If this estimate indicates that uncontrolled arsenic emissions will exceed 0.40 Mg (0.44 ton), then the owner or operator must demonstrate compliance with the particulate emission limits, and, within 10 days, give written notice to the Administrator of when they intend to conduct the Method 5 compliance test.

Selection of Monitoring Requirements

The proposed standard would require owners or operators choosing to comply with the standard by achieving the particulate emission limits of the standard to install, operate, and maintain a continuous opacity monitoring system. Monitoring of source emissions provides a convenient tool for enforcement authorities and a means by which plant operators can detect control equipment malfunctions. No method exists for continuously measuring particulate emissions directly. However, the opacity of exhaust gases can be measured continuously by using a transmissometer. A transmissometer is an optical device mounted in the stack which continuously monitors the percentage of light transmitted through a representative portion of the flue gas and records as percent opacity the percentage of light attenuated due to absorption and scattering by particulate matter. The total installed cost of a transmissometer is about $25,000 per source with annualized costs of about $14,000 (including data handling and training operators). Compared to the costs of a particulate control device, these costs are small and were determined to be reasonable considering that there are no other reasonable alternatives for insuring that the control device is continuously functioning properly.

There are currently insufficient opacity data from glass manufacturing plants to establish a single opacity limit for all sources. Therefore, the proposed standard would require that a source-specific opacity level be established for each affected source at the time of the particulate emission test that demonstrates compliance with the particulate emission limits. This opacity level would not be an enforceable visible emission limit, but rather would serve as an indicator for plant and enforcement personnel that the control device may not be operating properly.

To establish the source-specific opacity level, the owner or operator of the source would be required to conduct continuous opacity monitoring during the emission test. The opacity monitoring results would be reduced to 6-minute averages, and the opacity level would be established at the 97.5 percent upper confidence level of a normal or log normal (whichever is more representative) distribution of the 6-minute-average opacity values.

The proposed standard would require that all opacity monitoring results be

maintained at the source for a period of at least 2 years and that the owner or operator submit a report to EPA every 6 months if opacity in excess of the source-specific level occurred during the preceding 6-months period. The reports of the excess emission would not be used directly in determining compliance with the standard, but would serve as an indication to enforcement authorities that an emission test may be required.

Selection of Emission Test Methods

Two emission test methods were selected for use in implementing the proposed standard. However, the proposed standard allows other test methods to be used if the Administrator (1) specifies or approves, in specific cases, the use of a reference method with minor changes in methodology, (2) approves the use of an equivalent method, or (3) approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance.

The EPA Reference Method 5, "Determination of Particulate Emissions from Stationary Sources," (Appendix A, 40 CFR 60) was selected as the emission test method for demonstrating compliance with the proposed particulate emission limits. Reference Method 5 has been shown to provide a representative measurement of particulate emissions and was specified for use in demonstrating compliance with the glass manufacturing plants NSPS. As was done in the glass manufacturing plant NSPS, the proposed standard would modify Method 5 for this application to allow a higher filter box temperature. This modification was made to eliminate the effects of sulfuric acid on the measurement of particulate matter. Sulfur trioxide (SO_3), which exists as a gas in the exhaust gas of furnaces firing fuel oil containing more than 0.5 weight percent sulfur, is not collected by an add-on particulate control device but may condense as sulfuric acid onto the filter of the sampling train when the filter box temperature is at 120°C (the temperature specified by Method 5). Therefore, to prevent sulfuric acid from being collected by the sample filter and counted as particulate matter, the proposed standard would allow operation of the filter and the probe at up to 177°C, which is above the sulfuric acid dew point. This modification would be allowed only for furnaces that are firing fuel oil having a sulfur content greater than 0.5 weight percent.

Calculations applicable under Method 5 necessitate the use of data obtained from other EPA reference methods—Methods 1, 2, 3, and optionally Method 4. These are also described in Appendix A of 40 CFR 60. The proposed regulation explains how the results of Method 5 are converted into the units of the emission limits. Since the proposed emission limits would be expressed as mass of emissions per unit of mass of glass produced, it will be necessary to quantify the mass of glass pulled. Glass production would be determined by direct measurement or computed from materials balanced data. The materials balance computation may consist of a process relationship between feed material input rate and the glass pull rate. In all materials balance computations, glass pulled from the furnace shall include product, cullet, and any waste glass. The hourly glass pull rate for a furnace would be determined by averaging the glass pull rate over the time of the performance test.

The EPA Reference Method 108, "Determination of Particulate and gaseous Arsenic Emissions," was selected as the emission test method for determining whether a furnace emits 0.40 Mg (0.44 ton) or less of arsenic per year uncontrolled (i.e., preceding an add-on control device). This method is being proposed today along with the proposed standard. Method 108 produces emission measurement results expressed as mass of arsenic emitted per hour. Since the exclusion level would be expressed as mass or arsenic emitted per year, the proposed regulation prescribes that the results of Method 108 be used to established an emission factor (i.e., mass of arsenic per unit of mass of glass pulled). This emission factor would then be used along with yearly production estimates to estimate the mass of arsenic emitted per year.

Reporting and Recordkeeping Requirements

Owners or operators of sources covered by the proposed standard would be subject to the reporting and recordkeeping requirements of the proposed standard, as well as those prescribed in the General Provisions (Subpart A) of 40 CFR Part 61. Sources subject to the proposed standard are all glass melting furnaces that use arsenic as a raw material (except pot furnaces).

Reporting Requirements

Existing sources, arsenic-using furnaces for which construction or modification commenced before the date of publication of the proposed standard, would be required to submit an initial source report to EPA as provided in § 61.10(a). The owner or operator of each existing source is required to provide the following data in this initial source report: identification of owner or operator, source location, technical information on furnace design and production process, types of hazardous pollutants emitted, amount of hazardous pollutants emitted over the past 12 months, a description of any pollution controls which may be in place, and a statement of the feasibility of complying with the standard within 90 days of the date of promulgation of the standard. The purpose of this report is to assist EPA in identifying all existing arsenic-using glass furnaces and the amounts of arsenic emitted, and to determine their likelihood of compliance. Section 61.10(c) requires that the owner or operator report to EPA any changes in the initial source report.

For new sources, arsenic-using furnaces for which construction or modification commenced after the date of publication of the proposed standard, there is a series of one-time reports designed to confirm whether the furnace is affected by the standard and to provide notice to EPA of important milestones in the construction or modification process. The first of these is a written application to EPA from the owner or operator of the furnace. This report, required by § 61.08, is for the purpose of determining whether the planned construction or modification of the furnace would qualify the furnace as a new source subject to the standard. If, based upon this report, EPA determines that the furnace would be a new source that is subject to the standard, EPA will inform the owner or operator that the furnace is subject to the proposed standard whereupon the owner or operator would apply to EPA for approval to construct or modify the furnace. This application, prescribed under § 61.07, requires that the owner or operator provide process and emissions control data to EPA so that the Agency can determine if the source would comply with the standard. After EPA has approved the proposed construction or modification, the owner or operator would be required to notify EPA of certain project milestones including notification of the anticipated date of initial startup, as required in § 61.09(a)(1), and notification of the actual date of startup, as required under § 61.09(a)(2).

To allow EPA to confirm that a source is in compliance with the standard, the proposed standard requires that the owner or operator of a source notify EPA of the anticipated date of the initial emission test and, as applicable, the demonstration of the opacity monitoring system. After these tests have been

completed, the owner or operator is required to report the results to EPA in order the compliance can be determined.

The owner or operator of a source choosing to comply with the proposed standard by meeting the particulate matter emission limits would be required to report to EPA every 6 months if occurrences of excess opacity were recorded during the reporting period. These reports would identify the date, time, and duration of the excess opacity occurrences. Although these reports would not be used directly to determine compliance, they would serve as the primary means by which EPA enforcement personnel can evaluate the performance of the controls. Based on these reports, EPA may require additional emission testing.

The owner or operator of a source choosing to comply with the proposed standard by maintaining uncontrolled arsenic emissions at 0.40 Mg (0.44 ton). per year or less would be required to perform calculations every 6 months to estimate what arsenic eimissions were during the preceding 6-month period and what level of arsenic emissions is expected during the next 12-month period. If these calculations reveal that arsenic emissions exceeded 0.40Mg (0.44 ton) during the past 12-month period, then the owner or operator must report this to the Administrator within 10 days of performing the calculation. If these calculations indicate that arsenic emissions will exceed 0.40 Mg (0.44 ton) during the next 12-month period, then the owner or operator must demonstrate compliance with the particulate matter emission limits and must, within 10 days of performing the calculation, notify EPA of the anticipated date of the emission test.

Recordkeeping Requirements

The owner or operator of a new or existing source would be required to maintain a file of the following recores: all measurements, including monitoring and testing data; all calculations used to produce the required reports of emission estimates; monitoring system performance evaluations, including calibration checks and adjustments; the occurrence and duration of any startup, shutdown, or malfunction in the operation of the furnace; and malfunction of the air pollution control sysem; any periods during which the continuous monitoring system or device is inoperative; and all maintenance and repairs made to the air pollution controls or monitoring system. These records would be required to be maintained at the source for a period of 2 years. The purpose of the recordkeeping requirements is to enable EPA enforcement authorities to verify data submitted in reports and, in general, to aid in determining compliance with the proposed standard.

Impacts of Reporting and Recordkeeping Requirements

EPA believes that these reporting and recordkeeping requirements are necessary to assist the Agency in (1) identifying arsenic-using glass furnaces, (2) observing the emission testing and demonstration of the opacity monitoring devices, (3) determining initial compliance, and (4) enforcing the standard after the initial compliance determination. The proposed standard provides that new or mofified glass furnaces, which are subject to the proposed standard and choose to comply with the proposed standard by achieving the particulate matter emission limits, would not be subject to the NSPS for glass manufacturing plants. Therefore, there would be no duplication of reporting and recordkeeping requirements between the two standards.

The Paperwork Reduction Act (PRA) of 1980 (Pub. L. 96-511) requires that the Office of Management and Budget (OMB) approve reporting and recordkeeping requirements that qualify as an "information collection request" (ICR). For the purposes of accommodating OMB's review, EPA uses 2-year periods in its impact analysis procedures for estimating the labor-hour burden of reporting and recordkeeping requirements.

The average annual burden on the glass manufacturing industry to comply with these reporting and recordkeeping requirements over the firest 2 years is estimated to be 26,900 person-hours. The supporting statement that documents calculation of this burden is filed as item II-B-4 in docket A-83-08.

Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA) of 1980 requires that differential impacts of Federal regulations upon small businesses be identified and analyzed. The RFA stipulates that a regulatory flexibility analysis is required if a substantial number of small businesses will experience significant impacts. Both measures must be met. That is, substantial numbers of small businesses must be affected and they must experience significant impacts to require an analysis. Twenty percent or more of the small businesses in an affected source category is considered a substantial number.

Though EPA taken actions to identify small businesses in the glass industry, the Agency has insufficient information about the number of small businesses that would be affected by the proposed standard (i.e., the number that use arsenic) to determine conclusively whether a substantial number would incur significant impacts. Consequently, because EPA could not conclude that a regulatory flexibility analysis was not needed, a preliminary analysis has been prepared.

This analysis involved the identification of the small businesses in the country and an investigation of the use of arsenic and arsenic emissions from the furnaces at several of these facilities. The analysis indicated that because of several aspects of the proposed standard, it is unlikely that a substantial number of small buisnesses would incur significant impacts. These aspects are: (1) the exclusion of furnaces that emit 0.40 Mg of arsenic per year or less from the requirement of add-on control devices, (2) the exemption of pot furnaces, and (3) the provision that the emission testing requirement can be waived if non-test methods are adequate to demonstrate that arsenic emissions do not exceed 0.40 Mg/yr. The analysis is filed as item II-B-5 in docket A-83-08. The analysis will be completed before the standard is promulgated as final.

V. MISCELLANEOUS

As prescribed by Section 112, establishment of these standards was preceded by the Administrator's determination that inorganic arsenic presents a significant carcinogenic risk to human health, and is, therefore, a hazardous air pollutant as defined in Section 112(a)(1) of the Act. Inorganic arsenic was added to the list of hazardous air pollutants on June 5, 1980. In accordance with Section 117 of the Act, publication of these proposed standards was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator will welcome comments on all aspects of the proposed standards, including health, economic, and technological issues, and on the proposed test method.

These standards will be reviewed 5 years from the date of promulgation. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, improvements in emission control technology and health data, and reporting requirements.

An economic impact assessment was prepared for each standard and for other regulatory alternatives. All

aspects of the assessment were considered in the formulation of the standards to ensure that costs were carefully considered in determining the levels of the standards. The economic impact assessment for each standard is included in the BID's for the proposed standards.

Public Hearings

Public hearings will be held to discuss the proposed standards in accordance with Sections 112(b)(1)(B) and 307(d)(5) of the Clean Air Act. As indicated in the DATES section of this preamble, two hearings are scheduled. The first hearing will be held in Washington, D.C. on August 23, 24, and 25, 1983. The second hearing, which will address only the proposed standards for the high-arsenic primary copper smelter category, will be held in Tacoma, Washington on August 30, 1983. Persons wishing to make oral presentations on the proposed standards should contact the appropriate person listed in the DATES section of this preamble. Oral presentations will be limited to 15 minutes each. Any member of the public may file a written statement before, during, or within 30 days after each hearing. Written statements should be addressed to the Central Docket Section address given in the **Addressses** section of this preamble.

A verbatim transcript of each of the hearings and written statements will be available for public inspection and copying during normal working hours at EPA's Central Docket Section in Washington, D.C. (see **Addresses** section of this preamble). Also, a verbatim transcript of the hearing to be held in Tacoma will be placed in the Docket A-80-40 that will be available at the EPA Region X office in Seattle (see **Addresses** section of this preamble).

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered by EPA in the development of the proposed standards. The principal purposes of the docket are (1) to allow interested parties to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review (except for interagency review materials [§ 307(d)(7)(A)]).

Paperwork Reduction Act

The reporting and recordkeeping (information collection) provisions associated with the proposed standards (§§ 61.06, 61.07, 61.09, 61.10, 61.163, 61.164, 61.166, 61.173, 61.176, 61.177, 61.178, 61.183 61.186, 61.187, 61.188) have been submitted for approval to the Office of Management and Budget (OMB) under Section 3504(h) of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* Each final rule will explain how the reporting and recordkeeping requirements respond to any OMB or public comments. Public comments on the reporting and recordkeeping requirements should be sent to the Office of Information and Regulatory Affairs of OMB to the attention of the desk officer for EPA.

Executive Order 12291

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirements of a Regulatory Impact Analysis. None of the proposed standards is considered major because none is expected to result in:

(1) an annual effect on the eonomy of $100 million or more;

(2) a major increase in costs or prices for consumers, individual industries, Federal, State, or local government agencies, or geographic regions; or

(3) significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

This rulemaking was submitted to the Office of Management and Budget for review as required by the Executive Order 12291.

Regulatory Flexibility Analysis

A preliminary regulatory flexibility analysis has been prepared for the proposed standard for glass manufacturing plants. The results of this analysis, which are discussed in more detail in Part IV of this preamble, indicate that it is unlikely that the proposed standard for glass manufacturing plants would have a significant economic impact on a substantial number of small business entities. However, because this conclusion is based on limited information about small glass firms, comments and information are specifically requested on this subject. The regulatory flexibility analysis will be completed prior to promulgation of the final standard.

Regulatory Flexibility Act Certification

Pursuant to provisions of 5 U.S.C. 605(b), I hereby certify that the proposed standards for high-arsenic and low-arsenic copper smelters, if promulgated, will not have a significant economic impact on a substantial number of small business entities because none of the firms in the copper smelting industry is small.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl Chloride.

Dated: July 11, 1983.

William D. Ruckelshaus,

Administrator.

References

(1) Lee, A.M. and J.F. Fraumeni, Jr., "Arsenic and Respiratory Cancer in Man: An Occupational Study," Journal of National Cancer Institute, 42:1045-52, 1969, Docket Number (OAQPS 79-8) II-I-I.

(2) National Academy of Sciences, "Arsenic," Committee on Medical and Biologic Effects of Environmental Pollutants, Washington, D.C. 1977, Docket Number (OAQPS 79-8) II-A-3.

(3) International Agency of Research on Cancer, "IARC Monographs on Evaluation of the Carcinogenic Risk of Chemicals to Humans," Supplement 4, October 1982.

(4) U.S. EPA, "An Assessment of the Health Effects of Arsenic," April 1978, Docket Number (OAQPS 79-8) II-A-5.

(5) U.S. EPA, Science Advisory Board, Subcommittee on Arsenic, Report of the Subcommittee's Review of Arsenic as a Possible Hazardous Air Polllutant, May 22-23, 1978, January 10, 1979, and April 18, 1979, Docket Numbers (OAQPS 79-8) II-B-3, II-B-4, and II-B-6.

(6) Suta, Benjamin, "Human Exposures to Atmospheric Arsenic," SRI International, Report to EPA under Contract No. 68-01-4314 and 68-02-2835, May 1980, Docket Number (OAQPS 79-8) II-A-9.

(7) U.S. EPA, "An Assessment of Health Effects of Arsenic Germane to Low Level Exposure," Revised External Review-Draft, Washington, D.C., October 1978, Docket Number (OAQPS 79-8) II-A-6.

(8) National Academy of Sciences, Safe Drinking Water Committee, National Research Council, "Drinking Water and Health," Washington, D.C., 1977.

(9) U.S. EPA, "The Carcinogen Assessment Group's Final Risk Assessment on Arsenic," May 2, 1980, Docket Number (OAQPS 79-8) II-A-10.

(10) U.S. EPA, et. al., "Environmental Cancer and Heart and Lung Disease," Fifth Annual Report to Congress by the Task Force on Environmental Cancer and Heart and Lung Disease, August, 1982.

(11) Systems Application, Inc. "Human Exposure to Atmospheric Concentrations of Selected Chemicals." (Prepared for the U.S. Environmental Protection Agency, Research Triangle Park, North Carolina). Volume I, Publication Number EPA-2/250-1, and Volume II, Publication Number EPA-1/250-2.

(12) U.S. EPA, "Health Assessment Document for Acrylonitrile," Draft Report from Office of Health and Assessment, EPA-600/8-82-007, November 1982.

(13) Carcinogen Assessment Group, U.S. Environmental Protection Agency, "Carcinogen Assessment Group's Final

Report on Population Risk to Ambient Benzene Exposures." 1978.

(14) Blot, W.J. and Fraumeni, J.F., Jr. "Arsenical Air Pollution and Lung Cancer," *The Lancet*, pp. 142-144, July 1975.

(5) PEDCo Environmental, Inc., "Emission Test Report-Evaluation of an Air Curtain Hooding System for a Primary Cooper Converter; ASARCO, Inc., Tacoma, Washington," (preliminary draft). Prepared for U.S. Environmental Protection Agency, Research Traingle Park, N.C., Volumes I and II, March, 1983, Docket Number (A-80-4) II-A-40.

It is proposed that Part 61 of Chapter I, Title 40 of the Code of Federal Regulations be amended by adding a new Subpart N and a new Reference Method 108 to Appendix B, as follows:

PART 61—[AMENDED]

1. The Table of Contents of Part 61 is amended by adding Subpart N and by adding an entry for new Test Method 108 to Appendix B as follows:

Subpart N—National Emission Standards for Inorganic Arsenic Emissions From Glass Manufacturing Plants

Sec.
61.160 Applicability and designation of source.
61.1601 Definitions.
61.1602 Emission limits.
61.1603 Procedures for demonstrating compliance.
61.1604 Emission monitoring.
61.1605 Emission testing.
61.1606 Reporting and recordkeeping requirements.
* * * * *
Appendix B—Test Methods
* * * * *

Method 108—Determination of Particulate and Gaseous Arsenic Emissions
* * * * *

Authority: Secs. 112 and 301(a), Clean Air Act as amended (42 U.S.C. 7412 and 7601(a)), and additional authority as noted below.

2. Part 61 is amended by adding Subpart N as follows:

Subpart N—National Emission Standard for Inorganic Arsenic Emissions From Glass Manufacturing Plants

§ 61.160 Applicability and designation of source.

(a) The source to which this subpart applies is each glass melting furnace that uses arsenic as a raw material, except pot furnaces.

(b) An owner or operator who would be subject to the provisions of both 40 CFR Part 60, Subpart CC and to this subpart, shall be exempt from 40 CFR Part 60 Subpart CC if he demonstrates compliance with § 61.162(a)(1).

§ 61.161 Definitions.

The terms used in this subpart are defined in the Clean Air Act, in § 61.02, or in this section as follows:

"Arsenic-containing glass type" means any glass that is distinguished from other glass solely by the weight percent of arsenic in the batch feed material and by the weight percent of arsenic in the glass produced. Any two or more glasses that have the same weight percent of arsenic in the batch feed material as well as in the glass produced shall be considered to belong to one arsenic-containing glass type, without regard to the recipe used or any other characteristics of the glass or the method of production.

"Borosilicate recipe" means raw material formulation of the following approximate weight proportions: 72 percent silica, 7 percent nepheline syenite, 13 percent anhydrous borax, 8 percent boric acid, and 0.1 percent miscellaneous materials.

"Container glass" means glass made of soda-lime recipe, clear or colored, which is pressed and/or blown into bottle, jars, ampoules, and other products listed in Standard Industrial Classification 3221 (SIC 3221).

"Flat glass" means glass made of soda-lime recipe and produced into continuous flat sheets and other products listed in SIC 3211.

"Glass melting furnace" means a unit comprising a refractory vessel in which raw materials are charged, melted at high temperature, refined, and conditioned to produce molten glass. The unit includes foundations, superstructure and retaining walls, raw material charger systems, heat exchangers, melter cooling system, exhaust system, refractory brickwork, fuel supply and electrical boosting equipment, integral control systems and instrumentation, and appendages for conditioning and distributing molten glass to forming apparatuses. The forming apparatuses, including the float bath used in flat glass manufacturing, are not considered part of the glass melting furnace.

"Glass produced" means the weight of the glass pulled from the glass melting furnace.

"Lead recipe" means raw material formulation of the following approximate weight proportions: 56 percent silica, 8 percent potassium carbonate, and 36 percent red lead.

"Malfunction" means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a proess to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

"Measured arsenic emission factor" means the amount of inorganic arsenic, expressed in grams per kilogram of glass produced, as determined based on inorganic arsenic measured using EPA Reference Method 108.

"Pot furnace" means a glass melting furnace that contains one or more refractory vessels in which glass is melted by indirect heating. The openings of the vessels are in the outside wall of the furnace and are covered with refractory stoppers during melting.

"Pressed and blown glass" means glass that is pressed, blown, or both, including textile fiberglass, noncontinuous flat glass, noncontainer glass, and other products listed in SIC 3229. It is separated into:

(a) Glass of borosilicate recipe.

(b) Glass of soda-lime and lead recipes.

(c) Glass of opal, fluoride, and other recipes.

"Shutdown" means the cessation of operation of a source for any purpose.

"Soda-lime recipe" means raw material formulation of the following approximate weight proportions: 72 percent silica, 15 percent soda, 10 percent lime and magnesia, 2 percent alumina, and 1 percent miscellaneous materials (including sodium sulfate).

"Theoretical arsenic emission factor" means the amount of inorganic arsenic, expressed in grams per kilogram of glass produced, as determined based on a material balance.

"Uncontrolled arsenic emissions" means the inorganic arsenic in the glass melting furnace exhaust gas preceding any add-on particulate control device.

"Wool fiberglass" means fibrous glass of random texture, including fiberglass insulation, and other products listed in SIC 3296.

§ 61.162 Emission limits.

(a) Each owner or operator of a glass melting furnace subject to the provisions of this subpart shall comply with either paragraph (a)(1) or paragrph (a)(2) of this section.

(1) No owner or operator shall cause to be discharged into the atmosphere—

(i) From any glass melting furnace fired exclusively with a gaseous fuel or using an all-electric melting process, particulate matter at emission rates exceeding those specified in Table N-1, Column 2, or

(ii) From any glass melting furnace fired exclusively with a liquid fuel, particulate matter at emission rates

exceeding those specified in Table N-1, Column 3, or

(iii) From any glass melting furnace fired simultaneously with gaseous and liquid fuels, particulate matter at emission rates exceeding STD as specified by the following equation:

$STD = X(0.3Y + 1)$

where:

STD = Particulate matter emission limit, g of particulate/kg of glass produced.

X = Emission rate specified in Table N-1 for furnaces fired with gaseous fuel (Column 2).

Y = Fraction of total (gaseous and liquid) fuel heating value supplied by the liquid fuel fired in the glass melting furnace as determined in § 61.165(b)(9).

TABLE N-1.—EMISSION LIMITS

[g of particulate/kg of glass produced]

Column 1	Column 2	Column 3
Glass Manufacturing Plant Industry Sector	Furnaces fired with gaseous fuel and All-electric melters	Furnaces fired with liquid fuel
Container glass	0.100	0.130
Pressed and blown glass:		
Borosilicate recipes	0.500	0.650
Soda-lime and lead recipes	0.100	0.130
Other than borosilicate, soda-lime, and lead recipes (including opal, fluoride, and other recipes)	0.250	0.325
Wool fiberglass	0.250	0.325
Flat glass	0.225	0.225

(2) No owner or operator shall operate a glass melting furnace with uncontrolled arsenic emissions in excess of 0.40 Mg (0.44 ton) per year.

§ 61.163 *Procedures for demonstrating compliance.*

(a) Unless a waiver of emissions testing is obtained under § 61.13, each owner or operator subject to the provisions of this subpart shall test emissions from each source using the test methods and procedures as specified in § 61.165:

(1) Within 90 days of the effective date of the standard for a source that has an initial startup date preceding the effective date; or

(2) Within 90 days of startup for a source that has an initial startup date after the effective date.

(b) Each owner or operator subject to the provisions of this subpart shall provide the Administrator at least 30 days prior notice of the emissions test to afford the Administrator the opportunity to have an observer present.

(c) Each emissions test shall be conducted while the source is operating under such conditions as the Administrator may specify to the owner or operator based on representative performance of the source.

(d) Each owner or operator subject to the provisions of this subpart shall furnish the Administrator a written report of the results of the emissions test within 60 days of conducting the test.

(e) Each owner or operator who chooses to comply with § 61.162(a)(2) shall determine the level of uncontrolled arsenic emissions by:

(1) Measuring uncontrolled arsenic emissions from the source according to procedures described in § 61.165(c). Uncontrolled arsenic emissions shall be measured during the production of the arsenic-containing glass type (as defined in § 61.161) that the owner or operator expects will generate the highest rates of uncontrolled arsenic emissions from the source during the succeeding 12 months. The result of this measurement shall be converted to a "measured arsenic emission factor," expressed as g/kg, as described in § 61.165(c)(5).

(2) Deriving a "theoretical arsenic emission factor," expressed as g/kg, based on a material balance calculation performed for the same batch of glass produced during the measurement of arsenic emissions required under § 61.163(e)(1).

(3) Calculating the ratio of the measured arsenic emission factor from § 61.163(e)(1) to the theoretical arsenic emission factor from § 61.163(e)(2). This ratio shall be used as a "correction factor" in the development of arsenic emission estimates based on the use of theoretical emission factors as described in § 61.163(e)(4) and § 61.163(f).

(4) Estimating uncontrolled arsenic emissons for the initial 12-month period as follows:

(i) If the arsenic-containing glass type (as defined in § 61.161) that was produced during the measurement of uncontrolled arsenic emissions required under § 61.163(e)(1) is the only arsenic-containing glass type that will be produced during the 12-month period, then the owner or operator shall estimate arsenic emissions for the 12-month period by multiplying the measured arsenic emisson factor from § 61.163(e)(1) by the amount (in kg) of the arsenic-containing glass type that the owner or operator plans to produce during the 12-month period.

(ii) If arsenic-containing glass types (as defined in § 61.161) other than the type that was produced during the measurement of arsenic emissons required under § 61.163(e)(1) will be produced during the 12-month period, then the owner or operator shall estimate uncontrolled arsenic emissions for the 12-month period as follows:

(A) For each arsenic-containing glass type that will be produced during the 12-month period the owner or operator shall:

(1) derive a "theoretical arsenic emission factor" based on a material balance calculation, and

(2) calculate a "measured arsenic emission factor" by multiplying the theoretical arsenic emission factor from § 61.163(e)(4)(ii)(A)(1) by the "correction factor" from § 61.163(e)(3).

(B) Uncontrolled arsenic emissons for the 12-month period shall be estimated by multiplying each measured arsenic emissons factor from § 61.163(e)(4)(ii)(A)(2) by the amount (in kg) of the respective arsenic-containing glass types that the owner or operator plans to produce during the 12-month period, and summing the products of each multiplication.

(f) The records required by § 61.166(c), shall contain the following:

(1) an estimate of the uncontrolled arsenic emissons from the source during the immediately preceding 6-month period computed as follows:

(i) For each arsenic-containing glass type (as defined in § 61.161) produced during the preceding 6 months, determine a "measured arsenic emission factor" as follows:

(A) If the arsenic-containing glass type is the same as that produced during the measurement of arsenic emissions required by § 61.163(e)(1), use the "measured arsenic emission factor" from § 61.163(e)(1).

(B) If the arsenic-containing glass type is other than the type produced during the measurement of arsenic emissions required by § 61.163(e)(1), use the procedures described in § 61.163(e)(4)(ii)(A)(2).

(ii) For each arsenic-containing glass type produced during the preceding 6 months, estimate the uncontrolled arsenic emissions during the preceding 6 months by multiplying each measured arsenic emission factor from § 61.163(f)(1)(i) by the amount (in kg) of the respective arsenic-containing glass type that was produced during the preceding 6 months.

(iii) Sum the products obtained in § 61.163(f)(1)(ii) to obtain the estimated uncontrolled arsenic emissions from the source during the preceding 6 months.

(2) an updated arsenic emission forecast for the next 12-month period taking into account anticipated changes in production rates, arsenic-containing glass types to be produced, and other factors that might affect uncontrolled arsenic emissions, and computed by the procedures described in § 61.163(e)(4)(i) and (ii).

§ 61.164 Emission monitoring.

(a) An owner or operator who chooses to comply with § 61.162(a)(1) shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of emissions discharged into the atmosphere from the source.

(b) All continuous monitoring systems shall be installed and operational prior to conduction of an emissions test as required in § 61.163(a). Verification of operational status shall, as a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures contained in Performance Specification 1 of Appendix B of 40 CFR Part 60. A written report of the results of the continuous monitoring system evaluation shall be furnished to the Administrator within 60 days of conducting the evaluation.

(c) During the emission test required in § 61.165(b) each owner or operator subject to § 61.164(a) shall:

(1) Conduct continuous opacity monitoring during each test run.

(2) Calcuate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period during the test runs.

(3) Determine, based on the 6-minute opacity averages, the opacity value corresponding to the 97.5 percent upper confidence level of a normal or lognormal (whichever the owner or operator determines is more representative) distribution of the average opacity values.

(4) An owner or operator may redetermine the opacity value corresponding to the 97.5 percent upper confidence level as described in § 61.164(c)(3) if the owner or operator conducts continuous opacity monitoring during each test run of an emission test that demonstrates compliance with the emission limits in § 61.162(a)(1), and recalculates the 6-minute averages described in § 61.164(c)(2).

(d) The requirements of § 60.13(d), (d)(3), and (f) shall apply to an owner or operator subject to § 61.164(a).

(e) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under § 60.13(d) and (d)(3), all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements by completing a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(f) An owner or operator subjects to § 61.164(a) shall reduce all opacity data to 6-minute averages. Six-minute averages shall be calculated from 24 or more data points equally spaced over each 6-minute period. Data recorded during periods of monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph.

(g) After receipt and consideration of written application, the Administrator may approve alternative continuous monitoring systems for the measurement of one or more process or operating parameters that is or are demonstrated to enable accurate and representative monitoring of a properly operating control device. After the Administrator approves an alternative continuous monitoring system for an affected source, the requirements of § 61.164(a)–(f) will not apply for that source.

§ 61.165 Emission testing.

(a) Emission tests shall be conducted and data reduced in accordance with the test methods and procedures contained in this section unless the Administrator—

(1) Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;

(2) Approves the use of an equivalent method;

(3) Approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance; or

(4) Waives the requirements for emission tests as provided under § 61.13.

(b) Reference Method 5 in Appendix A of 40 CFR Part 60 shall be used to determine compliance with § 61.162(a)(1) as follows:

(1) Method 1 shall be used for sample and velocity traverses, and

(2) Method 2 shall be used to determine velocity and volumetric flow rate.

(3) Method 3 shall be used for gas analysis.

(4) Method 5 shall be used to determine the concentration of particulate matter and the associated moisture content. Each test shall consist of three separate runs. The sampling time for each run shall be at least 60 minutes and the collected particulate matter shall weigh at least 50 mg. For the purpose of determining the concentration of particulate matter, the arithmetic mean of the results of the three runs shall apply.

(5) For any glass melting furnace fired with a liquid fuel containing more than 0.50 weight percent sulfur, Method 5 shall be conducted with the probe and filter holder heating system in the sampling train set to provide a gas temperature no greater than 177°C.

(6) The particulate emission rate, E, shall be computed as follows:

where:

$E = Q \times C$

E = particulate emission rate, g/h.

Q = average volumetric flow rate from Method 2, dscm/h.

C = average concentration of particulate matter from Method 5, g/dscm.

(7) The rate of glass produced, P, shall be determined by dividing the weight, in kilograms (kg), of glass pulled from the source during the emission test by the number of hours (h) taken to perform the test. The glass pulled, shall be determined by direct measurement or computed from materials balance.

(8) For the purposes of demonstrating compliance with the emission limits in § 61.162(a)(1), the furnace particulate emission rate, R, shall be computed as follows:

$R = (E - A) \div P$

where:

R = furnace emission rate, g/kg.

E = particulate emission rate from § 61.165(b)(6), g/h.

A = zero production rate correction as follows:

A = 227 g/h for container glass, pressed and blown (soda-lime and lead) glass, and pressed and blown (other than borosilicate, soda-lime, and lead) glass.

A = 454 g/h for pressed and blown (borosilicate) glass, wool fiberglass, and flat glass.

P = rate of glass production from § 61.165(b)(7), kg/h.

(9) When gaseous and liquid fuels are fired simultaneously in a glass melting furnace, the heat input of each fuel, expressed in joules, is determined during each testing period by multiplying the gross calorific value of each fuel fired (in joules/kilogram) by the rate at which each fuel is fired (in kilogram/second) to the glass melting furnace. The decimal fraction of liquid fuel heating value to total fuel heating value is determined by dividing the heat input of the liquid fuels by the sum of the heat input for the liquid fuels and the gaseous fuels. Gross calorific values are determined in accordance with American Society of Testing and Materials (A.S.T.M.) Method D 240.64(73) (liquid fuels) and D 1826–64(7) (gaseous fuels), as applicable. The owner or operator shall determine the rate of fuels burned during each testing period by suitable methods and shall confirm the rate by a material balance over the glass melting system.

(c) Reference Method 108 in Appendix B of 40 CFR Part 61 shall be used to

determine compliance with § 61.162(a)(2) as follows:

(1) Method 1 shall be used for sample and velocity traverses, and

(2) Method 2 shall be used to determine velocity and volumetric flowrate.

(3) Method 3 shall be used for gas analysis.

(4) The rate of glass produced, P (kg/h) shall be determined by dividing the weight, in kilograms (kg), of glass pulled from the source during the emission test by the number of hours (h) taken to perform the test. The glass pulled, in kilograms, shall be determined by direct measurement or computed by materials balance.

(5) For the purpose of the procedures described in § 61.163(e)(1), the "measured arsenic emission factor" shall be computed as follows:

$R_a = E_a \div P$

where:

R_a = "measured arsenic emission factor," g/kg.

E_a = arsenic emission rate from Method 108, g/h.

P = rate of glass production from § 61.165(c)(4), kg/h.

§ 61.166 Reporting and recordkeeping requirements.

(a) Each owner or operator required to install a continuous opacity monitoring system under § 61.164 shall submit a written report to the Administrator semiannually if excess opacity occurred during the preceding 6-month period. For purposes of this section, an occurrence of excess opacity is any 6-minute period during which the average opacity, as measured by the continuous monitoring system, exceeds the opacity level determined under § 61.164(c)(3) or, of redetermined, the opacity under § 61.164(c)(4).

(b) All semiannual reports shall be postmarked by the 30th day following the end of each 6-month period and shall include the following information:

(1) The magnitude of excess opacity, any conversion factor(s) used, and the date and time of commencement and completion of each occurrence of excess opacity.

(2) Specific identification of each occurrence of excess opacity that occurs during startups, shutdowns, and malfunctions of the source.

(3) The date and time identifying each period during which the continuous monitoring system was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.

(c) Each owner or operator who demonstrates compliance with § 61.162(a)(2) shall, 6 months after demonstrating compliance and every 6 months thereafter, record the arsenic emission estimates prescribed under § 61.163(f).

(1) If the arsenic emission estimates prescribed under § 61.163(f)(1) reveal that uncontrolled arsenic emissions during the preceding 12-month period [or preceding 6-month period, in the case of the first 6-month period following the demonstration of compliance with § 61.162(a)(2)] exceeded 0.40 Mg (0.44 ton) per year, then the owner or operator shall report this fact to the Administrator. All such reports shall be postmarked by the 10th day following the end of the 6-month reporting period.

(2) If the arsenic emission estimate prescribed under § 61.163(f)(2) indicates that uncontrolled arsenic emissions will exceed 0.40 Mg (0.44 ton), then the owner or operator shall demonstrate compliance with § 61.162(a)(1). In this case, the owner or operator shall, within 10 days, notify the Administrator of the anticipated date of the emission test required under § 61.163(a).

(d) Any owner or operator of a source subject to the provisions of this subpart shall maintain a file of the following records: all measurements, including monitoring and testing data; all calculations used to produce the required reports of emission estimates; monitoring system performance evaluations, including calibration checks and adjustments; the occurrence and duration of any startup, shutdown, or malfunction in the operation of the furnace; any malfunction of the air pollution control system; any periods during which the continuous monitoring system or device is inoperative; and all maintenance and repairs made to the air pollution controls or monitoring system. This file shall be recorded in a permanent form suitable for inspection and shall be retained for at least 2 years following the date of such measurements, maintenance, reports, and records.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

3. Part 61 is amended by adding Method 108 to Appendix B as follows:

Appendix B—Test Methods

* * * * *

Method 108—Determination of Particulate and Gaseous Arsenic Emissions

1. *Applicability and Principle.*

1.1 Applicability. The Method applies to the determination of inorganic arsenic (As) emissions from stationary sources as specified in the regulations.

1.2 Principle. Particulate and gaseous arsenic emissions are withdrawn isokinetically from the source and collected on a glass mat filter and in water. The collected arsenic is then analyzed by means of atomic absorption spectrophotometry.

2. *Apparatus.*

2.1 Sampling Train. A schematic of the sampling train is shown in Figure 108-1; it is similar to the Method 5 train of 40 CFR 60, Appendix A.

Note.—This and all subsequent references to other methods refer to the methods in 40 CFR 60, Appendix A. The sampling train consists of the following components:

2.1.1 Probe Nozzle, Probe Liner, Pitot Tube, Differential Pressure Gauge, Filter Holder, Filter Heating System, Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.1 to 2.1.6 and 2.1.8 to 2.1.10, respectively.

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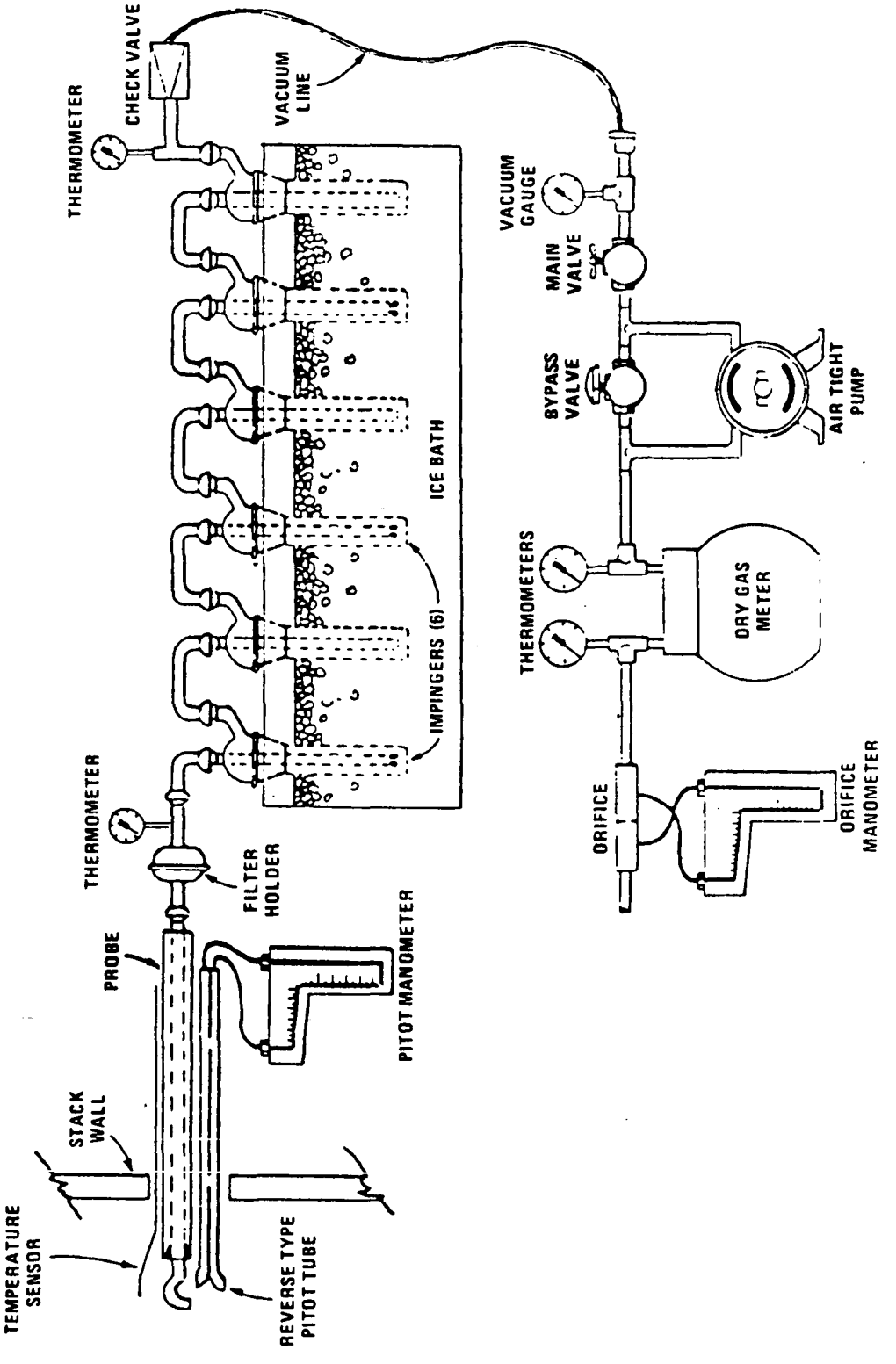

Figure 103-1. Arsenic sampling train.

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2.1.2 Impingers. Six impingers connected in series with leak-free ground-glass fittings or any similar leak-free noncontaminating fittings. For the first, third, fourth, fifth, and sixth impingers, use the Greenburg-Smith design, modified by replacing the tip with a 1.3–cm–ID (0.5 in.) glass tube extending to about 1.3 cm (0.5 in.) from the bottom of the flask. For the second impinger, use the Greenburg-Smith design with the standard tip. The tester may use modifications (e.g., flexible connections between the impingers, materials other than glass, or flexible vacuum lines to connect the filter holder to the condenser), subject to the approval of the Administrator.

Place a thermometer, capable of measuring temperature to within 1°C (2°F), at the outlet of the sixth impinger for monitoring purposes.

2.2 Sample Recovery. The following items are needed:

2.2.1 Probe-Liner and Probe-Nozzle Brushes, Petri Dishes, Graduated Cylinder or Balance, Plastic Storage Containers, Rubber Policeman, and Funnel. Same as Method 5, Sections 2.2.1 and 2.2.4 to 2.2.8, respectively.

2.2.2 Wash Bottles. Polyethylene (2).

2.2.3 Sample Storage Containers. Chemically resistant, polyethylene or polypropylene for glassware washes, 500- or 1,000-ml.

2.3 Analysis. The following equipment is needed:

2.3.1 Spectrophotometer. Equipped with an electrodeless discharge lamp and a background corrector to measure absorbance at 193.7 nm. For measuring samples having less than 10 μg As/ml, use a vapor generator accessory.

2.3.2 Recorder. To match the output of the spectrophotometer.

2.3.3 Beakers. 150–ml.

2.3.4 Volumetric Flasks. Class 50=, 100=, 200=, 500=, and 1,000=ml; and polypropylene, 50=ml.

2.3.5 Erlenmeyer Flasks. 250=ml.

2.3.6 Balance. To measure within 0.5 g.

2.3.7 Volumetric Pipets. 1=, 2=, 3=, 5=, 8=, and 10=ml.

2.3.8 PARR Acid Digestion Bomb.

2.3.9 Oven.

2.3.10 Hot Plate.

3. *Reagents*

Unless otherwise specified, use American Chemical Society reagent grade (or equivalent) chemicals throughout.

3.1 Sampling. The reagents used in sampling are as follows:

3.1.1 Filters, Silica Gel, Crushed Ice, and Stopcock Grease. Same as Method 5, Sections 3.1.1, 3.1.2, 3.1.4, and 3.1.5, respectively.

3.1.2 Water. Deionized distilled to meet American Society for Testing and Materials Specification D 1193–74, Type 3 (incorporated by reference—see § 60.17). When high concentrations of organic matter are not expected to be present, the analyst may omit the $KMnO_4$ test for oxidizable organic matter.

3.1.3 Hydrogen Peroxide (H_2O_2), 10 Percent (W/V). Dilute 294 ml of 30 percent H_2O_2 to 1 liter with water.

3.2 Sample Recovery. 0.1 N sodium hydroxide (NaOH) is required. Dissolve 4.00 g of NaOH in about 500 ml of water in a 1-liter volumetric flask. Then, dilute to exactly 1.0 liter with water.

3.3. Analysis. The reagents needed for analysis are as follows:

3.3.1 Water. Same as 3.1.2.

3.3.2 Sodium Hydroxide, 0.1 N. Same as 3.2.

3.3.3 Sodium Borohydride ($NaBH_4$), 5 Percent (W/V). Dissolve 5.00 g of $NaBH_4$ in about 500 ml of 0.1 N NaOH in a 1-liter volumetric flask. Then, dilute to exactly 1.0 liter with 0.1 N NaOH.

3.3.4 Hydrochloric Acid (HCl), Concentrated.

3.3.5 Potassium Iodide (KI), 30 Percent (W/V). Dissolve 300 g of KI in 500 ml of water in a 1-liter volumetric flask. Then, dilute to exactly 1.0 liter with water.

3.3.6 Sodium Hydroxide, 1.0 N. Dissolve 40.00 g of NaOH in about 500 ml of water in a 1-lter volumetric flask. Then, dilute to exactly 1.0 liter with water.

3.3.7 Phenolphthalein. Dissolve 0.05 g of phenolphthalein in 50 ml of 90 percent ethanol and 50 ml of water.

3.3.8 Nitric Acid (HNO_3), Concentrated.

3.3.9 Nitric Acid, 0.8 N. Dilute 52 ml of concentrated HNO_3 to exactly 1.0 liter with water.

3.3.10 Nitric Acid, 50 Percent (V/V). Add 50 ml concentrated HNO_3 to 50 ml water.

3.3.11 Stock Arsenic Standard, 1 mg As/Ml. Dissolve 1.3203 g of primary standard grade As_2O_3 in 20 ml of 0.1 N NaOH. Neutralize with concentrated HNO_3. Dilute to 1.0 liter with water.

3.3.12 Arsenic Working Solution, 1.0 μg As/ml. Pipet exactly 1.0 ml of stock arsenic standard into an acid-cleaned, appropriately labeled 1-liter volumetric flask containing about 500 ml of water and 5 ml of concentrated HNO_3. Dilute to exactly 1.0 liter with water.

3.3.13 Hydrofluoric Acid, Concentrated.

3.3.14 Air. Suitable quality for atomic absorption analysis.

3.3.15 Acetylene. Suitable quality for atomic absorption analysis.

3.3.16 Quality Assurance Audit Samples. Arsenic samples in glass vials prepared by the Environmental Protection Agency's (EPA) Environmental Systems Laboratory at the Research Triangle Park, North Carolina. Each set will consist of two vials with two unknown concentrations. When making compliance determinations, obtain an audit sample set from the Quality Assurance Management Office at each EPA regional office.

4. *Procedure.*

4.1 Sampling. Because of the complexity of this method, testers must be trained and experienced with the test procedures in order to obtain reliable results.

4.1.1 Pretest Preparation. Follow the general procedure given in Method 5, Section 4.1.1, except the filter need not be weighed.

4.1.2 Preliminary Determinations. Follow the general procedure given in Method 5, Section 4.1.2, except select the nozzle size to maintain isokinetic sampling rates below 28 liters/min (1.0 cfm).

4.1.3 Preparation of Collection Train. Follow the general procedure given in Method 5, Section 4.1.3, except prepare the impingers as follows:

Place 150 ml of water in each of the first two impingers and 200 ml of 10 percent H_2O_2 in the third, fourth, and fifth impingers. Weigh and record the weight of each impinger and liquid. Transfer approximately 200 to 300 g of preweighed silica gel from its container to the sixth impinger. Set up the train as shown in Figure 108–1.

4.1.4 Leak-Cheak Procedures. Follow the leak-check procedures given in Method 5, Sections 4.1.4.1 (Pretest Leak-Check), 4.1.4.2 (Leak-Checks During Sample Run), and 4.1.4.3 (Post-Test Leak-Check).

4.1.5 Arsenic Train Operation. Follow the general procedure given in Method 5, Section 4.1.5, except maintain a temperature of 110° to 135°C (230° to 275°F) around the filter and maintain isokinetic sampling flow rates below 28 liters/min (1.0 cfm). For each run, record the data required on a data sheet such as the one shown in Figure 108–2.

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PLANT _____

LOCATION _____

OPERATOR _____

DATE _____

RUN NO. _____

SAMPLE BOX NO. _____

METER BOX NO. _____

METER ΔH@ _____

C FACTOR _____

PITOT TUBE COEFFICIENT, C_p _____

SCHEMATIC OF STACK CROSS SECTION

AMBIENT TEMPERATURE _____

BAROMETRIC PRESSURE _____

ASSUMED MOISTURE, % _____

PROBE LENGTH, m (ft) _____

NOZZLE IDENTIFICATION NO _____

AVERAGE CALIBRATED NOZZLE DIAMETER, cm (in.) _____

PROBE HEATER SETTING _____

LEAK RATE, m^3/min. (cfm) _____

PROBE LINER MATERIAL _____

TRAVERSE POINT NUMBER	SAMPLING TIME (θ), min.	STATIC PRESSURE mm Hg (in Hg)	STACK TEMPERATURE (T_S) °C (°F)	VELOCITY HEAD (ΔP_S), mm(in) H_2O	PRESSURE DIFFERENTIAL ACROSS ORIFICE METER mm H_2O (in H_2O)	GAS SAMPLE VOLUME m^3 (ft^3)	GAS SAMPLE TEMPERATURE AT DRY GAS METER		FILTER HOLDER TEMPERATURE °C (°F)	TEMPERATURE OF GAS LEAVING CONDENSER OR LAST IMPINGER, °C (°F)
							INLET °C (°F)	OUTLET °C (°F)		
TOTAL							Avg.	Avg.		
AVERAGE							Avg.			

Figure 108-2. Arsenic field data.

4.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

4.2 Sample Recovery. Begin proper cleanup procedure as soon as the probe is removed from the stack at the end of the sampling period.

Allow the probe to cool. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle, and place a cap over it to prevent losing or gaining particulate matter. Do not cap off the probe tip tightly while the sampling train is cooling because a vacuum would form in the filter holder.

Before moving the sampling train to the cleanup site, remove the probe from the sample train, wipe off the silicone grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the filter inlet where the probe was fastened and cap it. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the first impinger and the filter holder, disconnect the line at the filter holder, and let any condensed water or liquid drain into the impingers. After wiping off the silicone grease, cap off the filter holder outlet and impinger inlet. Use either ground-glass stoppers, plastic caps, or serum caps to close these opening.

Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind so that the chances of contaminating or losing the sample is minimized.

Inspect the train before and during disassembly, and note any abnormal conditions. Treat the sample as follows:

4.2.1 *Container No. 1* (Filter). Carefully remove the filter from the filter holder, and place it in its identified petri dish container. Use a pair of tweezers or clean disposable surgical golves or both to handle the filter. If it is necessary to fold the filter, fold the particulate cake inside the fold. Carefully transfer to the petri dish any particulate matter and filter fibers that adhere to the filter holder gasket by using a dry Nylon bristle brush and a sharp-edged blade or both. (*Note*: Mention of trade names or specific products does not constitute endorsement by EPA.) Seal the container.

4.2.2 *Container No. 2* (Probe). Taking care that dust on the ouside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with 0.1 N NaOH and placing the wash in a plastic storage container. Measure and record to the nearest ml the total volume of solution in Container No. 2. Perform the rinsing with 0.1 N NaOH as follows:

Carefully remove the probe nozzle, and rinse the inside surface with 0.1 N NaOH from a wash bottle. Brush with a Nylon bristle brush, and rinse until the rinse shows no visible particles, after which, make a final rinse of the inside surface.

Brush and rinse the inside parts of the Swagelok fitting with 0.1 N NaOH in a similar way until no visible particles remain.

Rinse the probe liner with 0.1 N NaOH. While squirting 0.1 N NaOH into the upper end of the probe, tilt and rotate the probe so that all inside surfaces will be wetted with the rinse solution. Let the 0.1 N NaOH drain from the lower end into the sample container. The tester may use a funnel (glass or polyethylene) to aid in transferring the liquid washes to the container. Follow the rinse with a probe brush. Holding the probe in an inclined position, squirt 0.1 N NaOH into the upper end as the probe brush is being pushed with a twisting action through the probe. Hold the sample container underneath the lower end of the probe, and catch any liquid and particulate matter brushed from the probe. Run the brush through the probe three times or more until no visible particulate matter is carried out with the rinse or until none remains in the probe liner on visual inspection. With stainless steel or other metal probes, run the brush through in the above prescribed manner at least six times since metal probes have small crevices in which particulate matter can be entrapped. Rinse the brush with 0.1 N NaOH, and quantitatively collect these washings in the sample container. After the brushing, make a final rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

After ensuring that all joints have been wiped clean of silicone grease, brush and rinse with 0.1 N NaOH the inside of the front half of the filter holder. Brush and rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully brush and rinse out the glass cyclone, also (if applicable). After all washings and particulate matter have been collected in the sample container, tighten the lid so that liquid will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify clearly its contents.

Rinse the glassware a final time with water to remove residual NaOH before reassembling. Do not save the final rinse water.

4.2.3 *Container No. 3* (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent, and make a notation of its condition. Transfer the silica gel from the sixth impinger to its original container, and seal. The tester may use as aids a funnel to pour the silica gel and a rubber policman to remove the silica gel from the impinger. It is not necessary to remove the small amount of particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, the tester may follow the procedure for Container No. 3 in Section 4.5 (Analysis).

4.2.4 *Container No. 4* (Arsenic Sample). Clean each of the first two impingers and connecting glassware in the following manner:

a. Wipe the impinger ball joints free of silicone grease, and cap the joints.

b. Weigh the impinger and liquid to within ±0.5 g. Record in the log the weight of liquid along with a notation of any color or film observed in the impinger catch. The weight of liquid is needed along with the silica gel data to calculate the stack gas moisture content.

c. Rotate and agitate each impinger, using the impinger contents as a rinse solution.

d. Transfer the liquid to Container No. 4. Remove the outlet ball-joint cap, and drain the contents through this opening. Do not separate the impinger parts (inner and outer tubes) while transferring their contents to the cylinder.

e. (*Note:* In Steps e and f below, measure and record the total amount of 0.1 N NaOH used for rising.) Pour approximately 30 ml of 0.1 NaOH into each of the first two impingers, and agitate the impingers. Drain the 0.1 N NaOH through the outlet arm of each impinger into Container No. 4. Repeat this oeration a second time; inspect the impingers for any abnormal conditions.

f. Wipe the ball joints of the glassware connecting the impingers and the back half of the filter holder free of silicone grease, and rinse each piece of glassware twice with 0.1 N NaOH; transfer this rinse into Container No. 4. (*Do not rinse* or brush the glass-fritted filter support.) Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify clearly its contents.

4.2.5 *Container No. 5* (SO_2 Impinger Sample). Because of the large quantity of liquid involved, the tester may place the solutions from the third, fourth, and fifth impingers in separate containers. However, the tester may recombine them at the time of analysis in order to reduce the number of analyses required. Clean the impingers according to the six-step procedure described under Container No. 4 using water instead of 0.1 N NaOH as the rising liquid.

4.2.6 Blanks. Save a portion of the 0.1 N NaOH used for cleanup as a blank. Take 200 ml of this solution directly from the wash bottle being used and place it in a plastic sample container labeled "NaOH blank." Also save samples of the water and 10 percent H_2O_2, and place in separate containers labeled "H_2O blank" and "H_2O_2," respectively.

4.3 Arsenic Sample Preparation.

4.3.1 *Container No. 1* (Filter). Place the filter and loose particulate matter in a 150-ml beaker. Also, add the filtered material from Container No. 2 (see Section 4.3.3). Add 50 ml of 0.1 N Naoh. Then stir and warm on a hot plate at low heat (do not boil) for about 15 minutes. Add 10 ml of concentrated HNO_3, bring to a boil, then simmer for about 15 minutes. Filter the solution through a glass fiber filter. Wash with hot water, and catch the filtrate in a clean 150-ml beaker. Boil the filtrate, and evaporate to dryness. Cool, add 5 ml of 50 percent HNO_3, and then warm and stir. Allow to cool. Transfer to a 50-ml volumetric flask, dilute to volume with water, and mix well.

If there are any solids retained by the filter, place the filter in a PARR acid digestion bomb, and add 5 ml each of concentrated HNO_3 and HF acids. Seal the bomb, and heat it in an oven at 150°C for 5 hours.

CAUTION: Placing paper filters or any other kind of cellulose in the bomb could lead to an explosive hazard.

Remove the bomb from the oven, and allow it to cool. Quantitatively transfer the contents of the bomb to a 50-ml polypropylene volumetric flask, and dilute to exactly 50 ml with water.

4.3.2 *Container No. 4* (Arsenic Impinger Sample).

Note.—Prior to analysis, check the liquid level in Containers No. 2 and No. 4; confirm as to whether leakage occurred during transport on the analysis sheet. If a noticeable amount of leakage occurred, either void the sample or take steps, subject to the approval of the Administrator, to adjust the final results.

Transfer the contents of Container No. 4 to a 500-ml volumetric flask, and dilute to exactly 500 ml with water. Pipet 50 ml of the solution into a 150-ml beaker. Add 10 ml of concentrated HNO_3, bring to a boil, and evaporate to dryness. Allow to cool, add 5 ml of 50 percent HNO_3, and then warm and stir. Allow the solution to cool, transfer to a 50-ml volumetric flask, dilute to volume with water, and mix well.

4.3.3 *Container No. 2* (Probe Wash). See note in 4.3.2 above. Filter (using a glass fiber filter) the contents of Container No. 2 into a 200-ml volumetric flask. Combine the filtered material with the contents of Container No. 1 (Filter).

Dilute the filtrate to exactly 200 ml with water. Then pipet 50 ml into a 150-ml beaker. Add 10 ml of concentrated HNO_3, bring to a boil, and evaporate to dryness. Allow to cool, add 5 ml of 50 percent HNO_3, and then warm and stir. Allow the solution to cool, transfer to a 50-ml volumetric flask, dilute to volume with water, and mix well.

4.3.4 Filter Blank. Determine a filter blank using two filters from *each lot* of filters used in the sampling. Cut each filter into strips, and treat each filter individually as directed in Section 4.3.1, beginning with the sentence, "Add 50 ml of 0.1 N NaOH."

4.3.5 0.1 N NaOH and Water Blanks. Treat separately 50 ml of 0.1 N NaOH and 50 ml water, as directed under Section 4.3.2, beginning with the sentence, "Pipet 50 ml of the solution into a 150-ml beaker."

4.4 Spectrophotometer Preparation. Turn on the power; set the wavelength, slit width, and lamp current; and adjust the background corrector as instructed by the manufacturer's manual for the particular atomic absorption spectrophotometer. Adjust the burner and flame characteristics as necessary.

4.5 Analysis.

4.5.1 Arsenic Determination. Prepare standard solutions as directed under Section 5.1, and measure their absorbances against 0.8 N HNO_3. Then, determine the absorbances of the filter blank and each sample using 0.8 N HNO_3 as a reference. If the sample concentration falls outside the range of the calibration curve, make an appropriate dilution with 0.8 N HNO_3 so that the final concentration falls within the range of the curve. Determine the arsenic concentration in the filter blank (i.e., the average of the two blank values from each lot). Next, using the appropriate standard curve, determine the arsenic concentration in each sample fraction.

4.5.1.1 Arsenic Determination at Low Concentration. The lower limit of flame atomic absorption spectrophotometry is 10 μg As/ml. If the arsenic concentration of any sample is at a lower level, use the vapor generator which is available as an accessory component. Follow the manufacturer's instructions in the use of such equipment. Place a sample containing between 0 and 5 μg of arsenic in the reaction tube, and dilute to 15 ml with water. Since there is some trial and error involved in this procedure, it may be necessary to screen the samples by conventional atomic absorption until an approximate concentration is determined. After determining the approximate concentration, adjust the volume of the sample accordingly. Pipet 15 ml of concentrated HCl into each tube. Add 1 ml of 30 percent KI solution. Place the reaction tube into a 50°C water bath for 5 minutes. Cool to room temperature. Connect the reaction tube to the vapor generator assembly. When the instrument response has returned to baseline, inject 5.0 ml of 5 percent $NaBH_4$, and integrate the resulting spectrophotometer signal over a 30-second time period.

4.5.1.2 Mandatory Check for Matrix Effects on the Arsenic Results. Since the analysis for arsenic by atomic absorption is sensitive to the chemical composition and to the physical properties (viscosity, pH) of the sample (matrix effects), check (mandatory) at least one sample from each source using the "Method of Additions."

Three acceptable "Method of Additions" procedures are described in the General Procedure Section" of the Perkin Elmer Corporation Manual (incorporated by reference—see § 60.17). If the results of the Method of Additions procedure on the source sample do not agree to within 5 percent of the value obtained by the routine atomic absorption analysis, then reanalyze all samples from the source using the Method of Additions procedure.

4.5.2 *Container No. 5* (SO_2 Impinger Sample). Observe the level of liquid in Container No. 5, and confirm whether any sample was lost during shipping. Note any loss of liquid on the analytical data sheet. If a noticeable amount of leakage occurred, either void the sample or use methods subject to the approval of the Administrator, to adjust the final results.

Transfer the contents of the Container(s) No. 5 to a 1-liter volumetric flask and dilute to exactly 1.0 liter with water. Pipet 10 ml of this solution into a 250-ml Erlenmeyer flask, and add two to four drops of phenolphthalin indicator. Titrate the sample to a faint pink end point using 1 N NaOH. Repeat and average the titration volumes. Run a blank with each series of samples.

4.5.3 *Container No. 3* (Silica Gel). The tester may conduct this step in the field. Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g; record this weight.

4.6 Audit Analysis. With each set or sets of compliance samples, analyze the two unknown audit samples in the same manner as the source samples to evaluate the techniques of the analyst and the standards preparation. The same person, standarfd reagents, and analytical system shall be used both for each set or sets of compliance samples and the EPA audit samples.

If this condition is met for compliance samples that are analyzed frequently, it is only necessary to analyze the audit samples once per quarter.

Calculate the concentration, in g/m^3, using the specified sample volume in the audit instructions. (*Note:* The acceptability of the analyses of the audit samples may be obtained immediately be reporting the audit and compliance results by telephone.)

Include the results of both audit samples with the results of the compliance determination samples in appropriate reports to the EPA regional office or the appropriate enforcement agency.

5. *Calibration.*

Maintain a laboratory log of all calibrations.

5.1 Standard Solutions. For the high level procedure pipet 1, 3, 5, 8, and 10 ml of the 1.0-mg As/ml stock solution into separate 100-ml volumetric flasks, each containing 5 ml of concentrated HNO^3. If the low-level procedure is used, pipet 1, 2, 3, and 5 ml of 1.0 "g As/ml standard solution into the separate flasks. Dilute to the mark with water. Then treat the standards in the same manner as the samples (Section 4.3.4).

Check these absorbances frequently against 0.8 N HNO^3 (reagent blank) during the analysis to insure the base-line draft has not occurred. Prepare a standard curve of absorbance versus concentration. (*Note:* For instruments equipped with direct concentration readout devices, preparation of a standard curve will not be necessary.) In all cases, follow calibration and operational procedues in the manufacturer's instruction manual.

5.2 Sampling Train Calibration. Calibrate the sampling train components according to the indicated Sections of Method 5: probe Nozzle (Section 5.1), Pitot Tube Assembly (Section 5.2), Metering System (Section 5.3), probe Heater (Section 5.4). Temperature Gauges (Section 5.5), leak Check of Metering System (Section 5.6), and Barometer (Section 5.7).

5.3 1 N Sodium Hydroxide Solution. Standardize the NaOH titrant against 25 ml of standard 1.0 N sulfuric acid.

6. *Calculations.*

6.1 Nomenclature.

B_{ws} = Water in the gas stream, proportion by volume

C_a = Concentration of arsenic as read from the standard curve, "g/ml

C_c = Actual audit concentration, g/m^3

C_d = Determined audit concentrfation, g/m^3

C_{SO2} = Concentration of SO_2, percent of volume

C_s = Arsenic concentration is stack gas, dry basis, converted to standard conditions, g/dscm (g/dscf)

E_a = Arsenic mass emission rate, g/hr

F_d = dilution factor (equals 1 if the sample has not been diluted)

I = Percent of isokinetic sampling

m_{bi} = Total mass of all six impingers and contents before sampling,

m_{ft} = Total mass of all six impingers and contents after sampling, g
m_n = Total mass of arsenic collected in a specific part of the sampling train, μg
m_{SO_2} = Mass of SO_2 collected in the sampling train, g
m_t = Total mass of arsenic collected in the sampling train, μg
N = Normality of NaOH titrant, meq/ml
T_m = Absolute average dry gas meter temperature (see Figure 108-2), °K (°R)
V_a = Volume of sample aliquot titrated, ml
V_m = Volume of ga sample as measured by the dry gas meter, dcm(dcf)
$V_{m(std)}$ = volume of gas sample as measured by the dry gas meter correlated to standard conditions, scm(scf)
V_n = Volume of solution in which the arsenic is contained, ml
V_{soln} = Total volume of solution in which the SO_2 is contained, liter
V_{SO_2} = Volume of SO_2 collected in the sampling train, dscm(dscf)
V_t = Volume of NaOH titrant used for the sample (average of replicate titrations), ml
V_{tb} = Volume of NaOH titrant used for the blank, ml
V_{tot} Volume of gas sampled corrected to standard conditions, dscm(dscf)
$V_{w(std)}$ = Volume of water vapor collected in the sampling train, corrected to standard conditions, scm(scf).
ΔH = Average pressure differential across the orifice meter (see Figure 108-2), mm H_2O (in. H_2O).

6.2 Calculate the volume of SO_2 gas collected by the sampling train.

$$V_{SO_2} = K_1 (V_t - V_{tb}) N (V_{soln}/V_a) \qquad \text{Eq. 108-1}$$

Where:

$K_1 = 1.203 \times 10^{-5}$ m³/meq. for metric units.
$= 4.248 \times 10^{-4}$ ft³/meq. English units.

6.3 Calculate the sulfur dioxide concentration in the stack gas (dry basis adjusted to standard conditions) as follows:

$$C_{SO_2} = \frac{V_{SO_2}}{V_{m(std)} \cdot V_{SO_2}} \times 100 \qquad \text{Eq. 108-2}$$

6.4 Calculate the mass of sulfur dioxide collected by the sampling train.

$$M_{SO_2} = K_2 (V_t - V_{tb}) N (V_{soln}/V_a) \qquad \text{Eq. 108-3}$$

Where:

$K_2 = 0.032$ g/meq.

6.5 Average dry gas meter temperatures (T_m) and average orifice pressure drop ΔH). See data sheet (Figure 108-2).

6.6 Dry Gas Volume. Using data from this test, calculate $V_{m(std)}$ by using Eq. 5-1 of Method 5. If necessary, adjust the volume for leakages. Then add V_{SO_2}.

$$V_{tot} = V_{m(std)} + V_{SO_2} \qquad \text{Eq. 108-4}$$

6.7 *Volume of Water Vapor.*

$$V_{w(std)} = K_3 (m_n - m_{bl} - m_{SO_2}) \qquad \text{Eq. 108-5}$$

Where:

$K_3 = 0.001334$ m³/g for metric units.
$= 0.047012$ ft³/g for English units.

6.8 Moisture Content.

$$B_{ws} = \frac{V_{w(std)}}{V_{tot} + V_{w(std)}} \qquad \text{Eq. 108-6}$$

6.9 Amount of arsenic collected.

6.9.1 Calculate the amount of arsenic collected in each part of sampling train, as follows:

$$m_n = C_a F_d V_n \qquad \text{Eq 108-7}$$

6.9.2 Calculate the total amount of arsenic collected in the sampling train as follows:

$m_t = m_n$(filters) + m_n(probe) + m_n(impinger s) − m_n(Filter blank) − m_n(NaOH) − m_n (H_2O) Eq. 108-8

6.10 Calculate the aresnic concentration in the stack gas (dry basis, adjusted to standard conditions) as follows:

$$C_s = K_4 (m_t/V_{m(std)}) \qquad \text{Eq. 108-9}$$

Where:

$K_4 = 10^{-6}$g/μg

6.11 Pollutant Mass Rate. Calculate the arsenic mass emission rate using the following equation.

$$E_s = C_s Q_{sd} \qquad \text{Eq. 108-10}$$

The volumetric flow rate, Q_{sd}, should be calculated as indicated in Method 2.

6.12 Isokinetic Variation. Using data from this test, calculate I. Use Eq. 5-8 of Method 5, except substitute V_{tot} for $V_{m(std)}$.

6.13 Acceptable Results. Same as Method 5, Section 6.12.

6.14 Relative Error (RE) for QA Audits, Percent.

$$RE = C_a - C_e \times \frac{100}{C_e} \qquad \text{Eq. 108-11}$$

7. Bibliograph.

1. Same as Citations 1 through 9 of Section 7, of Method 5.

2. Pearkin Elmer Corporation. Analytical Methods for Atomic Absorption Spectrophotometry. 303-0152. Norwalk, Connecticut. September 1976. pp. 5-6.

3. Standard Specification for Reagent Water. In: Annual Book of ASTM Standards. Part 31; Water, Atmospheric Analysis. American Society for Testing and Materials. Philadelphia, PA. 1974. pp. 40-42.

It is proposed that Part 61 of Chapter I, Title 40 of the Code of Federal Regulations be amended by adding a new Subpart O and new Reference Method 108A to Appendix B, as follows:

1. The Table of Contents of Part 61 is amended by adding Subpart O and by adding an entry for new Test Method 108A to Appendix B as follows:

Subpart O—National Emission Standards for Inorganic Arsenic Emissions From Primary Copper Smelters Processing Feed Materials Containing Less Than 0.7 Percent Arsenic

Sec.
61.170 Applicability and designation of sources
61.171 Definitions
61.172 Standards for new and existing sources
61.173 Compliance provisions
61.174 Equivalent equipment and procedures
61.175 Test methods and procedures
61.176 Monitoring requirements
61.177 Recordkeeping requirements
61.178 Reporting requirements

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Appendix B—Test Methods

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Method 108A—Determinations of Arsenic Content in Ore Samples From Nonferrous Smelters

Authority: Secs. 112 and 301(a), Clean Air Act as amended [42 U.S.C. 7412 and 7601(a)], and additional authority as noted below.

2. Part 61 is amended by adding Subpart O as follows:

Subpart O—National Emission Standards for Inorganic Arsenic Emissions From Primary Copper Smelters Processing Feed Materials Containing Less Than 0.7 Percent Arsenic

§ 61.170 Applicability and designation of sources.

(a) The provisions of this subpart are applicable to each smelting furnace and each copper converter in operation at all new and existing primary copper smelters, except as noted in § 61.172 (c) and (d), processing a total smelter charge containing less than 0.7 weight percent inorganic arsenic on a dry basis averaged over a 1-year period.

(b) [Reserved].

§ 61.171 Definitions.

As used in this subpart, all terms not defined here shall have the meaning given them in the Act and in subpart A of Part 61, and the following terms shall have the specific meanings given to them:

"Blowing" means the injection of air or oxygen-enriched air into the molten converter bath.

"Charging" means the transfer of copper matte or any other material to a copper converter.

"Converter arsenic charging rate" means the hourly rate at which arsenic is charged to the copper converter based on the arsenic content of the copper matte and of any lead matte that is charged to the copper converter.

"Copper converter" means any vessel in which copper matte is charged and is oxidized to copper.

"Copper Matte" means any impure metallic sulfide mixture produced by smelting copper sulfide ore concentrates.

"Holding" means the suspension of blowing operations while the molten converter bath is heated.

"Malfunction" means any sudden and unavoidable failure of air pollution control equipment, process equipment or of a process to operate in a normal usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions.

"Primary copper smelter" means any installation or any intermediate process engaged in the production of copper from copper bearing materials through the use of pyrometallurgical techniques.

"Secondary emissions" means inorganic arsenic emissions that escape capture by a primary emission control systm.

"Secondary hood system" means the equipment (including hoods, ducts, fans, and dampers) used to capture and to transport secondary inorganic arsenic emissions.

"Shutdown" means the cessation of operation of a stationary source for any purpose.

"Skimming" means the removal of slag from the molten converter bath.

"Smelting furnace" means any vessel in which the smelting of copper ore concentrates or calcines is performed and in which the heat necessary for smelting is provided by an electric current, rapid oxidation of the sulfur contained in the concentrate, or the combustion of a fossil fuel.

"Smelting furnace arsenic tapping rate" means the hourly rate at which arsenic is transferred from the smelting furnace during tapping based on the combined arsenic content of the copper matte and slag.

"Tapping" means the transfer of copper matte or slag from the smelting furnace.

"Total smelter charge" means the weight on a dry basis of all copper ore concentrates processed at a primary copper smelter plus the weight of all other materials introduced into the roasters, smelting furnaces, and converters at a primary copper smelter over a 1-month period.

§ 61.172 Standards for new and existing sources.

(a) Except as provided under paragraph (c) of this section, the owner or operator of each copper converter subject to the provisions of this subpart shall reduce inorganic arsenic emission to the atmosphere by meeting the following equipment and operating requirements, or equivalent, as provided in § 61.174:

(1) The owner or operator shall equip each copper converter with a secondary hood system, the principal components of which are a hood enclosure, air curtain fan(s), exhaust system fan(s), and sufficient ductwork to convey the captured emissions to a control device. Each secondary hood system shall meet the following specifications:

(i) The configuration and dimensions of the hood enclosure shall be such that the copper converter mouth, charging ladles, skimming ladles, and any other material transfer vessels used will be housed within the confines or influence of the hood enclosure during each mode of copper converter operation.

(ii) The back of the hood enclosure shall be fully enclosed and sealed against the primary hood. Portions of the side-walls in contact with the copper converter shall be sealed against the copper converter.

(iii) Openings in the top and front of the hood enclosure to allow for the entry and egress of ladles and crane apparatus shall be minimized to the fullest extent practicable.

(iv) The hood enclosure shall be fabricated in such a manner and of materials of sufficient strength to withstand incidental contact with ladles and crane apparatus with no damage.

(v) One side-wall of the hood enclosure shall be equipped with a horizontal-slotted plenum along the top and opposite side-wall shall be equipped with an exhaust hood. The horizontal-slotted plenum shall be designed to allow the distance from the base to the top of the horizontal slot to be adjustable up to a dimension of 76 mm.

(vi) The horizontal-slotted plenum shall be connected to a fan. When activated, the fan shall push air through the horizontal slot, producing a horizontal air curtain above the copper converter and directed to the exhaust hood. The fan power output installed shall be sufficient to overcome static pressure losses through the ductwork upsteam of the horizontal-slotted plenum and across the horizontal-slotted plenum, and to deliver at least 22,370 watts (30 air horsepower) at the horizontal-slotted plenum discharge.

(vii) The exhaust hood shall be sized to completely intercept the airstream from the horizontal-slotted plenum combined with the additional airflow resulting from entrainment by the airstream of the surrounding air. The exahust hood shall be connected to a fan. When activiated, the fan shall pull the combined airstream into the exhaust hood.

(viii) The entire system shall be equipped with dampers and instrumentation, as appropriate, so that the desired air curtain and exhaust flow are maintained during each mode of copper converter operation.

(2) At all times the owner or operator of each copper converter shall operate the converter and associated secondary hood system in such a manner as to optimize the capture of secondary inorganic arsenic emissions.

(i) Optimum operating conditions for each secondary hood sysetem shall be determined by the Administrator on a case-by-case basis.

(ii) The owner or operator shall operate each copper converter to optimize the capture of secondary inorganic arsenic emissions as follows:

(A) The air screen and exhaust flow rates shall be increased to their optimum conditions prior to raising the primary hood and rolling the converter out for skimming.

(B) Once rolled out, the converter shall be held in an idle position until fuming from the molten bath ceases prior to commencing skimming.

(C) During skimming, the crane operator shall raise the receiving ladle off the ground and position the ladle as close to the converter as possible to minimize the drop distance between the converter mouth and receiving ladle.

(D) The rate of flow into the receiving ladle shall be controlled to the extent practicable to minimize fuming.

(E) Upon the completion of the charge, the charging ladle or vessel used shall be withdrawn from the confines of the secondary hood in a slow deliberate manner.

(3) The owner or operator of each copper converter shall perform the following inspeciton and maintenance requirements after installing the secondary hood system to comply with paragraph (a)(1) of this section.

(i) At least once every month, visually inspect the components of the secondary hood system that are exposed to potential damage from crane and ladle operation, including the hood enclosure, side- and back-wall hood seals, and the air curtain slot.

(ii) Replace or repair any defective or damaged components of the secondary hood system within 30 days of discovering the defective or damaged components.

(iii) Maintain each copper converter and associated secondary hood system in a manner consistent with minimizing inorganic arsenic emissions. A determination of whether acceptable maintenance procedures are being used will be based on information supplied to the Administrator, which may include but is not limited to monitoring results, review of maintenance procedures,

inspection of the source, and review of records.

(b) Except as provided under paragraphs (c), (d), and (e) of this section, no owner or operator subject to the provisions of this subpart shall allow gases that contain particulate matter in excess of 11.6 milligrams per dry standard cubic meter to be discharged into the atmosphere from any smelting furnace secondary hood system or any copper converter secondary hood system.

(c) The provisions of § 61.172(a) and (b) do not apply to a copper converter if the converter arsenic charging rate is less than 6.5 kg/h averaged over a 1-year period, as determined under §61.175.

(d) The provisions of § 61.172 (b) do not apply to a smelting furnace if the smelting furnace arsenic tapping rate is less than 40 dg/h averaged over a 1-year period, as determined under § 61.175.

(e) The emission limits set forth in § 60.172 (b) apply at all times except during periods of startup, shutdown, and malfunction.

§ 61.173 Compliance provisions.

(a) The owner or operator of each copper converter to which § 61.172 applies shall demonstrate compliance with the requirements of § 61.172 (a)(1) as follows:

(1) The owner or operator of each existing copper converter shall install capture equipment to meet the requirements of § 61.172(a)(1) no later than 90 days after the effective date, unless a waiver of compliance has been approved by the Administrator in accordance with § 61.11.

(2) The owner or operator of each new copper converter shall install capture equipment to met the requirements of § 61.172(a)(1) prior to the initial startup of the converter, except that if startup occurs prior to the effective date, the owner or operator shall meet the requirements of § 61.172(a)(1) on the effective date.

(b) Unless a waiver of emission testing is obtained under § 61.13, the owner or operator of each smelting furnance and copper converter to which § 61.172 (b) applies shall test emissions as specified in § 61.175 to demonstrate compliance with § 61.172(b) as follows:

(1) After achieving optimum operating conditions for the equipment required in § 61.172(a)(1) but no later than 90 days after the effective date in the case of an existing smelting furnace or copper converter or a new smelting furnace or copper converter that has an initial startup date preceding the effective date, or

(2) After achieving optimum operating conditions for the equipment required in § 61.172(a)(1) but no later than 90 days after startup in the case of a new smelting furnace or copper converter, initial startup of which occurs after the effective date, or

(3) At such other times as may be required by the Administrator under Section 114 of the Act.

(c) Each owner or operator subject to paragraph (b) of this section shall provide the Administrator 30 days prior notice of the emissions test to afford the Administrator the opportunity to have an observer present.

(d) Each emission test shall be conducted while the source is operating under such conditions as the administrator may specify to the owner or operator based on representative performance of the source.

(e) Each owner or operator subject to paragraph (b) of this section shall furnish the Administrator a written report of the results of the emission test within 60 days of conducting the test.

§ 61.174 Equivalent equipment and procedures.

(a) Upon written application from any person, the Administrator may approve the use of equipment or procedures that have been demonstrated to his satisfaction to be equivalent, in terms of capturing inorganic arsenic emissions, to those prescribed under § 61.172(a). For an existing source, requests for using equivalent equipment or procedures as the initial means of capture are to be submitted to the Administrator within 30 days of the effective date of the standard. For a new source, requests for using equivalent equipment or procedures are to be submitted to the Administrator with the application for approval of construction required by § 61.07.

(b) Demonstration of equivalency shall be made using a method approved by the Administrator.

(c) The Administrator may condition approval of equivalency on requirements that may be necessary to ensure operation and maintenance to achieve the same emission capture as the equipment prescribed under § 61.172(a).

(d) If in the Administrator's judgment an application for equivalency may be approvable, the Administrator will publish a notice of preliminary determination in the **Federal Register** and provide the opportunity for public hearing. After notice and opportunity for public hearing, the Administrator will determine the equivalence of the alternative means of emission capture and will publish the final determination in the **Federal Register.**

§ 61.175 Test methods and procedures.

(a) Emission tests shall be conducted and data reduced in accordance with the test methods and procedures contained in this section unless the Administrator—

(1) Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;

(2) Approves the use of an equivalent method;

(3) Approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance; or

(4) Waives the requirement for emission tests as provided under § 61.13.

(b) For the purpose of determining compliance with § 61.172(b), reference methods in 40 CFR Part 60, Appendix A shall be used as follows:

(1) Method 5 for the measurement of particulate matter,

(2) Method 1 for sample and velocity traverses,

(3) Method 2 for velocity and volumetric flow rate,

(4) Method 3 for gas analysis, and

(5) Method 4 for stack gas moisture.

(c) For Method 5, the sampling time for each run shall be at least 60 minutes and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes when necessitated by process variables or other factors may be approved by the Administrator.

(d) For the purpose of § 61.172(c), the converter arsenic charging rate shall be determined as follows:

(1) Grab samples of copper matte and any lead matte charged to a copper converter shall be collected daily and a composite sample representative of each calendar month shall be analyzed for inorganic arsenic.

(2) Copper matte and lead matte samples shall be individually analyzed using Method 108A to determine the weight percent of inorganic arsenic contained in each sample.

(3) Converter arsenic charging rate shall be calculated once per month using the following equation:

$$R_c = \frac{A_c W_c + A_l W}{100\ H_c}$$

Where:

R_c is the converter arsenic charging rate (kg/h)

A_c is the monthly average weight percent of arsenic in the copper matte charged during the month (%)

A_l is the monthly average weight percent of arsenic in the lead matte charged during the month (%)
W_c is the total weight of copper matte charged to the copper converter during the month (kg)
W_l is the total weight of lead matte charged to the copper converter during the month (kg)
H_c is the total number of hours the copper converter was in operation during the month (h)

(4) An annual arsenic charging rate shall be determined for each copper converter once per month by computing the arithmetic average of the 12 converter arsenic charging rate values for the proceding 12-month period.

(e) For the purpose of § 61.172(d), the smelting furnace arsenic tapping rate shall be determined as follows:

(1) Grab samples of smelting furnace copper matte and slag shall be collected daily and a composite sample representative of each calendar month shall be analyzed for inorganic arsenic.

(2) Copper matte and slag samples shall be individually analyzed using Method 108A to determine the weight percent of arsenic contained in each sample.

(3) Smelting furnace arsenic tapping rate shall be calculated once per month using the following equation:

$$R_f = \frac{A_m W_m + A_s W_s}{100\ H_f}$$

where:
R_f is the smelting furnace arsenic tapping rate (kg/h)
A_m is the monthly average weight percent of arsenic in the copper matte tapped during the month (%)
A_s is the monthly average weight percent of arsenic in the slag tapped during the month (%)
W_m is the total weight of copper matte tapped from the smelting furnace during the month (kg)
W_s is the total weight of slag tapped from the smelting furnace during the month (kg)
H_f is the total number of hours the smelting furnace was in operation during the month (h)

(4) An annual average smelting furnace arsenic tapping rate shall be determined for each smelting furnace once per month by computing the arithmetic average of the 12 smelting furnace arsenic tapping rate values for the preceding 12-month period.

(f) Each owner or operator subject to the provisions of this subpart shall collect daily grab samples of the total smelter charge and shall analyze a composite sample representative of each calendar month for inorganic arsenic. The procedures used to collect the samples of the total smelter charge shall be approved by the Administrator. Samples shall be analyzed for inorganic arsenic using Method 108A.

(g) An annual average weight percent of arsenic in the total smelter charge shall be determined for each smelter once per month by computing the arithmetic average of the 12 arsenic weight percent values for the preceding 12-month period.

§ 61.176 Monitoring requirements.

(a) An owner or operator of a source that is subject to the emission limit specified in § 61.172(b) shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of emissions discharged from the source according to the following procedures:

(1) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conduction of an emissions test as required in § 61.175(a). Verification of operational status shall, as a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures contained in Performance Specification 1 of Appendix B of 40 CFR Part 60. The owner or operator shall furnish the Administrator a written report of the results of the continuous monitoring system evaluation within 60 days of conducting such evaluation.

(2) The requirements of § 60.13 (d) and (f) shall apply to an owner or operator subject to the emission limits of § 61.172.

(3) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under § 60.13(d) all continuous monitoring systems shall be in continuous operation and shall meet minimum frequency of operation requirements by completing a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(4) The owner or operator shall calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period. Data recorded during periods of monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages.

(5) During the emission test required in § 61.173(b) each owner or operator subject to this paragraph shall:

(i) Conduct continuous opacity monitoring during each test run.

(ii) Calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period during the test runs.

(iii) Determine, based on the 6-minute opacity averages, the opacity value corresponding to the 97.5 percent upper confidence level of a normal or lognormal (whichever the owner or operator determines is more representative) distribution of the average opacity values.

(iv) An owner or operator may redetermine the opacity value corresponding to the 97.5 percent upper confidence level if the owner or operator conducts continuous opacity monitoring during each test run of an emission test that demonstrates compliance with the emission limits in § 61.172(b), and recalculates the 6-minute averages described in this paragraph.

(b) An owner or operator of a source that is required to install the equipment prescribed under § 61.172(a) shall install, calibrate, maintain, and operate a continuous monitoring device for the measurement of the air flow rate through the horizontal-slotted plenum and through the exhaust hood.

§ 61.177 Recordkeeping requirements.

(a) Each owner or operator subject to the provisions of this subpart shall maintain at the source for a period of at least 2 years a monthly record of the total smelter charge and the weight percent of arsenic contained in this charge, and the monthly calculations of the average annual weight percent of arsenic in the total smelter charge for the preceding 12-month period.

(b) Each owner or operator required to install the equipment precribed in § 61.172(a) shall maintain at the source for a period of at least 2 years records of the visual inspections and maintenance performed as required in § 61.172(a)(3).

(c) Each owner or operator who is exempt from § 61.172 (a) and (b) as described in § 61.172(c) shall maintain at the source for a period of at least 2 years the following records:

(1) For each copper converter, a daily record of the amount of copper matte and any lead matte charged to the copper converter and the hours of operation.

(2) For each copper converter, a monthly record of the weight percent of arsenic contained in the copper matte and lead matte as determined by § 61.175(d).

(3) For each copper converter, the monthly calculations of the average annual arsenic charging rate for the preceding 12-month period as determined by § 61.175(d).

(d) Each owner or operator who is exempt from § 61.172 (a) and (b) as

described in § 61.172(d) shall maintain at the source for a period of at least 2 years the following records:

(1) For each smelting furnace, a daily record of the amount of copper matte and slag tapped from the smelting furnace and the hours of operation.

(2) For each smelting furnace, a monthly record of the weight percent of arsenic contained in the copper matte and slag as determined by § 61.175(e).

(3) For each smelting furnace, the monthly calculations of the average annual smelting furnace arsenic tapping rate for the preceding 12-month period as determined by § 61.175(e).

(e) Each owner or operator subject to the provisions of § 61.172(b) shall maintain at the source, for a period of at least 2 years, a file of the following records: all measurements, including monitoring and testing data; all calculations used to produce the required reports of emission estimates; monitoring system performance evaluations, including calibration checks and adjustment; the occurrence and duration of any startup, shutdown, or malfunction in the operation of the stationary source; any malfunction of the air pollution control system; any periods during which the continuous monitoring system or device is inoperative; and all maintenance and repairs made to the air pollution control or monitoring system.

(f) Each owner or operator subject to the provisions of § 61.176(b) shall maintain at the source for a period of at least 2 years records of the reference flow rates for the horizontal-slotted plenum and exhaust hoods for each converter operating mode established during optimum operating conditions as determined by the Administrator under § 61.172(a)(2), and the average actual flow rates. In addition, a daily log shall be maintained of the start time and duration of each converter operating mode.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

§ 61.178 Reporting requirements.

(a) For purposes of the information required in the initial report prescribed in § 61.10(a)(5), each owner or operator shall provide the average weight percent of arsenic in the total smelter charge, the average converter arsenic charging rate, and the smelting furnace arsenic tapping rate over the last 12 months preceding the date of the report.

(b) Each owner or operator subject to § 61.176(a) shall submit a written report to the Administrator semiannually if excess opacity occurred during the 6-month period. For purposes of this paragraph, an occurrence of excess opacity is any 6-minute period during which the average opacity, as measured by the continuous monitoring system, exceeds the opacity level determined under § 61.175(a)(5).

(c) Each owner or operator subject to § 61.176(b) shall submit a written report to the Administrator semiannually if the air flow rates monitored are less than 20 percent of the reference flow rates, for any converter operating mode. Reference flow rate values for each converter mode shall be determined when the equipment prescribed under § 61.172(a) is operating under optimum operating conditions, as determined by the Administrator under § 61.172(a)(2).

(d) all semiannual reports shall be postmarked by the 30th day following the end of each 6-month period and shall include the following information:

(1) The magnitude of excess opacity, any conversion factor(s) used, and the date and time of commencement and completion of each occurrence of excess opacity.

(2) The magnitude of reduced flow rates and the date and time of commencement and completion of each occurrence of reduced flow rate.

(3) Specific identification of each period of excess opacity or reduced flow rate that occurs during startups, shutdowns, and malfunctions of the source.

(4) The date and time identifying each period during which the continuous monitoring system or monitoring device was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.

(e) The owner or operator of each primary copper smelter shall submit a written report to the Administrator annually which includes:

(1) The monthly computations of the average annual weight percent of inorganic arsenic in the total smelter charge for each preceding 12-month period as calculated under § 61.175(f).

(2) The monthly computations of the average annual converter arsenic charging rate as calculated in § 61.175(d).

(3) The monthly computations of the average annual smelting furnace arsenic tapping rate as caluctated in § 61.175(e).

(f) The annual report required in § 61.178(c) shall be postmarked by the 30th day following the end of each calendar year.

3. Part 61 is amended by adding Method 108A to Appendix B a s follows:

Appendix B—[Amended]

Method 108A—Determination of Arsenic Content in Ore Samples From Nonferrous Smelters

1 *Applicability and Principle.*

1.1 Applicability. This method applies to the determination of inorganic arsenic (As) content of process ore and reverberatory matte samples from nonferrous smelters and other sources as specified in the regulations.

1.2 Principle. Arsenic bound in ore samples is liberated by acid digestion and analyzed by atomic absorption spectrophotometry.

2. *Apparatus.*

2.1 Sample Preparation

2.1.1 Parr Acid Digestion Bomb. Stainless steel with vapor-tight Teflon cup and cover.

2.1.2 Volumetric Pipets. 2- and 5-ml sizes.

2.1.3 Volumetric Flask. 50-ml polypropylene with screw caps, (one needed per sample), 100-ml glass (one needed per standard).

2.1.4 Funnel. Polyethylene or polypropylene.

2.1.5 Oven. Capable of maintaining a temperature of approximately 105 °C.

2.1.6 Analytical Balance. To measure to within 0.1 mg.

2.2 Analysis

2.2.1 Spectrophotometer and Recorder. Same as in Method 108, Section 2.3.1 and 2.3.2, except a graphite furnace should be used in place of the vapor generator accessory when measuring samples with low as levels.

2.2.2 Volumetric Flasks. Class A, 50-ml (one needed per sample and blank).

2.2.3 Volumetric Pipets. Class A, 1-, 5-, 10-, and 25ml sizes.

3. *Reagents.*

Unless otherwise specified, use ACS reagent grade (or equivalent) chemicals throughout.

3.1 Sample Preparation.

3.1.1 Water. Same as in Method 108, Section 3.1.2. Use in all dilutions requiring water.

3.1.2 Nitric Acid (HNO_3), Concentrated. HANDLE WITH CAUTION.

3.1.3 Nitric Acid, 0.5 N. In a 1-liter volumetric flask containing water, add 32 ml of concentrated HNO_3 and dilute to volume with water.

3.1.4 Hydrofluoric Acid (HF), Concentrated. HANDLE WITH CAUTION.

3.1.5 Potassium Chloride (DCl) Solution, 10 percent (w/v). Dissolve 10 g KCl in water, add 3 ml concentrated HNO_3 and dilute to 100 ml.

3.1.6 Filter. Teflon filters, 3 micron porosity, 47mm size. (Available from Millipore Co., Type FS, Catalog Number FSLWO4700.)

3.2 Analysis.

3.2.1 Water. Same as in Section 3.1.1.

3.2.2 Sodium Hydroxide (NaOH), 0.1 N. Dissolve 2.00 g of NaOH in water in a 500-ml volumetric flask. Dilute to volume with water.

3.2.3 Nitric Acid, 0.5 N. Same as in Section 3.1.3.

3.2.4 Potassium Chloride Solution, 10 percent. Same as in Section 3.1.5.

3.2.5 Stock Arsenic Standard, 1 mg As/ml. Dissolve 1.320 g of primary grade As_2O_3 in 20 ml of 0.1 N NaOH. Slowly add 30 ml of concentrated HNO_3. Dilute to 1 liter with water.

3.2.6 Nitrous Oxide. Suitable quality for atomic absorption analysis.

3.2.7 Acetylene. Suitable quality for atomic absorption analysis.

3.2.8 Quality Assurance Audit Samples. Same as in Method 108, Section 3.3.16.

4. *Procedure.*

4.1 Sample Collection. A sample that is representative of the ore lot to be tested must be taken prior to analysis. The sample must be ground into a finely pulverized state. (A portion of the samples routinely collected for metals analysis may be used provided the sample is representative of the ore being tested.)

4.2 Sample Preparation. Weigh 50 to 500 mg of finely pulverized sample to the nearest 0.1 mg. Transfer the sample into the Teflon cup of the digestion bomb, and add 2 ml each of concentrated HNO_3 and HF. Seal the bomb immediately to prevent the loss of any volatile arsenic compounds that may form. Heat in an oven at 115°C for 2 hours. Then remove the bomb from the oven and allow it to cool. Using Whatman No. 4 filter paper, quantitatively filter the digested sample into a 50-ml polypropylene volumetric flask. Rinse the bomb three times with small portions of 0.5 N HNO^3, and filter the rinses into the flask. Add 5 ml of KCL solution to the flask, and dilute to 50 ml with 0.5 N HNO^3.

4.3 Spectrophotometer Preparation. Same as in Method 108, Section 4.4.

4.4 Preparation of Standard Solutions. Pipet 1, 5, 10, and 25 ml of the stock As solution into separate 100-ml volumetric flasks. Add 10 ml KCl solution and dilute to the mark with 0.5 N HNO^3. This will give standard concentrations of 10, 50, 100, and 250 g As/ml. For low-level-arsenic samples that require the use of a graphite furnace, prepare a series of standard solutions in the range appropriate to the sample concentrations and the graphite furnace operating range.

Dilute 10 ml of KCl solution to 100 ml with 0.5 N HNO^3, and use as a reagent blank. Measure the standard absorbances against the reagent blank. Check these absorbances frequently against the blank during the analysis to assure that baseline drift has not occurred.

Prepare a standard curve of absorbance versus concentration. *(Note:* For instruments equipped with direct concentration readout devices, preparation of a standard curve will not be necessary.) In all cases, follow calibration and operational procedures in the manufacturer's instruction manual. Maintain a laboratory log of all calibrations.

4.5 Analysis

4.5.1 Arsenic Determination. Determine the absorbance of each sample using the blank as a reference. If the sample concentration falls outside the range of the calibration curve, make an appropriate dilution with 0.5 N HNO^3 so that the final concentration falls within the rage of the curve. From the curve, determine the As concentration in each sample.

4.5.2 Mandatory Check for Matrix Effects on the Arsenic Results. Same as in Method 108, Section 4.5.1.2.

4.5.3 Audit Analysis. Same as in Method 108, Section 4.6.

5. *Calculations.*

5.1. Calculate the percent arsenic in the ore sample as follows:

$$\% \text{ AS} = \frac{5\,C_a F_d}{W}$$

Where:

C_a = Concentration of As as read from the stand curve, g/ml.

F_5 = Dilution factor (equals 1 if the sample has not been diluted).

W = Weight of ore sample analyzed.

5 = 50-ml sample x 100 / $10s^3$ µg/mg.

6. *Bibliography.*

1. Same as Citations 2 and 3 in Section 7 of Method 108.

2. Unpublished Report. Emission Measurement Branch, Emission Standards and Engineering Division, U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. August 1980.

It is proposed that Part 61 of Chapter I, Title 40 of the *Code of Federal Regulations* be amended by adding a new Subpart P as follows:

1. The Table of Contents of Part 61 is amended by adding Subpart P as follows:

Subpart P—National Emission Standards for Inorganic Arsenic Emissions From Primary Copper Smelters Processing Feed Materials Containing 0.7 Percent or Greater Arsenic

Sec.

61.180 Applicability and designation of sources.
61.181 Definitions.
61.182 Standards for new and existing sources.
61.183 Compliance provisions.
61.184 Equivalent equipment and procedures.
61.185 Test methods and procedures.
61.186 Monitoring requirements.
61.187 Recordkeeping requirements.
61.188 Reporting requirements.

Authority: Sec. 112 and 301(a), Clean Air Act as amended (42 U.S.C. 7412 and 7601(a)), and additional authority as noted below.

2. Part 61 is amended by adding Subpart P as follows:

Subpart P—National Emission Standards for Inorganic Arsenic Emissions From Primary Copper Smelters Processing Feed Materials Containing 0.7 Percent or Greater Arsenic

§ 61.180 Applicability and designation of sources.

The provisions of the subpart are applicable to each copper converter in operation at a primary copper smelter processing a total smelter charge containing 9.7 weight percent or more inorganic arsenic on a dry basis averaged over a 1-year period.

§ 61.181 Definitions.

As used in this subpart, all terms not defined here shall have the meaning given them in the Act and in subpart A of Part 61, and the following terms shall have the specific meanings given to them:

"Blowing" means the injection of air or oxygen-enriched air into the molten converter bath.

"Charging" means the transfer of copper matte or any other material to a copper converter.

"Control device" means the air pollution control equipment used to collect particulate emissions.

"Copper converter" means any vessel in which copper matte is charged and oxidized to copper.

"Copper matte" means any impure metallic sulfide mixture produced by smelting copper sulfide ore concentrates.

"Holding" means the suspension of blowing operations while the molten converter bath is heated.

"Primary copper smelter" means any installation or any intermediate process engaged in the production of copper from copper bearing materials through the use of pyrometallurgical techniques.

"Process emissions" means inorganic arsenic emissions from roasters, smelting furnaces, or copper converters that are captured and transported to a primary emission control device.

"Roaster" means any facility in which a copper ore concentrate charge is heated in the presence of air to eliminate a significant portion (5 percent or more) of the sulfur contained in the total smelter charge.

"Secondary emissions" means inorganic arsenic emissions that escape capture by a primary emission control system.

"Secondary hood system" means equipment (including hoods, ducts, fans, and dampers) used to capture and to transport secondary inorganic arsenic emissions.

"Shutdown" means the cessation of operation of a stationary source for any purpose.

"Skimming" means the removal of slag from the copper converter bath.

"Smelting furnace" means any vessel in which the smelting of copper ore concentrates or calcines is performed and in which the heat necessary for smelting is provided by an electric current, rapid oxidation of the sulfur contained in the concentrate, or the combustion of a fossil fuel.

"Tapping" means the transfer of copper matte or slag from the smelting furnace.

"Total smelter charge" means the weight on a dry basis of all copper ore concentrates processed at a primary copper smelter plus the weight of all other materials introduced into the roasters, smelting furnaces, and copper converters at a primary copper smelter over a 1-month period.

§ 61.102 Standards for new and existing sources.

(a) The owner or operator of each copper converter to which this subpart applies shall reduce inorganic arsenic emissions to the atmosphere by meeting the following equipment and operating requirements, or equivalent as provided in § 61.184:

(1) The owner or operator shall equip each copper converter with a secondary hood system, the principal components of which are a hood enclosure, air curtain fan(s), exhaust system fan(s), and sufficient ductwork to convey the captured emissions to a control device. Each secondary hood system shall meet the following specifications:

(i) The configuration and dimensions of the hood enclosure shall be such that the copper converter mouth, charging ladles, skimming ladles, and any other material transfer vessels used will be housed within the confines or influence of the hood enclosure during each mode of copper converter operation.

(ii) the back of the hood enclosure shall be fully enclosed and sealed against the primary hood. Portions of the side-walls in contact with the copper converter shall be sealed against the copper converter.

(iii) Openings in the top and front of the hood enclosure to allow for the entry and egress of ladles and crane apparatus shall be minimized to the fullest extent practicable.

(iv) The hood enclosure shall be fabricated in such a manner and of materials of sufficient strength to withstand incidential contact with ladles and crane apparatus with no damage.

(v) One side-wall of the enclosure shall be equipped with a horizontal-slotted plenum along the top and the opposite side-wall shall be equipped with an exhaust hood. The horizontal-slotted plenum shall be designed to allow the distance from the base to the top of the horizontal slot to be adjustable up to a dimension of 76 mm.

(vi) The horizontal-slotted plenum shall be connected to a fan. When activated, the fan shall push air through the horizontal slot, producing a horizontal air curtain above the copper converter and directed to the exhaust hood. The fan power output installed shall be sufficient to overcome static pressure losses through the ductwork upstream of the horizontal-slotted plenum and across the horizontal-slotted plunum, and to deliver at least 22,370 watts (30 air horsepower) at the horizontal-slotted plenum discharge.

(vii) The exhaust hood shall be sized to completely intercept the airstream from the horizontal-slotted plenum combined with the additonal airflow resulting from entrainment by the airstream of the surrounding air. The exhaust hood shall be connected to a fan. When activated, the fan shall pull the combined airstream into the exhaust hood.

(viii) The entire secondary hood system shall be equipped with dampers and instrumentation, as appropriate, so that the desired air curtain and exhaust flow rates are maintained during each mode of copper converter operation.

(2) At all times the owner or operator of each copper converter shall operate the converter and secondary hood system in such a manner as to optimize the capture of secondary inorganic arsenic emissions.

(i) Optimum operating conditions for each secondary hood system shall be determined by the Administrator on a case-by-case basis.

(ii) The owner or operator shall operate each copper converter to optimize the capture of secondary inorganic arsenic emissions as follows:

(A) The air screen and exhaust flow rates shall be increased to their optimum conditions prior to raising the primary hood and rolling the converter out for skimming.

(B) Once rolled out, the converter shall be held in an idle position until fuming from the molten bath ceases prior to commencing skimming.

(C) During skimming, the crane operator shall raise the receiving ladle off the ground and position the ladle as close to the converter as possible to minimize the drop distance between the converter mouth and receiving ladle.

(D) The rate of flow into the receiving ladle shall be controlled to the extent practicable to minimize fuming.

(E) Upon the completion of the charge, the charging ladle or vessel used shall be withdrawn from the confines of the secondary hood in a slow deliberate manner.

(3) The owner or operator of each copper converter to which this subpart applies shall meet the following inspection and maintenance requirements after installing the secondary hood system to comply with paragraph (a)(1) of this section:

(i) At least once every month, visually inspect the components of the secondary hood system that are exposed to potential damage from crane and ladle operation, including the hood enclosure, side and back wall hood seals and the air curtain slot.

(ii) Replace or repair any defective or damaged components of the secondary hood system within 30 days of discovering the defective or damaged components.

(iii) Maintain each copper converter and associated secondary hood system in a manner consistent with minimizing inorganic arsenic emissions. A determination of whether acceptable maintenance procedures are being used will be based on information supplied to the Administrator, which may include but is not limited to monitoring results, review of maintenance procedures, inspection of the source, and review of records.

(b) Except as provided under paragraph (c) of this section, no owner or operator subject to the provisions of this subpart shall cause to be discharged into the atmosphere from any copper converter any secondary emissions that exit from a control device and contain particulate matter in excess of 11.6 milligrams per dry standard cubic meter.

(c) The emission limits set forth in paragraph (b) of this section apply at all times except during periods of startup, shutdown, and malfunction.

§ 61.103 Compliance provisions.

(a) The owner or operator of each copper converter shall meet the requirements of § 61.182(a)(1) as follows:

(1) The owner or operator of each existing cooper converter shall install control equipment to meet the requirements of § 61.182(a)(1) no later than 90 days after the effective date, unless a waiver of compliance has been approved by the Administrator in accordance with § 61.11.

(2) The owner or operator of each new copper converter shall install control equipment to meet the requirements of

§ 61.182(a)(1) prior to the initial startup of the converter, except that if startup occurs prior to the effective date, the owner or operator shall meet the requirements of § 61.182(a)(1) on the effective date.

(b) Unless a waiver of emission testing is obtained under § 61.13, the owner or operator of each copper converter shall test emissions as specified in § 61.185 to demonstrate compliance with § 61.182(b) as follows:

(1) After achieving optimum operating conditions for the equipment required in § 61.182(a)(2) but no later than 90 days after the effective date in the case of an existing converter or a new converter that has an initial startup date preceding the effective date, or

(2) After achieving optimum operating conditions for the equipment in § 61.182(a)(2) but not later than 90 days after startup in the case of a new converter initial startup of which occurs after the effective date, or

(3) At such other times as may be required by the Administrator under Section 114 of the Act.

(c) Each owner or operator subject to paragraph (b) of this section shall provide the Administrator 30 days prior notice of the emissions test to afford the Administrator the opportunity to have an observer present.

(d) Each emission test shall be conducted while the source is operating under such conditions as the Administrator may specify to the owner or operator based on representative performance of the source.

(e) Each owner or operator subject to paragraph (b) of this section shall furnish the Administrator a written report of the results of the emissions test within 60 days of conducting the test.

§ 61.184 Equivalent equipment and procedures.

(a) Upon written application from any person, the Administrator may approve the use of equipment or procedures that have been demonstrated to his satisfaction to be equivalent in terms of capturing inorganic arsenic emissions, to those prescribed under § 61.182(a). For an existing source, requests for using equivalent equipment or procedures as the initial means of capture are to be submitted to the Administrator within 30 days of the effective date of the standard. For a new source, requests for using equivalent equipment or procedure ore is to be submitted to the Administrator with the application for approval of construction required by § 61.07.

(b) Demonstration of equivalency shall be made using a method approved by the Administrator.

(c) The Administrator may condition approval of equivalency on requirements that may be necessary to ensure operation and maintenance to achieve the same emission capture as the equipment prescribed under § 61.182(a).

(d) If in the Administrator's judgment an application for equivalency may be approvable, the Adminstrator will publish a notice of preliminary determination in the Federal Register and provide the opportunity for public hearing. After notice and opportunity for public hearing, the Administrator will determine the equivalence of the alternative means of emissions capture and will publish the final determination in the Federal Register.

§ 61.185 Test methods and procedures.

(a) Emission tests shall be conducted and data reduced in accordance with the tests methods and procedures contained in this section unless the Administrator—

(1) Specifies or approves, in specific cases, the use of a reference method with minor changes in methodology;

(2) Approves the use of an equivalent method;

(3) Approves the use of an alternative method the results of which he has determined to be adequate for indicating whether a specific source is in compliance; or

(4) Waives the requirement for emission tests as provided under § 61.13.

(b) For the purpose of determining compliance with § 61.182(b) reference methods in 40 CFR Part 60, Appendix A shall be used as follows:

(1) Method 5 for the measurement of particulate matter,

(2) Method 1 for sample and velocity traverses,

(3) Method 2 for velocity and volumetric flow rate,

(4) Method 3 for gas analysis, and

(5) Method 4 for stack gas moisture.

(c) For Method 5, the sampling time for each run shall be at least 60 minutes, and the minimum sampling volume shall be 0.85 dscm (30 dscf) except that smaller times or volumes when necessitated by process variables or other factors may be approved by the Administrator.

(d) Each owner or operator subject to the provisions of this subpart shall collect daily grab samples of the total smelter charge and analyze a composite sample representative of each calendar month for inorganic arsenic. The procedures used to collect the samples of the total smelter charge shall be approved by the Administrator. Samples shall be analyzed for inorganic arsenic using Method 108A.

(e) An annual weight percent of arsenic in the total smelter charge shall be determined for each smelter once per month by computing the arithmetic average of the 12 arsenic weight percent values for the preceding 12-month period.

§ 61.186 Monitoring requirements.

(a) An owner or operator of a source that is subject to the emission limit specified in § 61.182(b) shall install, calibrate, maintain, and operate a continuous monitoring system for the measurement of the opacity of emissions discharged from the source according to the following procedures:

(1) All continuous monitoring systems and monitoring devices shall be installed and operational prior to conducting an emissions test as required in § 61.185(a). Verification of operational status shall, as a minimum, consist of an evaluation of the monitoring system in accordance with the requirements and procedures contained in Performance Specification 1 of Appendix B of 40 CFR Part 60. The owner or operator shall furnish the Administrator a written report of the results of the continuous monitoring system evaluation within 60 days of conducting such evaluation.

(2) The requrements of § 60.13 (d) and (f) shall apply to an owner or operator subject to the emission limit of § 61.182.

(3) Except for system breakdowns, repairs, calibration checks, and zero and span adjustments required under § 60.13 (d) and (d)(3), all continuous monitoring systems shall be in continuous operations and shall meet minimum frequency of operation requirements by completing a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data recording for each successive 6-minute period.

(4) An owner or operator shall calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period. Data recorded during periods of monitoring system breakdowns, repairs, calibration checks, and zero and span adjustments shall not be included in the data averages computed under this paragraph.

(5) During the emission test required in § 61.183(b) each owner or operator subject to this paragraph shall:

(i) Conduct continuous opacity monitoring during each test run.

(ii) Calculate 6-minute opacity averages from 24 or more data points equally spaced over each 6-minute period during the test runs.

(iii) Determine, based on the 6-minute opacity averages, the opacity value

corresponding to the 97.5 percent upper confidence level of a normal or lognormal (whichever the owner or operator determines is more representative) distribution of the average opacity values.

(iv) An owner or operator may redetermine the opacity value corresponding to the 97.5 percent upper confidence level if the owner or operator conducts continuous opacity monitoring during each test run of an emission test that demonstrates compliance with the emission limits in § 61.182(b), and recalculates the 6-minute averages described in this paragraph.

(b) An owner or operator of a source that is required to install the equipment prescribed under § 61.182(a) shall install, calibrate, maintain, and operate a continuous monitoring device for the measurement of the air flow rate through the horizontal-slotted plenum and through the exhaust hood.

§ 61.187 Recordkeeping requirements.

(a) Each owner or operator subject to the provisions of this subpart shall maintain at the source for a period of at least 2 years a monthly record of the total smelter charge and the weight percent of arsenic contained in this charge, and the monthly calculations of the annual weight percent of arsenic in the total smelter charge for the preceding 12-month period.

(b) Each owner or operator required to install the equipment prescribed in § 61.182(a) shall maintain at the source for a period of at least 2 years records of the visual inspections and maintenance performed as required in § 61.182(a)(3).

(c) Any owner or operator of a source subject to the provisions of § 61.182(b) shall maintain a file of the following records: all measurements, including monitoring and testing data; all calculations used to produce the required reports of emission estimates; monitoring system performance evaluations, including calibration checks and adjustments; the occurrence and duration of any startup, shutdown, or malfunction in the operation of the stationary source; any malfunction of the air pollution control system; any periods during which the continuous monitoring system or device is inoperative; and all maintenance and repairs made to the air pollution control or monitoring system.

(d) Each owner or operator subject to the provisions § 61.186 (b) shall maintain at the source for a period of at least 2 years records of the reference flow rates for the horizontal-slotted plenum and exhaust hoods for each converter operating mode established during optimum operating conditions as determined by the Administrator under § 61.182(a)(2), and the average actual flow rates. In addition, a daily log shall be maintained of the start time and duration of each converter operating mode.

(Section 114 of the Clean Air Act as amended (42 U.S.C. 7414))

§ 61.188 Reporting requirements.

(a) For purposes of the information required in the initial report prescribed in § 61.10(a)(5), each owner or operator shall provide the average weight percent of arsenic in the total smelter charge over the last 12 months preceding the date of the report.

(b) Each owner or operator required to install a continuous opacity monitoring system under § 61.186 shall submit a written report to the Administrator semiannually if excess opacity occurred during the 6-month period. For purposes of this paragraph, an occurrence of excess opacity is any 6-minute period during which the average opacity, as measured by the continuous monitoring system, exceeds the opacity level determined under § 61.186(a)(5).

(c) Each owner or operator subject to § 61.186(b) shall submit a written report to the Administrator semiannually if the air flow rates monitored are less than 20 percent of the reference flow rates, for any converter operating mode. Reference flow rate values for each converter mode shall be determined when the equipment prescribed under § 61.182(a) is operating under optimum operating conditions, as determined by the Administrator under § 61.182(a)(2).

(d) All semiannual reports shall be postmarked by the 30th day following the end of each 6-month period and shall include the following information:

(1) The magnitude of excess opacity, any conversion factor(s) used, and the date and time of commencement and completion of each occurrence of excess opacity.

(2) The magnitude of reduced flow rates and the date and time of commencement and completion of each occurrence of reduced flow rate.

(3) Specific identification of each period of excess opacity or reduced flow rate that occurs during startups, shutdowns, and malfunctions of the source.

(4) The date and time identifying each period during which the continuous monitoring system or monitoring device was inoperative, except for zero and span checks, and the nature of the system repairs or adjustments.

(e) The owner or operator of any primary copper smelter shall submit a written annual report to the Administrator, which includes the monthly computations of the average annual weight percent of inorganic arsenic in the smelter charge for each preceding 12-month period as calculated in § 61.185(d).

(f) The annual report required in § 61.178(c) shall be postmarked by the 30th day following the end of each calendar year.

(Sec. 114 of the Clean Air Act as amended (42 U.S.C. 7414))

[FR Doc. 83-19361 Filed 7-14-83; 3:13 pm]
BILLING CODE 6560-50-M

40 CFR Part 61

[AH-FRL-2418-5]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Inorganic Arsenic

AGENCY: Environmental Protection Agency.

ACTION: Amended notice of public hearing and extension of public comment period.

SUMMARY: The public hearings to be held in Washington, D.C. and Tacoma, Washington for the purpose of receiving comments on the listing of inorganic arsenic as a hazardous pollutant and on the content of the proposed national emission standards for inorganic arsenic have been rescheduled. The end of the comment period has also been extended.

DATES: Two public hearings will be held. One hearing will be held in Tacoma, Washington, on November 2, 1983. This hearing will begin at 9:00 a.m. and may be continued on November 3, 1983, if necessary to provide all persons wishing to speak an opportunity to do so. Another hearing will be held in Washington, D.C., on November 8, 9, and 10, 1983, beginning at 9:00 a.m. each day. Comments must be received on or before December 10, 1983.

Persons wishing to present oral testimony at the Tacoma hearing must notify Ms. Laurie Kral by October 25, 1983, at telephone number (206) 442-1089 or mailing address: Air Programs Branch, U.S. Environmental Protection Agency, Region X, 1200 6th Avenue, Seattle, Washington 98101.

Persons wishing to present oral testimony at the Washington, D.C. hearing must notify Mrs. Naomi Durkee by October 31, 1983, at telephone number (919) 541-5578 or mailing address: Standards Development Branch, MD-13, U.S. Environmental Protection Agency, Research Triangle Park, N.C. 27711.

ADDRESSES: Hearings. The public hearing to be held in Tacoma, Washington will be held at the Tacoma Bicentennial Pavilion, Rotunda Room 1313 Market Street, Tacoma, Washington.

The public hearing to be held in Washington, D.C., will be held at the Department of Agriculture, Thomas Jefferson Auditorium, South Building, 14th and Independence Avenue SW., Washington, D.C.

Comments. Comments should be submitted (in duplicate is possible) to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 410 M Street SW., Washington, D.C. 20460. Specify the following Docket Numbers:

A-80-40	High-arsenic and low-arsenic copper smelters
A-83-8	Glass manufacturing plants
A-83-9	Secondary lead
A-83-10	Cotton gins
A-83-11	Zinc oxide plants
A-83-23	Primary zinc, primary lead, arsenic chemical manufacturing

FOR FURTHER INFORMATION CONTACT: Naomi Durkee (919) 541-5578.

SUPPLEMENTARY INFORMATION: *Public Hearing.* The hearing in Tacoma, Washington will be for the purpose of receiving comments on the proposed standards for high-arsenic copper smelters. The hearing in Washington, D.C. will consist of two separate sessions. The first session will be for the purpose of receiving comments on the listing of arsenic as a hazardous pollutant. The second session will be for the purpose of receiving comments on the content of the proposed regulations. The order of items on the agenda of the second session will be: (1) high-arsenic copper smelters, (2) low-arsenic copper smelters, (3) glass manufacturing plants, and (4) others. Persons planning to attend this hearing may call Mrs. Naomi Durkee (919) 541-5578 after November 1, 1983, to obtain an estimated time and date at which each subject will be addressed.

Background: On June 5, 1980, EPA listed inorganic arsenic as a hazardous air pollutant under Section 112 of the Clean Air Act. On July 20, 1983, EPA proposed standards in the Federal Register (48 FR 33112) for the following categories of sources of emissions of inorganic arsenic: high-arsenic primary copper smelters, low-arsenic primary copper smelters, and glass manufacturing plants. EPA identified other categories of sources emitting inorganic arsenic; but, after careful study, determined that the proposal of standards for these categories of sources was not warranted. These categories of sources are primary lead smelters, secondary lead smelters, primary zinc smelters, zinc oxide plants, cotton gins, and arsenic chemical manufacturing plants.

In the July 20, 1983, Federal Register notice, EPA announced the date ending the public comment period on the listing of inorganic arsenic as a hazardous pollutant and on the proposed national emission standards for inorganic arsenic. EPA also announced two public hearings: the first in Washington, D.C., to receive comments on the listing of inorganic arsenic as a hazardous pollutant and on the proposed standards; the second in Tacoma, Washington, to receive comments specifically on the proposed standards for inorganic arsenic emissions from high-arsenic copper smelters.

EPA has received several requests to postpone the public hearings to allow additional time for commenters to prepare their oral testimony. This notice amends the dates of the public hearings in response to those requests. In addition, this notice extends the end of the public comment period to provide an opportunity for submission of rebuttal and supplementary information to testimony presented at the hearings as required by Section 307(d)(5) of the Clean Air Act.

Dated: August 11, 1983.

Charles L. Elkins,

Assistant Administrator for Air, Noise, and Radiation.

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AH-FRL 2378-2]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Inorganic Arsenic

Correction

In FR Doc. 83-19361, beginning on page 33112 of the issue of Wednesday, July 20, 1983, make the following corrections:

1. On page 33155, second column, second indented paragraph, line six, the parenthetical expression "(90 tons-yr)" should read "(90 tons/yr)".

2. On page 33161, first column, third line, the word "the" should read "that".

3. On page 33161, second column, third line from the bottom the word "has" should follow "EPA".

4. On page 33166, in § 61.166(a), the last word in the third line from the end of the paragraph reading "of" should read "if".

5. On page 33168, in Method 108 of Appendix B to Part 61, the first column, the equal signs in paragraphs 2.3.4 through 2.3.7 should be replaced with hyphens.

6. On page 33171, in the third column, make the following corrections:

a. In paragraph 5.1, seventh line, the citation "ug" should read "μg".

b. In the following undesignated paragraph, third line, the word "draft" should read "drift".

c. In paragraph 6.1, the fifth line, "ug" should read "μg".

d. In the last line of the page, "g." should be inserted after "sampling,".

7. On page 33172, first column, the fourth and eighth lines, "ug" should read "μg".

8. In the same column, paragraph 6.4, the first letter in the formula now reading "M" should read "m".

9. On page 33174, first column, in § 61.172(d), fourth line, "40 dg/h" should read "40 kg/h".

10. On page 33174, third column, in § 61.175(d)(3), the formula reading:

$$R_c = \frac{A_c W_c + A_1 W}{100\ H_c}$$

should read:

$$R_c = \frac{A_c W_c + A_1 W_1}{100\ H_c}$$

11. On page 33175, first column, in § 61.175(e)(3), the formula reading:

$$R_f = \frac{A_m W_m + A_s W_s}{100\ H_f}$$

should read:

$$R_f = \frac{A_m W_m}{100\ H_f} + \frac{A_s W_s}{H_f}$$

12. On page 33176, Method 108A to Appendix B of part 61, third column, paragraph 2.2.1, last line, "as" should read "As".

13. On page 33177, make the following corrections:

a. In the first column, paragraph 4.2, eighth line, "115°C" should read "105°C".

b. In the second column, paragraph 5.1, in the third line following "Where:", "F_s" should read "F_d". In the sixth line following "Where:", "$100/10s^{3/}$" should read "$100/10^{3/}$".

c. In the third column, in the fifth line of the text of § 61.160, "9.7" should read "0.7".

BILLING CODE 1505-01-M

Central Docket Section (LE-131), U.S. Environmental Protection Agency, 410 M Street, SW., Washington, D.C. 20460. Specify the following Docket Numbers:

A-83-40 High-Arsenic and Low-Arsenic Copper Smelters
A-83-8 Glass Manufacturing Plants
A-83-9 Secondary Lead
A-83-10 Cotton Gins
A-83-11 Zinc Oxide
A-83-23 Primary Zinc, Primary Lead, Arsenic Chemical Manufacturing

FOR FURTHER INFORMATION CONTACT: Mr. Robert L. Ajax, Chief, Standards Development Branch, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone (919) 541-5578.

SUPPLEMENTARY INFORMATION: On June 5, 1980, EPA listed inorganic arsenic as a hazardous air pollutant under Section 112 of the Clean Air Act. On July 20, 1983, EPA proposed standards in the **Federal Register** (48 FR 33112) for the following categories of inorganic arsenic: high-arsenic primary copper smelters, low-arsenic primary copper smelters, and glass manufacturing plants. EPA identified other categories of sources emitting inorganic arsenic; but, after careful study, determined that the proposal of standards for these categories of sources was not warranted. These categories of sources are primary lead smelters, secondary lead smelters, primary zinc smelters, zinc oxide plants, cotton gins, and arsenic chemical manufacturing plants.

The public comment period for the proposed standards was scheduled to end on September 30, 1983. In an August 22, 1983, **Federal Register** notice, EPA extended the end of the comment period to December 10, 1983. EPA has now received several requests to allow additional time for written comments on the proposed standards to be submitted beyond the December 10 deadline. The United Steelworkers of America (USWA) has advised EPA that in cooperation with several environmental organizations, they are devising a control strategy that they plan to recommend for inclusion in the standards for high-arsenic primary copper smelters. The only existing smelter in the high-arsenic category is the ASARCO smelter in Tacoma, Washington. The USWA has asked that EPA make available the Agency's revised modeling results for the Tacoma smelter that are now being finalized, as discussed below, and allow additional time afterwards for the public to review the results and submit comments. The Natural Resources Defense Council subsequently joined the USWA in this request.

The results of the modeling will be made available about the first of January 1984. Additional documentation for the modeling will also be placed in the public docket at that time. To allow the public additional time to prepare comments on these results and other aspects of the proposed standards, EPA is reopening the public comment period until January 31, 1984.

A principal element upon which the proposed standards for the ASARCO-Tacoma smelter was based is the results of an ambient dispersion model and the associated estimates of exposure to arsenic in the Tacoma area. However, as discussed in the **Federal Register** notice of proposal, there were fundamental uncertainties in the dispersion modeling and in the inputs to the model, such as emission rates for the various arsenic emission sources at the smelter. Therefore, as described in the preamble to the proposed rules, EPA is continuing to refine its estimates of arsenic emissions from the ASARCO-Tacoma smelter, performing improved dispersion modeling, and evaluating additional controls that could potentially reduce arsenic emissions below the level achievable with BAT as proposed. The progress on each of these steps is discussed below.

Refinement in Emission Estimates Since Proposal

Since proposal of the standards, EPA has refined its estimate of both low-level fugitive emissions and process emissions vented through the 565-foot tall main stack. EPA has revised its estimates of fugitive emissions from the No. 4 converter at ASARCO-Tacoma based on emission test results. The estimates of fugitive emissions from the No. 1 and No. 2 converters have been revised based on visual observations by EPA personnel.

New information about other sources of fugitive emissions at the ASARCO-Tacoma smelter has been obtained by EPA and contractor personnel during extensive inspections of the smelter this past summer. Potential sources of fugitive arsenic emissions not identified by EPA at proposal have been evaluated and emission estimates have been made. Emission estimates made previously have been reviewed. It should be stressed, however, that fugitive emissions from these other sources at the smelter are not directly measurable; EPA's estimates are based on visual observation and engineering judgment and are, therefore, still subject to significant imprecision.

To refine the estimate of arsenic emissions from process emissions

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40 CFR Part 61

[AH-FRL 2489-8]

National Emission Standards for Hazardous Air Pollutants; Proposed Standards for Inorganic Arsenic

AGENCY: Environmental Protection Agency (EPA).

ACTION: Reopening of public comment period.

SUMMARY: The period for receiving written comments on the proposed national emission standards for inorganic arsenic is being reopened. EPA is extending the public comment period in response to several requests to do so.

DATE: Comments must be postmarked on or before January 31, 1984.

ADDRESS: Comments should be submitted (in duplicate if possible) to:

vented through the main stack, EPA conducted emission source testing in September 1983. The operation of the smelter was closely monitored to assure that testing was conducted while the smelter was operating normally. The test results were carefully evaluated and are considered to be valid.

Refined arsenic emission estimates for fugitive and main stack sources were announced in a press release on October 20, 1983, by EPA's Region X office and are available in the public docket.

Improved Dispersion Modeling. As indicated in the Federal Register notice of proposal, the dispersion model analysis used by EPA before proposal to predict air quality in the vicinity of the ASARCO-Tacoma smelter was limited in its ability to simulate the actual operation of the smelter, the terrain around the smelter, meteorological conditions, and other factors. That these limitations could lead to significant error was confirmed by comparing ambient arsenic concentrations predicted by the model to values actually measured at monitoring sites around the smelter. This comparison showed that the model predicted concentrations about an order of magnitude greater then those actually measured.

Following proposal, EPA undertook work to improve the dispersion modeling results for the ASARCO-Tacoma smelter. A sophisticated model was selected and tailored specifically to simulate the operation of the smelter, including the frequent production curtailments that occur to avoid exceedances of the ambient air quality standards for sulfur dioxide. In addition, the best available information on emissions, meteorology, and other factors crucial to performing dispersion modeling were obtained and input to the model. The modeling results will be finalized within a few weeks, and will be available about the first of January 1984. These results and additional documentation on the new modeling will be placed in the dockets available for public inspection at EPA's Region X office in Seattle and at EPA headquarters in Washington, D.C.

After completing development of the model, EPA plans to use the model as a tool to help evaluate the effects of various control scenarios for arsenic emissions on ambient concentrations and exposure levels around the smelter. The Administrator will consider the results of this evaluation in making his final decision on the standards for the ASARCO-Tacoma smelter.

Evaluation of Additional Controls for Arsenic. As described in the Federal Register notice of proposal, EPA planned further investigation to identify controls that could potentially reduce fugitive arsenic emissions at the ASARCO-Tacoma smelter. This has been done. During extensive inspections of the ASARCO-Tacoma smelter, EPA and contractor personnel observed on a daily basis the process operations, the control equipment performance, and the worker operating and housekeeping practices. Based on these observations EPA has identified control measures that could be instituted, in addition to installing air curtain secondary hoods on the converters, that could reduce fugitive arsenic emissions from the smelter. Based on this and on comments received at the public hearings and in writing, EPA has developed a list of specific control measures to be considered in the development of the final standards.

The additional control measures currently being considered are presented below:

Equipment

A. *Reverberatory Smelting Furnaces.*
1. Install leak-tight covers on pig iron charging ports.
2. Install leak-tight cover on bath level measurement port.
3. Upgrade hood design and operation to achieve at least 80 percent capture efficiency for hoods over calcine charging ports.
4. Upgrade hood design and operation to achieve at least 80 percent capture efficiency for hoods over slag tapping ports and launders.

B. *Arsenic Plant.* 1. Install dust-tight conveyor system for transfer of raw dust from the bunkers to the Godfrey roaster charge hoppers.
2. Install solid refractory arch on each Godfrey roaster.
3. Install water-cooled screw conveyor system for transfer of hot calcine from roaster deck on each Godfrey roaster.
4. Install pneumatic conveyor system for transfer of calcine from Godfrey roaster water-cooled screw conveyors to Herrschoff roasters or to railcar loading station.
5. Install enclosure around the kitchen pulling areas. Ventilate space within the enclosure to a control device.

C. *Chemical Plants.* 1. Install pneumatic conveyor system for transfer of white dust from chemical plant electrostatic precipitators to enclosed storage bin located at arsenic plant.

Work Practices

The company will prepare and submit for approval by EPA or the delegated authority agency a detailed plan describing the inspection, maintenance, and housekeeping work practices the company will implement to achieve all of the following objectives:

1. No accumulation of material having an arsenic content greater than 2 percent of any surface within the plant boundaries outside of a dust-tight enclosure.
2. Immediate clean-up of any spilled material having an arsenic content greater than 2 percent.
3. Regular scheduled maintenance of all smelter process, conveying, and emission control equipment to minimize equipment malfunctions.
4. Regular inspection of all smelter process, conveying, and emission control equipment to ensure the equipment is operating properly. The inspection procedure shall be performed at least once per shift in each smelter department. For each smelter department, a prescribed inspection route shall be followed by the inspector so that the inspector observes each piece of equipment. The inspector shall document the operating status of each piece of equipment.

If the inspector finds malfunctions or damaged equipment, the inspector will immediately report the situation to smelter supervisory personnel.

5. Repair of malfunctioning or damaged equipment identified to smelter supervisory personnel will begin as soon as personnel can be made available. If personnel qualified to perform the work necessary to complete the repair are not available at the smelter when needed, the personnel will be called to work. If the malfunctioning or damaged equipment affects process operations involving material having an arsenic content greater than 2 percent, the affected operations will be shut down until the equipment is repaired.

Ambient Monitoring Requirement

During the public hearings for the proposed standards, the State of Washington and others recommended that EPA consider an ambient monitoring requirement to ensure the proper implementation of arsenic emission control measures at the Tacoma smelter. EPA is investigating an ambient monitoring requirement as a means of assessing control technology performance.

Reopening of the Public Comment Period

As discussed earlier, the results of the modeling related to the ASARCO-Tacoma smelter are now being finalized and will be made available about the first of January 1984. Additional documentation for this modeling will

also be placed in the public docket at that time. In order to allow time for the public to review these results and prepare comments on them and other aspects of this rulemaking, EPA is reopening the public comment period until January 31, 1984.

Dated: December 9, 1983.

Joseph A. Cannon,

Assistant Administrator for Air and Radiation.

[FR Doc. 83-33346 Filed 12-15-83, 8:45 am]

BILLING CODE 6560-50-M

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40 CFR Part 61

[AH-FRL 2546-4]

National Emission Standards for Hazardous Air Pollutants Proposed Standards for Inorganic Arsenic

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of reopening of public comment period and request for comments.

SUMMARY: The public comment period for the proposed national emission standards for inorganic arsenic for glass manufacturing plants is being reopened. This reopening is for two limited purposes. The first purpose is to receive comments concerning the emission of inorganic arsenic from glass manufacturing plants which produce soda-lime glass. Data received since the proposal of these standards indicate that a substantially higher portion of inorganic arsenic emissions from furnaces producing soda-lime glass may be in vapor phase than from furnaces producing other types of glass. EPA is requesting comments on three regulatory options that are being considered for soda-lime furnaces. The second purpose for reopening the comment period is to receive comments on a possible revision of the zero prodction rate offsets. The deadline for comments on all other aspects of the proposed standards was January 31, 1984.

DATE: Comments must be received on or before April 19, 1984.

ADDRESSES: Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 401 M Street SW, Washington, D.C. 20460. Specify Docket Number A-83-8.

FOR FURTHER INFORMATION CONTACT: Mr. R. E. Myers or Mr. J. U. Crowder, Industrial Studies Branch, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone (919)541-5601.

SUPPLEMENTARY INFORMATION: On June 5, 1980, inorganic arsenic was listed by EPA as a hazardous air pollutant under Section 112 of the Clean Air Act (44 FR 377886). Standards for the control of emissions of inorganic arsenic from glass manufacturing plants were proposed in the **Federal Register** on July 20, 1983 (48 FR 33112).

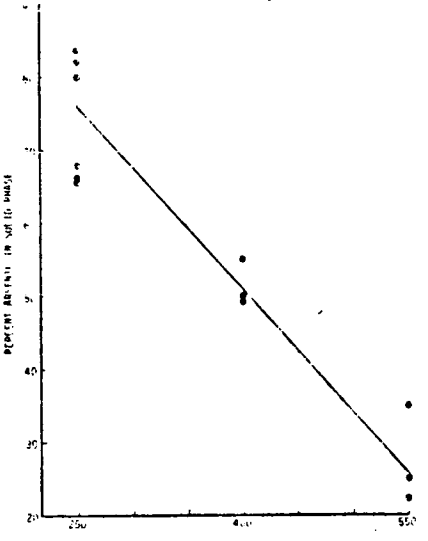
The preamble to the proposed standards identifies add-on particulate matter control devices, such as electrostatic precipitators (ESP) or fabric filters, as the best available technology (BAT) for the control of inorganic arsenic emissions from glass manufacturing plants that emit greater than 0.40 Mg (0.44 ton) of arsenic per year. In investigating the factors affecting the performance of particulate matter control devices, EPA evaluated the effect of gas stream temperature on the formation of vapor-phase arsenic. Arsenic in vapor form would not be collected by a control device such as a fabric filter or ESP. The preamble discussion points out that the vapor pressure characteristics of arsenic trioxide (the from of arsenic theoretically expected to be found in the emissions from glass melting furnaces) would indicate that at temperatures typical of flue gas streams from glass furnaces, all arsenic would be theoretically in the vapor phase. The data collected on this question prior to the proposal of the standards, however, revealed a very large fraction of the arsenic to be in the solid phase.

To summarize briefly the test results given in the proposal preamble, EPA examined test data from two glass manufacturing plants that use liquid arsenic acid (rather than powdered arsenic trioxide) in the batch materials. In the first test on a lead glass furnace, less than 1 percent of the total arsenic in the gas stream was found to be in the vapor phase, even though at the flue gas temperature of 204°C (400°F) all of the arsenic would be expected to be in the vapor phase if present as arsenic trioxide. At the second plant producing borosilicate glass, the control device temperature of 138°C (280°F) was also high enough that all arsenic would be expected to be in the vapor phase, but the control device (a fabric filter) was found to be 93 percent efficient in reducing arsenic emissions. This indicated that the arsenic was primarily in the solid phase. Based on these test data, EPA concluded at the time of proposal that it was not certain that the cooling of the gas stream would be effective in increasing the arsenic emission reduction efficiency of the particulate matter control devices at glass manufacturing furnaces that use arsenic acid.

As noted in the preamble to the proposed regulation, EPA has continued its testing program for arsenic emissions from glass manufacturing furnaces. This testing effort has been directed at an investigation of the effects of flue gas temperature and of the use of arsenic acid versus arsenic trioxide on control efficiency. For the purposes of this investigation, emission tests were conducted on two glass furnaces. One test was conducted on a lead glass furnace equipped with an ESP. Arsenic emissions were measured by the proposed EPA Reference Method 108 at the inlet and the outlet of the ESP with arsenic trioxide being added to the batch. In order to determine the temperature effects, single point monitoring (sampling without traversing) was also conducted with the gas temperature maintained at 121°C and 288°C (250°F and 550°F) at the filter of the sampling train. Four weeks later, another set of Method 108 tests was conducted on the same furnace with liquid arsenic acid being added to the batch. Single point monitoring was also conducted at 121°C and 288°C (250°F and 550°F). The test results showed no difference in arsenic emissions from the use of arsenic trioxide versus arsenic acid. The arsenic control efficiency of the ESP was in both cases found to be greater than 97 percent at a flue gas temperature of about 196°C (385°F). The single point tests showed no significant impact of temperature on the solid fraction of arsenic captured by the sampling train. Solid-phase arsenic was greater than 99 percent at both 121°C and 288°C (250°F and 550°F). Therefore, EPA has concluded that the use of arsenic acid would not increase arsenic emissions reduction by particulate control devices.

A second test was performed on a furnace that manufactures glass from a soda-lime recipe, and which operates within a particulate control device. EPA Method 108, as well as single point tests at 121°C, 204°C, and 288°C (250°F, 400°F, and 550°F), were conducted. Individual runs on Method 108 showed that between 66 and 84 percent of the arsenic was in the solid phase. The single point test data showed that for that particular furnace the vapor-phase arsenic content of the vent stream increased with an increase in gas stream temperature above 121°C (250°F). Although the test data show a lack of consistency in the percent of solid-phase arsenic present in the gas stream at 121°C (250°F) and 204°C (400°F), a general trend toward decreasing solid-phase arsenic with increasing temperature is apparent. These data indicate that there is a relationship between gas stream temperature and the percentage of solid-phase arsenic for soda-lime glass furnaces. This relationship is depicted in Figure 1.

Figure 1. Solid/Vapor Arsenic Phase Relationships With Temperature



This finding has significant implications for strategies intended to control inorganic arsenic emissions from soda-lime glass furnaces. Since the amount of arsenic being emitted in the vapor phase cannot be controlled with particulate matter control devices, the achievable arsenic emission reduction will be limited by the percent of the arsenic that is in the solid phase at the operating temperature of the particulate control device. An analysis of the test data from the soda-lime glass furnace indicates that at a flue gas temperature of 288°C (550°F), only 20 to 30 percent of the arsenic emitted would be in solid phase. This percentage of arsenic in the solid phase would be increased to approximately 50 percent if the gas stream were cooled to 210°C(400°F) and to approximately 76 percent if the gas stream is cooled to 121°C (250°F). This analysis is available for review in the docket, or from Mr. R.E. Myers at the telephone number listed at the beginning of this notice.

Based on the above conclusions, EPA is considering three regulatory options for possible application to soda-lime glass furnaces which would be subject to any add-on control requirements that may be included in the final standard. The first option would place no restrictions on the gas stream temperature entering the particulate matter control device at a soda-lime glass furnace. Available imformation indicates that flue gas temperatures for soda-lime glass furnace range from about 232°C (450°F) to 510°C (950°F). The resulting arsenic control achieved by an effective particulate matter control device would, therefore, be substantially less than 50 percent, depending on the temperature. This option would not require any additional cost for cooling the gas stream, and the cost of control would remain comparable with that for glass furnaces producing other types of glass. The capital and annualized costs would be the costs associated with the installation and operation of the particulate control device.

The second option under consideration would be to restrict the gas stresm temperature for a soda-lime glass furance to about 10°C to 20°C (18°F to 36°F) above the acid dew point of the gas stream. This level would avoid acid condensation that can adversely impact the effectiveness of ESPs or fabric filters and increase system maintenance costs by causing premature deterioration of fabric filter bags or corrosion of piping, precipitator plates, and other system components. The temperature range at which the control device should operate would differ for each furnace, since the acid dew point of individual gas streams varies significantly with the batch composition, the moisture in the flue gas, and the fuel used in the glass furnace. Consequently, were this option adopted, the temperature range required by the standard would have to be tailored individually for each facility.

The second option would result in a higher percentage of the arsenic in the gas stream being in the solid phase. Consequently, greater emission reductions would be achieved through the use of particulate matter control devices than are achievable under the first option. However, with this option, a significant percentage of the inorganic arsenic in a gas stream will continue to be in the vapor-phase. This percentage would vary with the temperature or the flue gas from the individual soda-lime furnace. Because arsenic in the vapor-phase cannot be controlled with either a fabric filter or an ESP, this vapor-phase arsenic would be vented to the atmosphere. In some cases, the additional cost of cooling the gases (e.g., with an evaporative cooler) may be completely offset by the reduced cost of the control device resulting from the decrease in the flue gas volume.

The third option would require that the gas stream temperature entering a particulate matter control device be restricted to 121°C (250°F). This represents the lowest temperature at

which data on the solid-phase fraction of inorganic arsenic emissions from soda-lime glass furnaces have been collected, and for which the proportion of solid-phase arsenic can be determined without extrapolation. At this temperature, however, it is expected that most furnace operators will begin to experience problems with acid condensation in the gas stream, as discussed above. Consequently, it will probably be necessary to install a dry scrubber upstream of the particulate control device in order to remove the acidic components of the gas stream.

The capital and annualized costs for a dry scrubbing system are shown in Table 1. The capital costs for these systems for soda-lime glass furnaces are projected to be about $500,000 to $725,000 depending upon the furnace size. The annualized costs range from about $101,000 to $157,000. The dry scrubbing system would increase the capital cost of the control system for various size furnaces by 30 to 70 percent over the cost of an ESP alone. The annualized costs are increased by about 30 to 45 percent.

TABLE 1.—CAPITAL AND ANNUALIZED COSTS OF DRY SCRUBBER SYSTEMS

Furnace Size, Mg/Day (Tons/Day	23(25)	45(50)	91(100)	181(200)
Capital cost, dollars	508,000	530,000	611,000	728,000
Capital recovery, dollars	82,700	86,300	99,400	118,500
Annual O&M costs, dollars	18,400	20,000	26,600	38,400
Total annualized cost, dollars per year	101,100	106,500	126,000	156,900

As stated previously, EPA is considering each of these regulatory options as a potential response to the effect of high gas stream temperatures on the control of inorganic arsenic emissions from soda-lime glass furnaces. EPA is requesting comments or information from any interested parties on these or other regulatory approaches to controlling arsenic from soda-lime glass furnaces. These comments will be considered by the Agency as a part of the rulemaking proceedings for inorganic arsenic emissions from glass furnaces.

In addition to reviewing regulatory options for soda-lime glass manufacturing, EPA is also reevaluating the application of zero production offsets. These offset values were determined during the development of the new source performance standards for glass manufacturing plants (40 CFR Part 60). The emission limits for glass furnaces are expressed in terms of grams of particulate emissions per kilogram of glass produced. The emission levels in this format, which are achievable by best demonstrated technology, vary according to the production level of the glass manufacturing furnace. The purpose of the zero production offsets is to express the emission limits for each type of glass in a mathematical form that represents the emissions achievable at any level of production. The offsets included in the existing NSPS were not intended to apply to glass furnaces as small as some of the existing glass furnaces that may be subject to the NESHAP. The existing zero production offsets applied to such small furnaces may result in emission limits that are higher than would be appropriate for best demonstrated technology. The zero production offset values are being reviewed and new values may be recalculated for inclusion in the promulgated standards. EPA invites comments on the zero production offset values.

Dated: March 9, 1984.

John C. Topping, Jr.,

Acting Assistant Administrator for Air and Radiation.

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ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 61

[AD-FRL-2673-4]

National Emission Standards for Hazardous Air Pollutants Proposed Standards for Inorganic Arsenic

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule; Reopening of Public Comment Period on new information.

SUMMARY: The period for receiving written comments on the proposed national emission standards for inorganic arsenic emissions from low-arsenic throughput primary copper smelters is being reopened. EPA is extending the public comment period for the limited purpose of allowing comment on EPA's analyses of new information concerning arsenic emissions and control costs for low-arsenic throughput primary copper smelters.

DATE: Comments must be postmarked on or before November 5, 1984.

ADDRESS: Comments should be submitted (in duplicate if possible) to: Central Docket Section (LE-131), U.S. Environmental Protection Agency, 410 M Street, SW., Washington, D.C. 20460. Specify the following Docket Number: A-80-40 High-Arsenic and Low-Arsenic Copper Smelters.

FOR FURTHER INFORMATION CONTACT: Ms. Linda Chaput, Standards Development Branch, Emission Standards and Engineering Division (MD-13), Environmental Protection Agency, Research Triangle Park, N.C. 27711, telephone number (919) 541-5578.

SUPPLEMENTARY INFORMATION: On June 5, 1980, EPA listed inorganic arsenic as a hazardous air pollutant under Section 112 of the Clean Air Act. On July 20, 1983, EPA proposed several rulemaking actions in the **Federal Register** (48 FR 33112), one of which was a national emission standard for inorganic arsenic emissions from low-arsenic primary copper smelters. The public comment period for the proposed standards, which was extended twice at the request of members of the public, ended on January 31, 1984.

A number of commenters on the proposed standards for low-arsenic throughput primary copper smelters commented that EPA's estimates of arsenic emissions at these smelters were too high and the estimates of control costs were too low. The information submitted by the commenters was analyzed, and, where necessary, EPA requested addition information to substantiate or clarify that provided during the public comment period. EPA subsequently reevaluated the cost and emission estimates for these facilities using the new information as well as the previously available information on low-arsenic primary copper smelters. As a result, significant changes have been made to some estimates of emissions and control costs that EPA cited at proposal. In addition, one commenter also requested that, if the final standard is based on information not presented at proposal, EPA provide an opportunity to comment on the new information before making a final decision. Because of the changes and EPA's desire to ensure that the standards are based on the most complete and accurate information available, EPA is reopening the public comment period until November 5, 1984. Comments must be limited to EPA's additional analyses of costs and emissions; the comment period for all other aspects of the rulemaking ended January 31, 1984. EPA has placed the relevant comment summaries and the additional analyses in the public docket (Item No. IV-B-32 of Docket A-80-40).

Refinement in Emission and Cost Estimates Since Proposal

Several copper companies commented that EPA had overestimated the amount of arsenic in materials smelted at several of their smelters and, hence, overstated emissions from the smelters. Comments of this type were received for ASARCO's El Paso and Hayden smelters, Kennecott's Hayden, McGill, and Garfield smelters, and Phelps Dodge's Morenci and Ajo smelters.

For each of these smelters, EPA reviewed the information on which the proposal emission estimates were based in light of the comments submitted. Where judged appropriate, revisions to the proposal estimates were made. All of the revised estimates of inorganic arsenic emissions are lower than the proposed estimates with the exception of the Kennecott-Hayden estimates, which are unchanged. The revised emission estimates reflect changes in the assumed arsenic content of smelter feed and the estimated smelting furnace arsenic volatilization rate, smelter configuration, or the emission capture efficiency. The revised arsenic balances show reduced emission rates from the smelting furnaces and converters.

ASARCO, Kennecott, and Phelps Dodge also commented that EPA's estimates of control costs were understated and based on faulty assumptions. These companies submitted their estimates of emission control costs for six of their smelters.

In several cases, EPA obtained from the companies additional information on their cost estimates. EPA reviewed the cost information supplied by the companies and analyzed the difference between these estimates and those made by EPA at proposal. Factors contributing to the cost differences included: (1) site-specific factors requiring modification of the converter secondary hood design; (2) installation of new ductwork and fans rather than reuse of existing equipment; (3) different assumptions regarding the control systems needed; and (4) different assumptions for the annualized cost capital recovery factor (i.e., the interest rate and equipment service life). For each smelter, EPA reviewed the reasonableness of the companies' assumptions and reevaluated the control costs. Because of this reanalysis, the control cost estimates for converter operations and matte and slag tapping operations generally were increased over the estimates presented at proposal.

The revised emission and cost estimates are summarized in Table 1 and 2. Tables 1 presents the revised estimates for applying secondary inorganic arsenic emission controls to converter operations and represents an update of Table III–1 of the preamble for the proposed standards (48 FR 33143). Table 2 presents the control cost and emission estimates for matte and slag tapping operations and represents an update of Table III–2 of the proposal preamble (48 FR 33144).

Reopening of The Public Comment Period

As discussed earlier, EPA is reopening the public comment period for the limited purpose of allowing comment on the revised control costs and emission estimates for low-arsenic throughput primary copper smelters. The bases of the estimates presented in Tables 1 and 2 and the supporting information have been placed in the public docket (Item No. IV–B–32 of Docket A–80–40). To allow time for review of this material and for preparing comments, EPA is reopening the public comment period until November 5, 1984.

List of Subjects in 40 CFR Part 61

Air pollution control, Asbestos, Beryllium, Hazardous materials, Mercury, Vinyl chloride, Arsenic.

Dated: September 7, 1984.

John C. Topping, Jr.,

Assistant Administrator for Air and Radiation.

TABLE 1. REVISED ENVIRONMENTAL AND COST IMPACTS ASSOCIATED WITH SECONDARY INORGANIC ARSENIC EMISSION CONTROL SYSTEMS FOR CONVERTER OPERATIONS

Smelter	Arsenic content of feed, percent	Arsenic feed rate to converters, kilogram per hour	Potential secondary arsenic emissions, milligram per year	Baseline secondary arsenic emissions, milligram per year	Projected secondary arsenic emission reduction, milligram per year	Annualized control costs, $1,000	Cost per unit emission reduction, dollars per milligram arsenic
ASARCO—El Paso [a]:							
(1)	0.5	63.6	59.3	13.3	9.7	379	102,430
(2)	0.5	63.6	24.6	2.4	1.0	379	376,000
ASARCO—Hayden	0.42	53.4	10.2	5.4	4.4	783	181,335
Kennecott—McGill	0.033	0.3	10.1	10.1	0.2	2,201	239,240
Kennecott—Hayden	0.015	7.2	9.5	9.5	5.9	2,140	332,710
Phelps Dodge—Douglas	0.09	4.2	4.1	4.1	3.7	2,943	795,405
Inspiration—Miami	0.033	5.7	1.8	1.8	1.7	2,943	1,731,000
Phelps Dodge—Morenci	0.003	1.8	1.8	1.8	1.7	3,432	2,019,000
Kennecott—Utah (Garfield)	0.144	14.7	1.5	1.5	1.4	2,020	1,448,000
Phelps Dodge—Hidalgo	0.010	2.2	1.2	1.2	1.1	1,745	1,563,000
Tennessee Chemical—Copperhill	0.0004	0.7	0.65	0.65	0.50	1,278	2,203,000
Magma—San Manuel	0.003	0.9	0.55	0.55	0.50	3,976	7,950,000
Phelps Dodge—Ajo	0.015	0.8	0.52	0.52	0.47	1,552	3,323,000
Kennecott—Hurley	0.0003	0.9	0.43	0.43	0.42	2,283	5,487,000
Copper Range—White Pine	0.003	0.5	0.30	0.30	0.27	1,278	4,733,000
Total							

[a] El Paso figures represent secondary arsenic emissions based (1) on an emission factor for uncontrolled converter fugitive emissions of 18% of the arsenic contained in the primary converter process gases and, (2) on a 8.75% emission factor. These figures are estimated by EPA to represent the upper and lower bounds of uncontrolled converter fugitive emissions at ASARCO—El Paso.