GUIDELINE SERIES

OAQPS NO. 3.0-001

May 10, 1973

QUESTIONS AND ANSWERS CONCERNING THE IMPLEMENTATION OF SECTION 110 OF THE CLEAN AIR ACT

U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Air Quality Planning and Standards

Research Triangle Park, North Carolina

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Report on Potential Problems in Priority II and III Regions with Respect to NAAQS. MDAD. 8/14/73. Guidelines.

Guidelines for Evaluation of Suspect Air Quality Data. MDAD. 8/9/73. OAQPS No. 1.2-006. (Superseded by OAQPS 1.2-013, Procedures for Screening, Validating and Reporting Air Quality Data (Draft).)

Air Quality Monitoring Interim Guidance. MDAD. 8/73. OAQPS No. 1.2-007.

Research Triangle Park, North Carolina 27711

NEDS Area Source Reports

April 3, 1973

NADB

NEDS/SAROAD Contacts, Region I-X

Two copies of the NEDS area source reports (computer printouts) for each state are being mailed under separate cover. These reports were prepared in response to the request made at the recent STAPPA meeting for the States to be given an opportunity to review the area source emissions calculations. As with the NEDS point source reports previously distributed, one copy of the area source report for each state should be retained for use within the Regional Office and the other copy sent to the appropriate state agency for review. A letter similar to the enclosed sample memorandum should accompany the area source reports sent to state agencies. Please note that the state agencies should be requested to complete their review of the area source reports and return them to your office by May 21, 1973, if possible. Please forward the State responses directly to us. This timetable will facilitate orderly processing by the National Air Data Branch (NADB) of any changes on additions to the data in the reports that are recommended by the states.

James R. Hammerle
Chief
National Air Data Branch

2 Enclosures

NADB:JRHammerle:jam:rm 647:MU,x491:4-3-73

Enclosure 1

SAMPLE MEMORANDUM TO STATE AGENCIES

Dear Sir:

A copy of the National Emissions Data System (NEDS) area source report is enclosed. As with the NEDS point source report previously mailed, the area source report should be reviewed and returned to the Regional Office with comments and recommendations for correction of or additions to the data shown in the area source report. To facilitate processing by EPA, the report should be returned to this office by May 21, 1973, if possible. If the agency wishes to recommend changes or additions to the data shown in the report, additional information may be noted on the pages of the report itself or enclosed in separate correspondence. In either case, the methods used and information sources contacted to obtain data different from or not shown in the NEDS area source report should be specified.

In general the data shown in the area source reports has been developed using the methods discussed in Chapter 5 of APTD-1135, "Guide for Compiling a Comprehensive Emission Inventory." Data sources used largely consist of literature references and source data available from State Implementation Plan (SIP) emission inventories. When possible, local regulations affecting area sources, such as prohibition of open burning and sulfur in fuel limitations, that were in force during or before 1970 have been taken into account to the extent that the data in the area source reports should be consistent with the emission inventory data shown in the SIP.

An area source data listing is shown for each county or county equivalent, with two counties listed on each computer page. Code numbers identifying counties refer to the SAROAD numbers assigned to counties. (see SAROAD Station Coding Manual, APTD-0907). To read the report, read from left to right across each page line by line. This is the same order as the data fields are grouped on the NEDS area source coding form. Do not attempt to read the columns of data from top to bottom. Calculated area source emissions are shown at the bottom of the right hand column. Do not expect these calculated emissions, obtained through application of the NEDS area source computer program, to agree with the estimated emissions shown on the first two lines of each county listing, which were obtained from the SIP inventory, where given. Procedures used to arrive at the estimated emissions may differ for a variety of reasons, including use of different emission factors, inclusion of different source categories to make up the county emission estimates, and somewhat different methods that may have been used to determine area source quantities by county.

Your agency should concentrate on noting apparent discrepancies between the NEDS data and state data for the area source categories identified on the printout, and supplying additional data, if possible, for the cases where the NEDS printout shows little or no data.

Once again your cooperation and recommendations will be appreciated.

Enclosure 2

EXPLANATION OF THE NEDS AREA SOURCE PRINTOUT

The following points will clarify the use of the area source reports:

1. A listing of area source data is shown for each county or county equivalent. Data for two counties are shown on each computer page. The data are listed in the same order that the data fields appear on the NEDS area source coding form. To properly read the area source printout, read left to right across the page line by line. Do not read the columns from top to bottom.

2. Calculated area source emissions for each county are shown at the bottom of the right-hand column. Emission estimates, where available from the State Implementation Plan (SIP), are shown in the first two lines of each county listing. The calculated emissions will not necessarily agree with the SIP emission estimates for one or more of the following reasons:

a. Different emission factors may have been used for preparation of the SIP's than were used for calculation of emissions via NEDS computer program. The NEDS emission factor file contains emission factors that were developed subsequent to the last publication of AP-42, "Compilation of Air Pollutant Emission Factors."

b. Source categories included in the SIP emission estimates may not have been included in the calculated emissions because no emission factors for certain source categories (i.e., dirt roads traveled, forest fires, coal refuse burning) are presently included in the NEDS emission factor file.

c. Methods used for development of the SIP emission inventory may differ somewhat from methods used by NADB for preparation of area source data. NADB may have also used literature references (such as 1970 U.S. Census of Housing) for determining area source quantities that may not have been available when the SIP inventories were prepared. Also, area source categories not included in the SIP emission inventory may have been added to the area source report using methods outlined in APTD-1135.

3. The data in the area source report has been prepared using the methods discussed in Chapter 5 of APTD-1135, "Guide for Compiling a Comprehensive Emission Inventory." Since in most cases on-site collection of area source data was not possible, literature references, source data where available from SIP's, and data collected by previous EOA contractors for SIP inventories have been most

heavily relied upon for preparation of the NEIS area source reports. Where possible, local regulations affecting area sources, such as prohibition of open burning and sulfur in fuel limitations, that were in force during or before 1970 (and were taken into account for preparation of the SIP emission inventory) have been considered for preparation of the area source reports.

4. No data is shown for some area source categories. A blank data field indicates that no adequate information for determination of area source quantities is known by NADB. State agencies that may have data pertaining to blank data categories should be requested to make such data available to EPA. For the states of Iowa and North Carolina area source data for commercial-institutional and industrial area source fuel consumption is presently not available. This data will be added to the NEIS area source inventory following completion of current source inventory contract work in these states about June 1973. No area source reports have been prepared for New York, American Samoa, and Guam. Data for New York will be available following completion of contract work there (also about June 1973). No plans have presently been formulated to collect area source data for American Samoa and Guam.

TELEGRAPHIC MESSAGE

NAME OF AGENCY	PRECEDENCE	SECURITY CLASSIFICATION
ENVIRONMENTAL PROTECTION AGENCY LAND USE PLANNING BRANCH	ROUTINE ACTION: INFO:	UNCLASSIFIED
ACCOUNTING CLASSIFICATION	DATE PREPARED 4-3-73	TYPE OF MESSAGE ☐ SINGLE ☐ BOOK ☒ MULTIPLE-ADDRESS
FOR INFORMATION CALL		
NAME Ronald A. Venezia	PHONE NUMBER (919) 688-8270	

THIS SPACE FOR USE OF COMMUNICATION UNIT

MESSAGE TO BE TRANSMITTED *(Use double spacing and all capital letters)*

TO: AIR AND WATER PROGRAM DIRECTORS (SEE ATTACHED ADDRESS LIST)
REGIONS I-X

SUBJECT: AIR QUALITY BASELINE AND EMISSION INVENTORY FOR TRANSPORTATION CONTROL MEASURES

A QUESTION HAS ARISEN REGARDING THE INTERPRETATION OF "MORE RECENT AIR QUALITY DATA MAY BE USED..." AS CONTAINED IN SECTION 51.14 (G) OF THE PROPOSED TRANSPORTATION CONTROL MEASURES FEDERAL REGISTER, JANUARY 12, 1973, (38 F.R. 1464.)

IN GENERAL, THE BASELINE AIR QUALITY FOR MODELING OR ROLLBACK HAS BEEN THAT SHOWN IN SIPS SUBMITTED JANUARY 30, 1972. WHERE VALID MEASUREMENTS (INSTRUMENT LOCATION, OPERATION AND CALIBRATION ARE PROPER) ARE OBTAINED SUBSEQUENTLY THAT ARE HIGHER THAN THIS, THE BASELINE AIR QUALITY FOR THE TRANSPORTATION CONTROL MEASURES MUST BE THE HIGHER VALUE. IF THIS VALUE IS NOT USED, THERE MUST BE ADEQUATE JUSTIFICATION OF WHY IT IS NOT REPRESENTATIVE. THE FACT THAT METEOROLOGICAL CONDITIONS WERE LESS FAVORABLE IS NOT ACCEPTABLE. FOR EXAMPLE, AN ACCEPTABLE JUSTIFICATION WOULD CITE ONE TIME EVENTS OR UNIQUE SITUATIONS SUCH AS FIRES, PARADES, OR HEAVY TRAFFIC FROM A DETOUR NEAR THE MEASUREMENT STATION DURING THE MORE RECENT HIGHER MEASUREMENTS.

THE TIME OF OCCURRENCE OF THE MAXIMUM POLLUTANT

SECURITY CLASSIFICATION	PAGE NO.	NO. OF PGS
	1	3

STANDARD FORM 16
REVISED AUGUST 1967
GSA FPMR (41 CFR) 101-35.306

☆ GPO 1967 O—309-458 (9-11)

TELEGRAPHIC MESSAGE

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		☐ SINGLE ☐ BOOK ☒ MULTIPLE-ADDRESS
FOR INFORMATION CALL		
NAME RONALD A. VENEZIA	PHONE NUMBER (919) 688-8270	

THIS SPACE FOR USE OF COMMUNICATION UNIT

MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)

TO:

CONCENTRATIONS ALSO CAN PRECLUDE ITS USE. FOR INSTANCE, IF THE OXIDANT PEAK VALUE OCCURS AT MIDNIGHT, ITS VALIDITY FOR A ROLLBACK BASELINE WOULD BE QUESTIONABLE. IN GENERAL, WHILE IT IS NOT INTENDED TO "PENALIZE" THE STATES, THE HIGHEST POLLUTANT CONCENTRATIONS MEASURED MUST BE USED UNLESS THE USE OF LOWER VALUES CAN BE DEFENDED BY THE ABOVE OR OTHER CRITERIA.

IN THE EVENT THAT THE MORE RECENT AIR QUALITY MEASUREMENTS SHOW A LOWER CONCENTRATION OF THE POLLUTANTS IN QUESTION, THE HIGHER VALUE, AS SHOWN IN THE SIP MUST BE USED UNLESS THE CHANGE CAN BE CORRELATED WITH A NEW EMISSIONS INVENTORY. AN EXAMPLE WOULD BE THAT A LARGE UNCONTROLLED SOURCE, STATIONARY OR MOBILE, WAS CONTROLLED AND IS REFLECTED IN PROPORTIONALLY LOWER POLLUTANT CONCENTRATIONS.

A RELATED QUESTION HAS ARISEN WHERE TWO OR MORE URBAN AREAS ARE IN ONE AQCR BUT ARE IN SEPARATE STATES. SINCE THE SIP REPRESENTS THE STRATEGY FOR THE STATE TO ACHIEVE THE STANDARDS, THE BASELINE AIR QUALITY VALUES MUST BE THOSE ESTABLISHED FOR EACH STATE. A PROBLEM MAY ARISE WHERE THE URBAN AREAS ARE IN CLOSE PROXIMITY TO THE STATE LINE BUT HAVE WIDELY DIFFERING AIR QUALITY VALUES. REGIONAL OFFICES SHOULD APPRISE STATE REPRESENTATIVES OF THE NECESSITY OF USING AIR QUALITY BASELINE VALUES THAT

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	2	3

TELEGRAPHIC MESSAGE

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FOR INFORMATION CALL		
NAME RONALD A. VENEZIA	PHONE NUMBER (919) 688-8270	

THIS SPACE FOR USE OF COMMUNICATION UNIT

MESSAGE TO BE TRANSMITTED *(Use double spacing and all capital letters)*

TO:

ARE TRULY REPRESENTATIVE. GENERALLY, THE SUMMER 1971 CO AND O_X DATA WILL BE THE MOST ACCURATE. THESE AND OTHER AIR QUALITY DATA, SUCH AS REQUESTED BY OD/OAQPS MEMO "AIR QUALITY DATA" DATED MARCH 16, 1973, ARE BEING COMPILED UNDER THE STORAGE AND RETRIEVAL OF AEROMETRIC DATA (SAROAD). DR. JAMES R. HAMMERLE, CHIEF, NATIONAL AIR DATA BRANCH, SHOULD BE CONTACTED FOR ANY FURTHER QUESTIONS. HIS NUMBER IS: FTS (919) 688-8491.

STATES SHOULD BE ENCOURAGED TO PRESENT CHANGES IN AIR QUALITY BASE-LINES AND NEW EMISSION INVENTORIES TO THE PUBLIC AT HEARINGS WHERE THE NEW VALUES WILL SUBSTANTIALLY INFLUENCE THE TRANSPORTATION CONTROL MEASURES OR ATTAINMENT DATE OF THE STANDARDS, I.E., A JUSTIFIED EXTEN-SION UP TO TWO YEARS, BEYOND MAY 31, 1975. FURTHER, THE STATE SHOULD SHOW THAT THERE IS CORRELATION WITH A REVISED EMISSIONS INVENTORY AND THE TRANSPORTATION CONTROLS SUPPORTING DATA SUMMARY, SIMILAR TO THAT PRESENTED IN APPENDIX N TO FEDERAL REGISTER, JANUARY 12, 1973, (38 F.R. 1464.) THE QUESTION OF WHETHER A PLAN REVISION IS REQUIRED WILL DEPEND ON WHETHER THE ABOVE REQUIRES A REVISION TO THE ACHIEVEMENT DATE OF THE STANDARDS OR TRANSPORTATION CONTROL MEASURES.

RONALD A. VENEZIA, CHIEF
LAND USE PLANNING BRANCH

SECURITY CLASSIFICATION		
	PAGE NO. 3	NO. OF PGS. 3

STANDARD FORM 14
REVISED AUGUST 1967
GSA FPMR (41 CFR) 101-35.306

* GPO : 1967 OF—300-456 (9-11)

ENVIRONMENTAL PROTECTION AGENCY LAND USE PLANNING BRANCH	ROUTINE ACTION: INFO:	UNCLASSIFIED
ACCOUNTING CLASSIFICATION	DATE DISPATCHED 4-3-73	TYPE OF MESSAGE [ ] SINGLE [ ] BOOK [X] MULTIPLE-ADDRESS
FOR INFORMATION CALL NAME RONALD A. VENEZIA	PHONE NUMBER (919) 688-8270	

THIS SPACE FOR USE OF COMMUNICATION UNIT

MESSAGE TO BE TRANSMITTED (Use double spacing and all capital letters)

TO: AIR AND WATER PROGRAM DIRECTORS (SEE ATTACHED ADDRESS LIST)
REGIONS I-X

SUBJECT: EFFECTIVE DATE OF STATE IMPLEMENTATION PLAN FOR ACHIEVING NATIONAL AMBIENT AIR QUALITY STANDARDS

QUESTIONS HAVE ARISEN REGARDING THE PROCEDURE REQUIRED TO SATISFY THE REQUIREMENTS OF EPA AND THE U.S. DISTRICT COURT OF APPEALS ORDER NUMBERS 72-1522, ETC., OF JANUARY 31, 1973, IN NRDC V. EPA, WHERE THERE IS JUSTIFIABLE GROUNDS FOR EPA TO GRANT AN EXTENSION (UP TO TWO YEARS) FOR ATTAINMENT OF THE PRIMARY STANDARDS.

THE BASIC PLAN SUBMITTED SHOULD SHOW THE STRATEGIES FOR ACHIEVEMENT OF THE PRIMARY STANDARDS BY MAY 31, 1975. WHERE THESE MEASURES ARE VERY STRINGENT WITH A SEVERE PUBLIC IMPACT, ALTERNATES WHICH ARE MORE REASONABLE AND ALLOW FOR IMPLEMENTATION LEAD TIMES, SUCH AS PROCUREMENT OF BUSES, ETC., ALSO SHOULD BE PRESENTED. THE REQUEST AND JUSTIFICATION FOR THE EXTENDED TIME (UP TO TWO YEARS) TO ACHIEVE THE STANDARDS BY THE ALTERNATE SHOULD BE A PART OF THE PLAN. THE ALTERNATE PLAN COULD BE WRITTEN IN SUCH A MANNER AS TO BE CONTINGENT UPON APPROVAL OF THE EXTENSION BY THE ADMINISTRATOR. THE BASIC PLAN AND THE ALTERNATE COULD BE PRESENTED TOGETHER AT PUBLIC HEARINGS TO PRECLUDE A SECOND SET OF HEARINGS ON THE ALTERNATE AND REQUEST FOR THE EXTENSION OF THE EFFECTIVE

SECURITY CLASSIFICATION

LAND USE PLANNING BRANCH

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: Consideration of "Reactive" Hydrocarbons in Transportation Control Plans

DATE: April 6, 1973

FROM: SASD/LUPB

TO: Air and Water Program Directors
Regions I-X

Refer: OD/OAQPS Memo "Criteria for Review of Transportation Control Measures," dated January 30, 1973.

At the meeting in Chicago, Illinois, March 20, 1973, of the regional transportation control and land use representatives, it was requested that the "guidance" provided in the referenced memo be expanded with respect to subject.

The suggestions regarding using "reactive" and "highly reactive" hydrocarbons as the basis for compiling the emission inventory and strategies for reducing oxidant levels to the standards are still considered valid, i.e., "These are acceptable if there is a measure of credibility and definition to these approaches and if they are adequately explained in the plan." It is recognized that complying with this requirement poses several problems and there is some controversy regarding the definition of the reactivities of particular organic hydrocarbon solvents. Problems have arisen with the suggestions and definitions in Appendix B to the Federal Register of August 14, 1971, (36 FR 15486) since the solvent control would require substitutes beyond those reasonably available. A revision is underway, however, this notice of proposed rule making (NPRM) will not be published in time for reference or guidance of current transportation control measures. Consequently, it is suggested that where appropriate, as discussed below, Los Angeles County Rule 66 type regulations, similar to the enclosure, be employed for control of "reactive" hydrocarbons.

The review of SIPs submitted to date indicates that only Los Angeles County itemized their hydrocarbon inventory in detail. The other AQCRs listed only total hydrocarbons. Consequently, an approvable plan based on "reactive" or non methane hydrocarbons, must contain sufficient data to justify the validity of the inventory and the basis for any assigned reactivities of the various hydrocarbons. Where this is accomplished, full credit for the strategies can be given and Rule 66 type regulations accepted in lieu of Appendix B. Otherwise, the hydrocarbon inventory should be based on total hydrocarbons. In the event EPA must propose/promulgate control measures, the Rule 66 type regulations should be considered -- similar to the enclosure.

There are only five hydrocarbons that are truly of zero or low photochemical reactivity. They are: methane, ethane, propane, acetylene, and benzene. The occupational exposure hazard and explosive nature of benzene preclude its being considered as a lower reactive solvent substitute. Thus, even following Rule 66 type regulations does not preclude emissions of hydrocarbons that in the presence of sunlight and nitrogen oxide will produce oxidants. However, it may be possible to successfully use this type control where the topography, meteorology and demography are more favorable than the California Southcoast basin. Here, the oxidant values are apparently going down in the Los Angeles CBD but rising in Riverside which is generally downwind about 70 miles away. It is also noted that high oxidant readings in the Southeast Dessert Region are thought to be a result of spill-over from the Los Angeles basin. Thus the employment of Rule 66 type regulations should be considered on an individual basis for each AQCR.

Ronald A. Venezia
Chief
Land Use Planning Branch

Paragraphs 4.6 and 4.7 would replace the present paragraph 4.6 in Appendix B of 40 CFR 51.

4.6 Organic solvents. Except as required in paragraph 4.7 the emission of photochemically reactive solvent into the atmosphere can be limited to 40 pounds in any one day or 8 pounds in any one hour from any process equipment unless such discharge has been reduced by at least 85 percent. Emissions of organic solvents into the atmosphere during the first 12 hours after removal from the equipment are included in determining allowable emissions.

Except as required in paragraph 4.7, the emission of photochemically non-reactive materials can be limited to 3,000 pounds in any one day and 450 pounds in any one hour from processing equipment unless such discharge has been reduced by at least 85 percent. Emissions of organic solvents into the atmosphere for the first 12 hours after removal from the equipment are included in determining allowable emissions.

The provisions stated above are not applicable to:

(a) The manufacture of organic solvents, or the transport or storage of organic solvents or materials containing organic solvents.

(b) The spraying or other employment of insecticides, pesticides, or herbicides.

(c) The employment, application, evaporation, or drying of saturated halogenated hydrocarbons or perchloroethylene.

Organic solvents are organic diluents and thinners which are liquids at standard conditions and which are used as dissolvers, viscosity reducers, or cleaning agents. Controls are not necessary for materials which exhibit a boiling point higher than 220°F at 0.5 millimeter mercury absolute pressure or have an equivalent vapor pressure unless they are exposed to temperatures exceeding 220°F.

Photochemically reactive organic solvents include any material with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified below or which exceed any one of the following individual percentage composition limitations, referred to the total volume of solvent:

(a) Combination of hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones having an olefinic or cyclo-olefinic type of unsaturation: 5 percent

(b) Combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent

(c) Combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene, and toluene: 20 percent.

4.7 Baking and curing of organic compounds. The emission of organic compounds can be limited to 15 pounds in any one day and to 3 pounds in any one hour from equipment in which the organic compounds come into contact with flame or are baked, heat-cured, or heat-polymerized in the presence of oxygen unless the discharge has been reduced by at least 85 percent by adsorption or incineration systems or equivalent devices.

Baking and curing operations may be exempted from control if the gases do not come in contact with flame and

(a) the volatile content of which consists of water and not more than 20 percent by volume of organic solvent which is not photochemically reactive, or

(b) the organic solvent content of which does not exceed 20 percent by volume and which is not photochemically reactive and more than 50 percent by volume of such volatile material is evaporated before entering a chamber heated above ambient application temperature, or

(c) the organic solvent content of which does not exceed 5 percent and the volatile component is not photochemically reactive.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning & Standards

SUBJECT: Lead Time and Steps Necessary to Implement an Inspection/Maintenance and/or Retrofit Program

DATE: April 11, 1973

FROM: LUPB

TO: Regional Transportation Control and Land Use Representatives

Guidance on the subject was requested at the meeting on SIP's held in Chicago on March 20, 1973. These programs are inherent in the requirements of the proposed Transportation Guidelines, Federal Register (38 FR 1464) dated January 12, 1973 Appendix N Sections 3(c) and 4(c). Representatives of MSPCP were requested to outline the anticipated steps and approximate times to implement these control strategies. The Emissions Control and Testing Division responded by the attached memo "Clarification of Steps Necessary to Implement a Retrofit or Inspection/Maintenance Program", dated March 23, 1973. At approximately the same time there were changes being made to the final rule making draft of the above "Guidelines", particularly Appendix N. The attached memo from MSPCP "Rationale for Changes in Appendix N re Inspection/Maintenance", March 26, 1973, discusses some of the changes. Subsequently there have been revisions to the loaded and idle tests' reduction effectiveness percentages shown in paragraphs 3(2)(i) and 3(2)(ii) of Appendix N.

Because of the changes and the fact that the above ECTD memo addressed the question more from a standpoint of "certification" procedures, which are necessarily somewhat formal and lengthy, meaningful firm suggestions applicable to a specific State's problem have not been forthcoming. Further, recent data from the National Academy of Sciences and testimony at hearings regarding extension of the 1975-76 motor vehicle standards casts some doubt on the advisability (at least in the near-term) of some of the more "popular" retrofit devices and approaches as stated in NAS letter of Feb. 15, 1973, also attached.

The minimum time frame estimated by ECTD of 33 months would be applicable for the most complicated retrofit devices where the state has had no previous involvement. The time can be shortened by less formal evaluation approaches and any previous state experience. Approval of state plans can be made on the basis of their own tests or those of private laboratories. Problems arise where EPA must promulgate a plan that contemplates retrofit. It is not considered that the retrofit devices must be "certified" by EPA, at least if the Los Angeles plan approach is used. Thus, the minimum time could be reduced to 24 to 30 months for retrofit implementation.

The ECTD estimated minimum frame time of 24 to 30 months for inspection programs is based on no prior state involvement and contemplates a loaded emission tests. The most important milestone is the legal authority to conduct the mandatory inspections. A review of the Arizona plan indicates they received their legal authority in May 1972, expect to have 4 loaded inspection lanes operational in January 1974 and the capacity to handle 80% of the states motor vehicles by July 1975. It should be noted that this state's plan was preceded by considerable ground work and two years testing with a mobile van.

In general, the emissions inspection hardware, both for idle and loaded, appear to pose no further problem. However, the facilities for a loaded test and the legal authority and administrative implementation can cause extensive delays. It is considered that an idle test through franchised garages/service stations could be operational by May 1975, if legal authority is obtained this year.

It is expected the final rule making version of the above Transportation Control Guidelines will be available in the near future and will be expedited to the Regional Transportation Control Representative.

It should be noted that the capability of each state to implement emissions inspection and/or retrofit programs is dependent on its unique situation and status of legal authority, pilot programs, experience on current requirements, etc. Thus, the Regions should assess these factors, which in some instances may justify extension requests, in the review of plans. The appraisal of the local capability becomes even more important when EPA proposed/promulgated plans are being considered.

Ronald A. Venezia
Chief
Land Use Planning Branch

Enclosures (3)

Research Triangle Park, North Carolina 27711

International Pollution Impact

April 11, 1973

Ronald A. Venezia

Air and Water Program Directors
Regions II, V, VI, and IX

States in your region may be encountering, or have the potential for encountering, problems with pollutants generated in neighboring countries. The Land Use Planning Branch would like to document existing or potential problems in states in your region. This documentation should include information such as available air quality data, emission inventory data, description of industrial cites in the neighboring country which affect air quality, the extent of air quality impact if known, and any other pertinent facts bearing on the problem.

Information should be forwarded to this office for coordination of problems in all Regions. Action will be initiated by LUPB to provide a solution. If additional information is required, please contact me.

Ronald A. Venezia
Chief
Land Use Planning Branch

LUPB:RCCLARK:sag:mu 962:x291:4/11/73.

MAINTENANCE OF NATIONAL AMBIENT AIR QUALITY STANDARDS

Complex Source Regulations

Office of Air Quality Planning and Standards
Control Programs Development Division
Standards Implementation Branch

June 1973

COMPLEX SOURCE REGULATIONS

On April 18, 1973, the EPA proposed amendments to 40 CFR 51 designed primarily to expand the scope of review prior to construction or modification of buildings, facilities, and installations for both direct and indirect air pollutant source emissions. The EPA received over 70 sets of comments on the proposed regulations. These comments were received from a wide spectrum of interest groups; official agencies (Federal, State, and local), environmental groups, trade associations, contractors, and private citizens. The EPA promulgated the regulations, with appropriate modifications on June 18, 1973. The schedule of events is attached (Table 1).

The EPA must now proceed to work with the States in the development of approvable plans that are to be submitted by August 15, 1973. The milestones involved between now and August 15 are given in Figure 1.

The State should be urged to submit at least six (6) copies of the plan to the appropriate Regional Office on or before August 15. Figure 2 illustrates the review and processing procedures to be employed in the approval/disapproval and proposal/promulgation process. In view of the short scheduled imposed by the Court order, it is urgent that this procedure be followed.

A draft of available guidelines was prepared and distributed by SIB to assist the Regional Offices in working with State agencies in this matter. The guidelines are available as of this date and are attached. Additional work is underway to provide improved analytical procedures and guidance in implementing these maintenance (complex source) provisions. As guidelines are developed, they will be distributed by the Regional Office as expeditiously as possible.

Guidelines for Implementing EPA Requirments for Maintenance of Standards

This document is intended to assist the Regional Offices in providing guidance to States for developing implementation plan revisions to comply with the recently promulgated (6/15/73) regulations involving maintenance of the national standards. As indicated in the promulgated regulations, States must submit these plan revisions by August 15, 1973. The new requirements 40 CFR Part 51 are discussed in order below.

1. § 51.11(a)(4) Legal authority

Based upon a poll of state attorney general's offices by the Regional Counsels, it si estimated that a majority of states will not have adequate legal authority to prevent construction of indirect sources of emissions if they would result in a violation of an ambient air quality standard. States are advised to consider, in addition to statutes pertaining to environmental protection, other laws which may provide the necessary legal authority. Such laws include land use controls and authority for local zoning. In the plan submission, States are advised to cite their authority and include copies of applicable statutes.

2. § 51.12 Control strategy: General paragraphs (e), (f), (g), (h)

Guidelines for compliance with the provisions for maintenance of standards under this section are under preparation and will be available at a later date. The major submittal required by these paragraphs is not due for 2 years.

3. § 51.18 Review of new sources and modifications paragraphs (a)(b)(c)

Several techniques are attached which are designed to enable the reviewing agency to determine which facilities are to be reviewed and to perform the analysis of carbon monoxide impact from a particular facility. States are not precluded from requiring the developer of a facility to perform his own analysis of impact on air quality from his facility. To lessen the agency's workload, such a procedure is encouraged. In those cases where the burden an analysis is placed on the developer, the State should provide an approved technique of impact analysis to be

used by the developers.

Technique for determination of the necessary level of analysis (Tab A)

This scheme is in the form of a decision tree which enables one to determine the level of analysis needed for a particular facility. Required information to make decisions in this scheme include current air quality, both on the site and in vicinity of the facility, and pertinent meteorological data. Presented as an appendix to this scheme is a technique for estimating air quality concentrations downwind and in outlying areas from a "downtown" air quality measurement site.

Technique for estimation of the carbon monoxide air quality impact from an indirect source (Tab B)

This technique, developed by the Source-Receptor Analysis Branch, incorporates the graphical relationship between emission density, area size and carbon monoxide concentrations which appeared in Appendix O to the Federal Register regulations of 6/15/73.

4. § 51.18, paragraph (d)

The purpose of this paragraph is to ensure that the new facility is not inconsistent with any applicable control strategy, even though the new facility may not result in a violation of an ambient air quality standard. As an example, suppose a facility is to be built in an area for which a transportation control strategy exists. An analysis of the facility indicates that the air quality impact will not result in a violation of an ambient air quality standard. If, however, the facility will cause a significant disruption in traffic patterns which were assumed in the transportation control strategy, then the facility would essentially change that control strategy. Either the facility as designed would have to be disapproved, or the control strategy would have to be revised to reflect the resulting traffic pattern.

An apparent shortcoming of the review process is the level of accuracy of the techniques used to predict the air quality impact of an indirect source of

emissions. If an analysis indicated that a particular facility would not result in a violation of an ambient air quality standard, yet a violation occured after the facility is put into use, there is obviously no method under the new source review system for correcting the problem. In such an instance the proper mechanism for addressing the problem would be to revise the control strategy to curtail mobile sources, either at the particular facility or in general in an area. This choice of control would depend on whether the violation of the standard were directly attributable to one particular facility or to a group of facilities.

5. § 51.18 paragraph (e)

This paragraph requires that the agency responsible for meeting the requirements of § 51.18 be identified and that if a non-air pollution control agency is given that responsibility, that agency must consult with the congnizant air pollution control agency. The plan should include a discussion of how this will be done, including the weight given to comments from the air pollution control agency.

6. § 51.18 paragraph (f)

An illustration of a technique for determining the sizes of types of facilities which should be s[illegible] to review is given in Tab C. Item 1 of the proposed Appendix O which appeared in the Federal Register of April 18, 1973, suggested sizes of shopping centers and sports stadiums, which should generally not be exempted from review. Their sizes were chosen because they might cause a violation of ambient air quality standards regardless of their location. These were shopping centers with gross leasable area greater than 800,000 square feet and sports stadiums with seating capacity greater than 25,000. The deviation of these numbers was dependent in part upon a technique which incorporated assumptions which were subsequently found to be questionable. Consequently, States are advised to ignore those proposed sizes and rely on techniques provided in this guideline for choosing facility sizes which will be subject to review.

7. § 51.18 paragraph (g)

Administrative procedures can be depicted in a flow diagram which indicates time intervals between steps. Such a flow diagram is presented in Tab D. There were a number of comments on the proposed regulations indicating that EPA should require the States to act on an application to construct within a certain period of time. While EPA has no authority to do this, it does seem reasonable that the review procedures include such a provision.

The plan should also provide a detailed list of the information which the developer must supply to the reviewing agency. This can be submitted in a sample application form. Item 2 of Appendix O of Part 51 lists some of the information which should be supplied by the developer in order that an evaluation of the air quality impact of a facility can be determined.

8. § 51.18 paragraph (h)

The State should provide a discussion of how it will provide public notification of the availability of both the application for approval to construct and the analysis of the application, including proposed approval or disapproval. The State might include a copy of a sample notice. The notice might take the form of a legal notice together with a display advertisement. To help defray the cost of such advertisement, the States might consider charging a permit a permit application fee, or billing the applicant directly for advertisement if these practices are within the legal constraints of the agency.

General

1. As with all plan revisions the State must follow the procedures pertaining to public notice, public hearing and plan submission as indicated in 40 CFR Part 51, section 51.4, 51.5 and 51.6.

2. If the implementation of the new requirements will significantly increase the funding and manpower requirements of an angency, States are advised to revise information which they submitted pursuant to § 51.20 (Resources). If agencies other than the air pollution control agency are given responsibility for the

the review process, the resources which those agencies will allocate for this purpose should also be submitted.

3. The States may want to include in their regulations provisions for conditional permission for construction of indirect sources. Suggested conditions which can be imposed on the developer include:

- ambient air quality sampling in the vicinity of the proposed site prior to beginning construction,
- estimation of the existing air quality in the vicinity of the proposed site, prior to construction,
- provision for adequate public transportation to offset an increase in mobile source activity which would result in a violation of a standard.

4. For areas where ambient air quality standards are presently being exceeded, but the air quality concentrations projected for the area will be below the standard at the time the facility is put into operation, then the facility should be permitted, if it does not result in a violation of standards. Air quality projections found in state implementation plans can be used for this determination.

TAB A - Example Screening Techniques for Review of Indirect Sources

One possible approach to implementing the indirect source review procedures is to establish a screening technique which can be used to determine the depth of analysis a source should receive. The major parameters in developing such a technique would be the existing air quality at or near the proposed location of the source and the relative size of the proposed source. An example of such a technique is illustrated in general terms in Figure 1. The terms and parameters used in Figure 1 are discussed below:

1. Measured or estimated air quality at proposed site. States may wish to require a developer to conduct air quality monitoring in order to accurately define existing air quality. Alternatively, Appendix I presents a technique for estimating air quality at agiven site using air quality data from another location in the city.

2. Indicator of induced on-site air quality.

For a shopping center or sports complex, this parameter would likely be the size of a parking area. However, the same size parking lot at different types of indirect sources may likely result in different predictors of on-site air quality due to the different operating characteristics of cars (e.g., relatively uniform traffic flow during the day at a shopping center versus short-term peaks at a sports complex). Using average conditions of assumptions involving the operation of vehicles within parking lots, the size of a shopping center parking lot can be roughly related to on-site air quality (see Tab C). For example, the assumptions in Tab C indicate that a shopping center parking lot of approximately 40 acres would correspond to on-site air quality that is about 60 percent of the 1-hour standard for CO.

3. Full analysis.

This analysis involves the evaluation of on-site air quality using the techniques of Tab B and as well as an evaluation of the impact of on-site emissions on air quality "hot spots" in the vicinity of the source. This latter analysis can be performed using the area source modeling technique described on page 39 of Turner's workbook.

Where the off-site emissions may be significant (e.g., congestion on highways leading to the source), the imapct should be analyzed using the line source calcu-tions on page 40 of Turner's workbook or the HIWAY program.

4. On-site analysis

The on-site analysis can be relatively simple in cases where existing air quality is very low (i.e., background and nearby source effects are negligible). In such cases, the graphical techniques in Tab B can be used for evaluation. Where background values are important, the full 8-step procedure in Tab B should be followed.

Appendix II describes computer modeling techniques which are, or will be, available to Regional Offices to assist States in evaluating the impact of new sources.

Appendix III presents a brief abstract of each of the modeling references listed in the May 15, 1973, Federal Register.

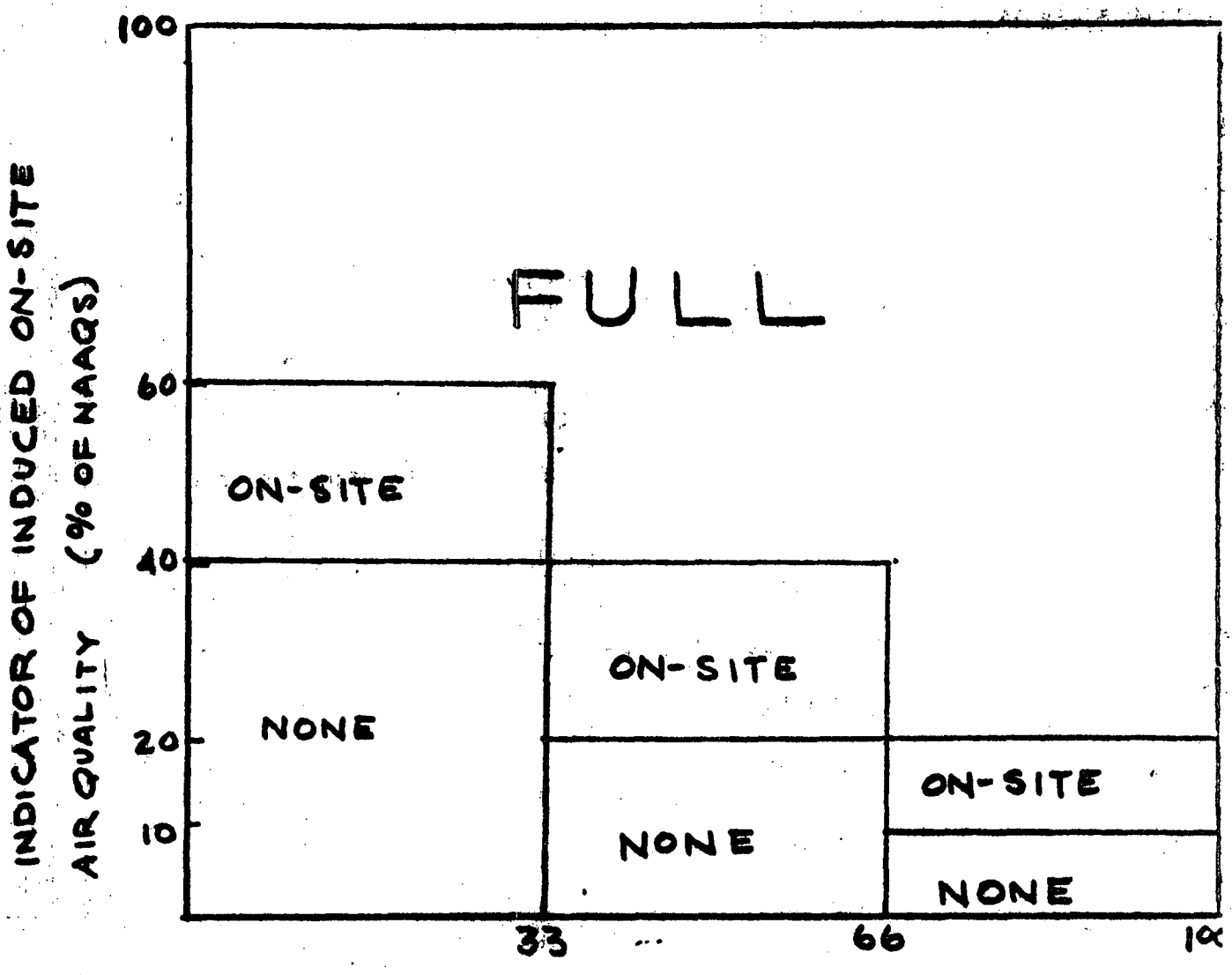


FIGURE 1

DETAIL OF ANALYSIS REQUIRED AS A FUNCTION OF SOURCE SIZE AND EXISTING AIR QUALITY

APPENDIX I

Meteorological basis of "Nearby Point of High Concentration" Rule

This rule is intended for the case where measured or calculated air quality data at the site of the proposed development are not available. In that case, if there is an adequate emission inventory and meteorological information and a computer capacity, the best approach is probably to make a diffusion model estimate of the air quality at the site, and a second estimate of air quality in the site and its surroundings after the complex source is in operation. Comparing these, the impact of this source can be determined. However in most situations this will not be a practical alternative, because the agency making the evaluation will not have those capabilities, nor will it have the time to make this kind of evaluation for each site if it had the capabilities.

Therefore the objective of this rule is to obtain a simplified substitute for that procedure, which will give substantially the same results that such a thorough study would. Since this procedure is not to be used to reject any project, but only to decide what level of further study is needed, it should be somewhat conservative, i.e. err on the side of predicting higher rather than lower concentrations.

Because the reviewing agency probably does not have a map with pollutant isopleths of concentration under the worst conditions, but probably does not have point values from its downtown measuring stations, the question we are asking is "If the concentraiton at the city center is A, how much is the concentration B km away?"

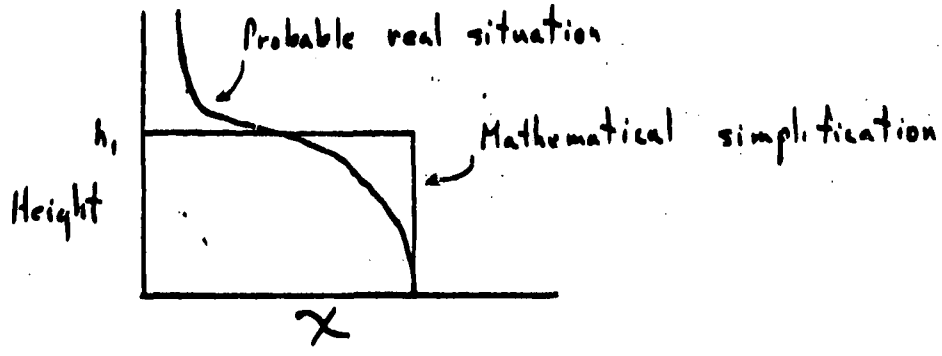
The procedure used is to convert the air flow over the city center into an equivalent line source, which can then be used in the well-known line source solution (Turner p. 40). This indicates how the air with the highest measured concentration (normally the city center) dilutes as it flows at low wind speed toward an outlying location where the complex source will presumbably be located. For a line source (normally a highway) the source strength (q) is normally specified in gm/sec m. The flux of a pollutant across a line perpendicular to the wind at any point is:

$$q = \text{flux} = \int_0^\infty u\,\chi\,dh \qquad (1)$$

where u is the wind speed, χ the concentration, and h the height above the ground. If q is substituted for the source strength in Turner's line source equation 5.18, we have

$$\chi_{downwind} = \frac{2\int_0^\infty u\,\chi\,dh}{\sqrt{2\pi}\;u\,\sigma_z}\exp\left[-\tfrac{1}{2}\left(\frac{H}{\sigma_z}\right)^2\right] \qquad (2)$$

To simplify this, assume that the wind speed is independent of height, which brings it out of the integral sign, and allows it to cancel the wind speed in the denominator. Next, refer to the sketch below, which shows the probable height-concentration plot for a typical city-center pollutant. The pollutant concentration should be practically uniform for the first few tens of meters above ground level, and then decrease rapidly. To simply the integration, this real pattern is replaced with the rectangular pattern shown.



The rectangular pattern allows us to replace the integral with χ_{ground} times h_1. We can also say that H in equation 2 is $1/2h_1$ because H must represent the average emission height. Making these substitutions, and solving for ~~ground~~ χ_c/χ_g (i.e. the downwind concentration over the city center concentration:

$$\frac{\chi_d}{\chi_g} = \frac{2}{\sqrt{2\pi}} \frac{h_1}{\sigma_z} \exp\left[-\frac{1}{2}\left(\frac{h_1}{2\sigma_z}\right)^2\right] \qquad (3)$$

To evaluate the probable values of this function, use D stability and the σ_z vs distance relation from Turner's workbook. Several values of h_1 have been used, to show the sensitivity of the answer to this estimated parameter.

The values obtained using equation 3 are shown in Table 1. Table 1 shows that at a distance of 1 km and further the exponential term is practically 1 so that the results are approximately $0.797\ h_1/\sigma_z$. At 1 km the ratio varies from 0.25 to 0.67 for h_1 assumed from 10 to 30 m, etc.

This procedure somewhat underestimates the concentration at the suburban location, because it assumes that the source strength between the city center and the suburb is negligible. Therefore the results should be adjusted upward to take this into account.

TABLE 1

Computed Values According to Eq(3)

Downwind Distance Km		0.1	0.5	1.0	3.0	5.0
σ_z (m)		37	18	32	65	88
h_1/σ_z	for h = 10	3.19	0.55	0.313	0.154	0.113
	h = 20	5.40	1.11	0.625	0.307	0.227
	h = 30	8.1	1.67	0.94	0.462	0.342
$1/2(h/2\sigma_z)^2$	for h = 10	1.26	0.038	0.012	0.003	0.0016
	h = 20	3.66	0.154	0.049	0.012	0.0065
	h = 30	82	0.35	0.110	0.026	0.014
$\exp[-1/2(\frac{h_1}{2})^2]$	for h = 10	0.283	0.962	0.988	0.997	0.998
	h = 20	0.025	0.857	0.952	0.998	0.993
	h = 30	0.36	0.704	0.895	0.974	0.986
$x/x_{gr} = 0.797\ (\frac{h_1}{o_2})[\exp 1/2\ (\frac{b}{z_0})]$						
	for h = 10	0.72	0.422	0.246	0.122	0.089
	h = 20	0.10	0.759	0.595	0.242	0.179
	h = 30	0	0.938	0.671	0.340	0.269

APPENDIX II

UNAMAP

The Users Network for Applied Modeling of Air Pollution (UNAMAP) is a system of diffusion models which can be accessed on interactive terminals (time-share option) at the EPA regional offices as well as the Research Triangle Park offices. Three models are presently available on this system:

1. APRAC. This is a short-term diffusion model that calculates the automotive contribution to carbon monoxide concentrations. The model was developed by Stanford Research Institute (SRI). A users manual is available on the model (120 pages).

2. HIWAY. This is a line-source model which calculates pollutant concentrations in the vicinity of a roadway. This model is self-documenting in that all the necessary instructions appear on the terminal telling the user what to do next.

3. CDM (Climatological Dispersion Model). This is a multiple-source urban diffusion model. It is a refinement of AQDM, and is on-line. A users manual will be released in the near future.

Models available for placing on UNAMAP in the near future:

1. Several point source models described in the "Workbook of Atmospheric Dispersion Estimates" have been programmed. With a statement of requirement and a modest amount of reprogramming, they can be placed on UNAMAP in the near future.

2. A 24-hour point source model is available but needs to be documented and reprogrammed before being placed on UNAMAP.

3. The Real-Time Air Quality Modeling (RAM) is a realtime area-point source model which is yet to be documented. It is a candidate for UNAMAP in 4-8 months.

4. The GEOMET multiple source, short-long term model is due for final completion by July 1, 1973. This model will be compatible with the Implementation Planning Program and, therefore, will provide a source-contribution output and enable other features of the IPP model to be operated. It is capable of being placed on UNAMAP late in 1973.

5. A photochemical model is being prepared for UNAMAP. An availability date for UNAMAP is tenuous.

Efforts are underway to incorporate the UNAMAP system into INFONET, an interactive computer system contracted for by GSA. This system would enable the models to be used by any user having access to appropriate ADP terminal equipment.

Appendix III - Abstracts of References Presented in June 15, 1973, Federal Register

1) Turner, D. B.; "Workbook of Atmospheric Dispersion Estimates," PHS No. 999-AP-26 (1969). Useful for estimating concentrations from point sources (e.g., incinerators) which may be part of the complex. Also, provides method for estimating area source concentrations.

(2) US EPA; "Compilation of Air Pollutant Emission Factors," OAP No. AP-42 (Feb. 1972). Useful for determining emissions from mobile and stationary sources, given operating characteristics of the sources.

(3) Briggs, G.A.; "Plume Rise"; TID-25075 (1969), Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Useful to compute the effective plume height of point source effluents. This is needed to estimate ground level concentrations from point sources.

'4) Mancuso, R. L.; and Ludwig, F. L.; "Users Manual for the APRAC-1A Urban Diffusion Model Computer Program," "Stanford Research Institute Report" prepared for EPA under contract. CPA 3-68 (1-69) (Sept. 1972). Available at Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Model which presents methods for computing CO concentrations. Can be adapted to estimate CO concentrations in urban street canyons.

(5) Zimmerman, J. R., and Thompson, R. S.; "User's Guide for HIWAY," paper under preparation, Met. Lab., EPA, RTP, N. C. Self-documenting model which can be used to compute CO concentrations in the vicinity of at-grade highways.

(6) USGRA: "Proceedings of Symposium on Multi-Source Urban Diffusion Models," OAP Publication No. AP-86 (1970). General reference presenting various approaches to estimating pollutant concentrations. Discusses how to model various types of sources and the information needed for various models.

(7) Air Quality Implementation Planning Program, Volume I, Operators Manual, PB 198-299 (1970). Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Multi-source urban diffusion model suitable for predicting long-term (monthly, annual) average concentrations. Also estimates costs associated with various strategies of emission controls.

(8) Hanna, S. R.; "Simple Methods of Calculating Dispersion from Urban Area Sources," paper presented at Conference on Air Pollution Meteorology, Raleigh, N. C. (April 1971). Available at Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151. Method which may be used to compute concentrations resulting from area sources.

(9) ASME: "Recommended Guide for the Prediction of Dispersion of Airborne Effluents," United Engineering Center, 345 E. 47th Street, New York, New York 10017 (1968). General treatment discussing the impact of several meteorological phenomena on pollutant dispersion and methods of calculating peak concentration resulting from these phenomena.

(10) Slade, D. H. (editor): "Meteorology and Atomic Energy 1968, USAEC (1968). A general reference presenting meteorological and diffusion theory fundamentals which can be used to estimate pollutant dispersion. Available as TID-24190 from Clearinghouse for Federal Scientific and Technical Information, National Bureau of Standards, U. S. Department of Commerce, Springfield, VA 22151.

TAB B - Technique for Predicting On-Site Air Quality at Complex Sources

This recommended technique requires that one estimate what the maximum impact of a proposed complex may be over a 1-hour and 8-hour period at a sensitive receptor under unfavorable meteorological conditions. Meteorological assumptions used in the analysis are Class D atmospheric stability with a steady wind speed of 1 m/sec from a direction placing the receptor in such a position to sustain the maximum impact of CO emissions. The recommended technique requires that the impact of four different types of emissions be assessed on 1-hour and 8-hour CO concentrations. These concentrations result from:

(1) General background concentrations from sources in the environs of the proposed complex;

(2) concentrations from large point source emissions of CO which would occur within the proposed complex;

(3) concentrations from sources which are immediately adjacent to the sensitive receptor, and

(4) concentrations resulting from sources within the complex which are not immediately adjacent to the sensitive receptor.

An 8 step procedure used to estimate the maximum impact of a proposed complex on 1-hour and 8-hour CO concentrations. Some of the salient features of this procedure are discussed in more detail in accompanying enclosure 2. In this procedure, it is assumed that the maximum impact of the complex will be exhibited at a roadside receptor within or immediately adjacent to the complex.

Step 1: Compute Peak Background Concentrations

(a) Require developers of major complexes to monitor CO concentrations at the site of the proposed complex in a sufficient manner to obtain a statistically valid sample.

(b) If it is considered impractical to require the developer of a given complex to monitor CO concentrations, utilize previous observations at the most appropriate location to estimate 1-hour and 8-hour CO concentrations. (See Appendix 1 of Tab A)

(c) If neither (a) nor (b) is possible, it would be necessary for the appropriate control agency to obtain enough CO measurements to form a statistically valid sample from which to compute peak background concentrations of CO.

Step 2: Convert Peak Background Concentrations to an Equivalent Emission Intensity within the Proposed Complex

Use Figure 1, plotting isoconcentration lines on a graph of source intensity vs. the complexes' dimension directly upwind from the receptor, and move to the right until reaching the isoconcentration lines corresponding to those obtained in Step 1 for 1-hour and 8-hour concentrations. Note the corresponding emission intensities on the abscissa, Q_b. These represent the uniform emission intensities within the complex which would result in the predicted background concentrations at the receptor under the assumed meteorological conditions. Figure 1 was derived using a technique similar to one used by Hanna.[2]

Step 3: Estimate Maximum Ground Level Concentration of CO from Any Large Stationary Point Source of CO Which Would be A Part of the Complex

Since large stationary point sources of CO are relatively unimportant compared to automotive sources, this step and Step 4 could be skipped frequently. The concentration of CO at the chosen receptor resulting from a point source which would be part of the proposed complex should be estimated using Figure 3-5D in the Workbook of Atmospheric Dispersion Estimates (PHS Publication 999-AP-26)[3]. The concentration at the receptor would be obtained from the $\frac{\chi u}{Q}$ value resulting from use of this figure by dividing this value by a "u" of 1 m/sec and multiplying the peak average emission rate considered likely for the point source over 8-hour and 1-hour periods.

Step 4: Convert Concentration Estimated from Point Sources to Equivalent Emission Intensity within the Proposed Complex

This is done using a procedure identical with that described in Step 2. The result is an equivalent emission intensity Q_p.

Step 5: Estimate the Concentration at the Chosen Receptor Resulting From Sources in the Immediate Vicinity of the Receptor

Since it is assumed that the maximum impact of the proposed complex occurs beside roads or traffic lanes which will be located within or adjacent to the proposed complex, a line source model (HIWAY)[4] has been used to derive Figure 2 which relates concentration to traffic flow when the wind blows at various angles to the roadway. Enter Figure 2 on the abscissa corresponding to the estimated peak traffic load for 8-hour and 1-hour periods and read the resulting concentration on the ordinate corresponding to the wind angle giving the highest concentration. A more detailed description of how to use Figure 2 is given in the examples in Enclosure 1.

Step 6: Convert Concentrations Estimated from Nearby Sources to Equivalent Emission Intensity within the Proposed Complex

This is done using a procedure identical with that described in Step 2. The result is an equivalent emission intensity Q_n.

Step 7: Determine the Emission Intensity within the Proposed Complex Corresponding with the 8-Hour and 1-Hour NAAQS

Using Figure 1, follow the appropriate isoconcentration line (9 ppm for 8-hour NAAQS, and 35 ppm for 1-hour NAAQS) until the ordinate corresponding to the proposed complexes' longest dimension is reached. Note the corresponding emission density, Q_{std}.

Step 8: Determine Allowable Emission Intensity within the Complex and Compare this with the Estimated Emission Intensity

The allowable emission intensity is determined by subtracting the emission intensities obtained in Steps 2, 4 and 6 from the intensity obtained in Step 8.

$$Q_{ALLOW} = Q_{std} - Q_b - Q_p - Q_n$$

Q_{ALLOW} is then compared with the emission intensity estimated for the complex a priori. Suggestions how to make such estimates have already been supplied to Mr. John Fink for shopping centers and sports complexes in letters dated March 29 and April 3. Suggestions on how to estimate the intensities for other complex sources will be supplied in Enclosure 2.

If the proposed complexes' estimated emission intensities exceed Q_{ALLOW}, or some specified fraction thereof, provision must be made for a detailed Environmental Impact Statement in which various design alternatives and site locations should be considered.

Edwin L. Meyer, Jr.
Engineer
Model Application Section
Source Receptor Analysis Branch

Enclosures
(1) Examples of the Evaluation Technique
(2) Salient Features of the Proposed Technique

References

1. Larsen, R.I., "A Mathematical Model for Relating Air Quality Measurements to Air Quality Standards" OAP Publication No. AP-89, (Nov. 71).

2. Hanna, S.R., "A Simple Method of Calculating Dispersion from Urban Area Sources" JAPCA 21 pp. T14-777, (1971).

3. Turner, D.B., "Workbook of Atmospheric Diffusion Estimates", USPHS Publication No. AP-26, (1971).

4. Zimmerman, J.R. and Thompson, R.S., "Users Guide for HIWAY", paper under preparation, Met. Lab., EPA, RTP, N.C.

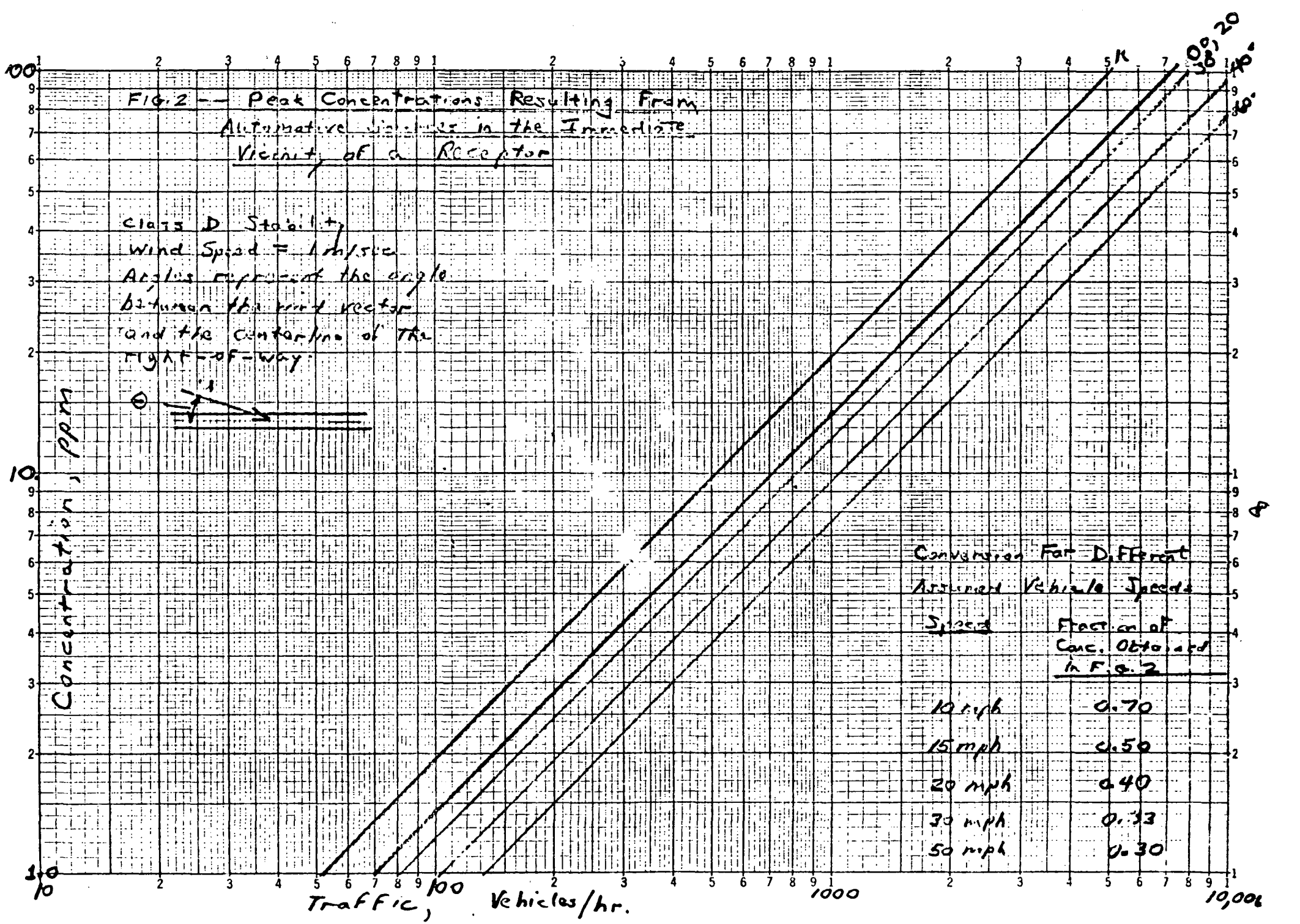
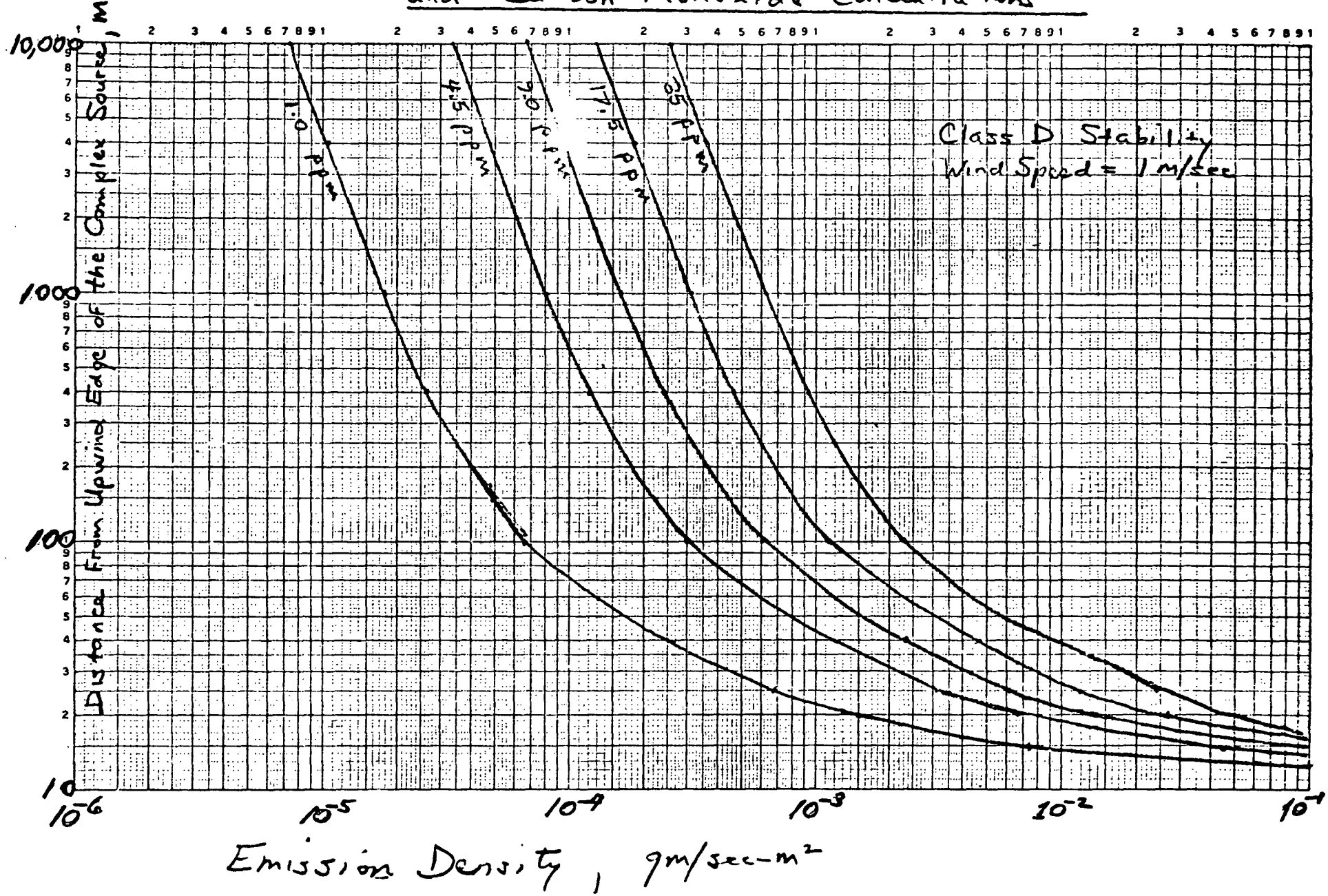


FIG. 2 -- Peak Concentrations Resulting From Alternative Widths in the Immediate Vicinity of a Receptor
Class D Stability
Wind Speed = 1 m/sec
Angles represent the angle between the roadway and the centerline of the right-of-way.
Concentration, ppm
Traffic, Vehicles/hr.
Conversion For Different Assumed Vehicle Speeds
Assumed Speed
Fraction of Conc. Obtained in Fig. 2
10 mph 0.70
15 mph 0.50
20 mph 0.40
30 mph 0.33
50 mph 0.30

FIG. 1 -- Relationships Among Emission Density, Source Size and Carbon Monoxide Concentrations

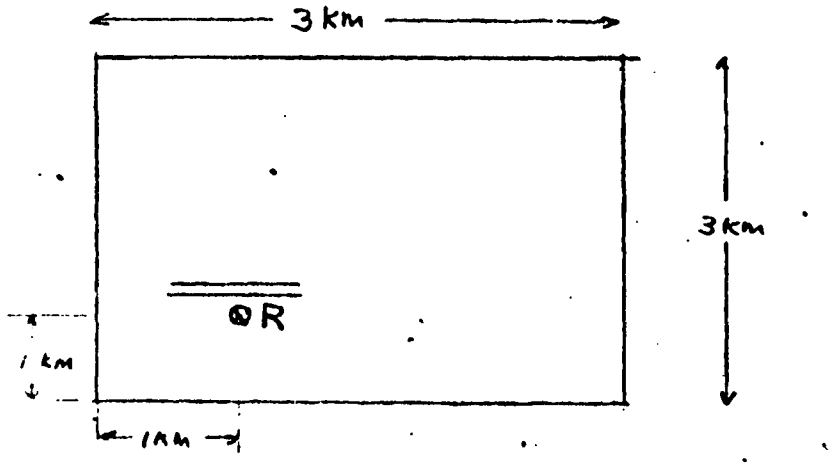


Enclosure 1

Examples Illustrating the Proposed Technique for Evaluating the Direct Impact of Complex Sources on Air Quality

Example 1. Problem: A housing complex containing 500 living units is proposed for an area whose peak background concentrations have been observed to be 11 ppm over a 1-hr. period and 3 ppm over an 8-hour period. It is assumed that the peak concentrations will occur at a roadside within the proposed complex located as shown. Traffic on this road is estimated at 300 vph for 1-hr. and 100 vph for 8-hrs. The dimensions of the complex are also pictured below. There are no significant point sources of CO contemplated within the complex.

Required: What is the estimated emission density for the complex above which a detailed EIS and perhaps some re-design may be required?



Solution:

(1) $C_{1\text{-hr}}$ = 11 ppm; $C_{3\text{-hr}}$ = 3 ppm; upwind dimension = 2 km

(2) Using Fig. 1, for 1-hr.,
$Q_b = 1.49 \times 10^{-4}$ gm/sec-m^2

for 8-hr

$Q_b = 4.05 \times 10^{-5}$ gm/sec-m^2

(3)-(4) Since there are no large point sources of CO planned within the complex, $Q_p = 0$

(5) Using the 10° wind angle in Fig. 2,

For 1-hr.

C_1 = 6.0 ppm

For 8-hr.

C_8 = 1.9 ppm

(6) From Fig. 1,

For 1-hr., Q_n = 8.4×10^{-5} gm/sec-m^2

For 8-hr., Q_n = 2.6×10^{-5} gm/sec-m^2

(7) For 1-hr., Q_{std} = 4.0×10^{-4} gm/sec-m^2

For 8-hr., Q_{std} = 1.1×10^{-4} gm/sec-m^2

(8) For 1-hr.

$Q_{allow} = 4.0 \times 10^{-4} - 1.49 \times 10^{-4} - 0 - 8.4 \times 10^{-5}$

1-hr. $Q_{allow} = 1.67 \times 10^{-4}$ gm/sec-m^2

For 8-hr

$Q_{allow} = 1.1 \times 10^{-4} - 4.05 \times 10^{-5} - 0 - 2.6 \times 10^{-5}$

8-hr. $Q_{allow} = 4.35 \times 10^{-5}$ gm/sec-m^2

Hence, if the estimated peak 1-hr. emission density for the complex exceeds 1.67×10^{-4} gm/sec-m^2 or the estimated peak 8-hr. emission density exceeds 4.35×10^{-5} gm/sec-m^2, a detailed environmental impact study should be required for the complex and redesign or relocation may be necessary.

Example 2

Problem: A shopping center is proposed in an area in which 6 ppm and 2 ppm peak 1-hr. and 8-hr. concentrations have been observed. There are no large point sources of CO contemplated within the center. Maximum impact is assumed to occur at residences across the street from the main entrance to the proposed center. Maximum traffic at the center's major entrance (road 1) is 300 vph over 1-hr. and 100 vph

Enclosure 2

Features of the Proposed Technique to Estimate the Impact of Complex Sources on Air Quality

There are a number of assumptions which are made or implied by the proposed technique for estimating the impact of a complex source on air quality. Most of these assumptions are conservative ones, and the end result is a technique which gives a conservative estimate of the complexe's immediate impact. These assumptions and the rationale behind them are listed below. Assumptions which are believed to be conservative are so indicated.

Meteorological assumptions: Class D atmospheric stability, steady wind of 1m/sec and unlimited mixing depth. As a result of the types of surfaces likely to be encountered in areas where complexes would be developed, and the mechanical turbulence generated by vehicles as well as the heat of their discharges, Class D stability was regarded as the most stable atmospheric conditions likely to persist during periods when the impact of traffic generated by the complex was likely to be greatest. A steady wind of 1m/sec is a conservative assumption, since speeds this low are unlikely to persist from a single direction (and the direction maximizing the impact of the complex, at that) for 8, or even 1, hours. Assumptions about mixing depth are probably only important for estimating background concentrations. Since the technique either utilizes observations directly to estimate background concentrations or estimates background concentrations using a statistical model based on observations, the effect of limited mixing depth is felt to be inherently accounted for.

The assumption, inherent in the technique, that the maximum ($C_{99,99}$) background concentration, point source centerline concentration and maximum contribution from immediately adjacent roadways all occur at the same receptor point is an extremely conservative one. It is justified on the basis that one is concerned with estimating the maximum impact of the source and whether this impact could pose any danger to NAAQS. Since there are undoubtedly a number of uncertainties in estimating, a priori, emissions resulting from a complex source, this assumption provides a factor of safety.

Step 1 assumes that there are no significant existing point sources of CO, such as a large, inefficient incinerator, in the immediate vicinity of the receptor. If this assumption could not be made, heavier reliance on direct observation of background concentrations and corresponding meteorological conditions would be needed.

The model upon which Figure 1 (used in Steps 2, 4, 6 and 7) is based ignores "edge effects." A more complete analysis could not necessarily do this. The procedure used in the recommended technique is justified on the basis that the most severe impact of the complex will most likely occur at a section where the edge effects are of minor importance.

The rationale behind Steps 2, 4, 6 and 7 is that CO concentrations at the chosen receptor site resulting from background sources, proposed point sources within the complex and sources in the immediate vicinity of the receptor diminish the emission density which would be allowable from the proposed complex.

Use of Fig. 3-5D in the Workbook requires one to first estimate the effective plume height for the point source. This requires knowledge of certain operating parameters for the source which may not be available. Under the meteorological assumptions assumed with the recommended technique, an assumption that the effective plume height is twice the physical stack height would seem reasonable. Such an assumption depends on the relatively large plume rise resulting with low wind speeds being compensated for by the low temperature of effluents likely to result from stationary sources of CO.

In constructing Figure 2, needed in Step 5, it was necessary to use emission factors to relate traffic count to CO emissions. OAP Publication No. AP-42, "Compilation of Air Pollutant Emission Factors," (Feb. '72) was used for this purpose. A number of assumptions were made to derive the emission factors:

(a) 1975 mix of vehicles--seemed reasonable in view of the fact that these guidelines are to be applied to proposed rather than existing complexes;

(b) urban travel conditions

(c) average vehicle speed 5 mph--it was assumed that the maximum impact would either occur at an exit to the complex where traffic was moving very slowly, or at a traffic signal within or adjacent to a complex.

In constructing Fig. 2 by using the HIWAY model, a road length of 200m was assumed in order to be conservative. This means that a vehicle as far as 200m from the receptor could contribute slightly to the CO concentration estimated at the receptor--particularly when the wind angle with the road centerline

is a small one. While vehicles distant from the receptor make a disproportionately small contribution to the receptor (.i.e. concentrations resulting from a zero degree wind angle with a road 100 m long would be much greater than 1/2 those from a road 200 m long) this assumption may be unduly conservative. If experience proves this to be the case, Figure 2 could be easily based on a shorter road segment and redrawn.

Requiring one to use the ordinate in Figure 1 corresponding to the complexe's longest dimension in Step 7 is not entirely consistent with Steps 2, 4 and 6 where the ordinate used depends on the orientation of the source and receptor with respect to the critical wind direction. Step 7 is conservative and also simplifies the process of evaluation.

Step 8 assumes that an emission intensity has been estimated a priori for the complex source being evaluated. In order to be complete, guidelines should suggest ways in which this could be done. It would seem desirable to require the developer to provide the States or Regional Offices with a few key design parameters which could then be used by the States or Regions to derive estimates for maximum emission intensity likely to occur over 1-hour and 8-hour periods. Table 1 includes several complex sources, key parameters which should be supplied by developers and assumptions which would have to be made by State and/or Regional personnel in estimating emission intensities.

TABLE 1. ESTIMATING EMISSION DENSITIES

Source	Key Parameters	Assumptions Needed to Derive Estimated Emission Intensity
Shopping Centers	1. Gross Leaseable Floor Space 2. Required Parking Lot Size	1. Vehicle Speed* 2. Year of Auto "Mix"* 3. Area occupied by single vehicle 4. Fraction of total area which may be occupied by vehicles 5. Maximum number of vehicles running simultaneously for 1-hr. and 8-hr. periods * This information is needed to compute emission factors for a single vehicle as specified in OAP publication No. AP-42
Sports Complexes	1. Seating Capacity 2. Parking lot size and capacity	1. Vehicle speed and mix 2. Area occupied by a single vehicle 3. Fraction of total area occupied by vehicles 4. Maximum number of vehicles running simultaneously for 8-hr. and 1-hr. periods.
Housing Developments	1. Size of area 2. Number of living units	1. Number of vehicles per family 2. Vehicle speed and mix 3. Maximum number of vehicles running simultaneously for 1-hour and 8-hour periods

TAB C - Technique for estimating sizes of facilities subject to review

For estimating the size of a parking lot for a particular facility, above which will result in a local violation of the carbon monoxide standard, assumptions must be made concerning the behavior of motor vehicles in that parking lot under estimated worst conditions. One refernce on parking lot design* gives dimensions of parking spaces. A parking unit is defined as two parking stalls plus an aisle. For parking stalls at 90^0 to the aisle, the maximum dimensions for the unit is 65 feet by 10 feet, for a two-way aisle. This amounts to a space requirement of 650 ft^2/2 stalls = 325 ft^2/stall.

Automobile behavior in a parking lot can be assumed, although if such behavior is known, the more valid information should be used. Assuming for a worst-case example that vehicles travel an average of five miles per hour in the lot (which includes the time they are idling) and the travel is of an urban (stop-and-go) ther than a rural (more or less steady speed) type, Compilation of Air Pollution Factors** yields an emission factor of 60 g CO/vehicle-mile for a 1975 distribution of automobile age and an (extrapolated) speed adjustment factor of 3.0. Therefore, the emission rate, Q, is:

$$Q = \left(\frac{60 g CO}{\text{vehicle mile}}\right)\left(\frac{5 \text{ miles}}{\text{hour}}\right)(3.0) = \frac{900 \text{ g CO}}{\text{vehicle hours}}$$

Assumptions concerning the behavior of motor vehicles in a parking lot will depend upon the type of facility and the intensity of use over a time period. The following examples are intended to illustrate the types of assumptions necessary to make determinations concerning air quality and size of a parking lot; since these assumptions may not be valid, an attempt should be made to acquire more accurate information. Furthermore, the examples assume zero background CO concentrations.

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*Parking in the City Center, prepared by Wilbur Smith and Associates, New Haven, Connecticut, under commission from the Automobile Manufacturers Association, May 1965.

**Compilation of Air Pollutant Emission Factors (Revised), U.S. Environmental Protection Agency, Office of Air Programs, Research Triangle Park, N. C., February 1972 Publication No. AP-42.

For particular areas, compensation should be made for existing air quality.

(1) Parking lots for shopping centers, commercial and industrial developments, amusement parks, and recreational areas

Activity in terms of trips generated in these facilities will probably be spread out over an 8-12 hour period, with a peak-to-off-peak hour ratio of perhaps 2 to 4. Two worst condition analyses will be necessary--one for the worst peak hour and one for the worst 8-hour period, to determine which standard (the one-hour standard of 35 ppm or the eight-hour standard of 9 ppm) will be the limiting standard for the maximum parking area.

(a) Worst peak hour

An estimate must be made of the number of vehicles running in the parking lot at any one time during the worst peak hour. For purposes of illustration, assume that the parking lot contains one vehicle per each stall (full lot) and that of these , 10 percent are operating at any one time. The emission density, E, is then calculated as follows:

$$E_{1\text{-hr}} = \left(\frac{900\ \text{g CO}}{\text{vehicle-hr}}\right)\left(\frac{1\ \text{hr.}}{3600\ \text{sec.}}\right)\left(\frac{1\ \text{stall}}{325\ \text{ft}^2}\right)\left(\frac{1\ \text{vehicle}}{1\ \text{stall}}\right)\left(\frac{10.8\ \text{ft}^2}{1\ \text{m}^2}\right)(0.10)$$

$$= 8.31 \times 10^{-4}\ \text{g CO/sec-m}^2$$

If we assume a constant wind speed of 1 m/sec and constant wind direction with class "D" atmospheric stability, the graphical relationship given in Figure 1 of Appendix O of 40 CFR Part 51 can be used to determine the maximum parking area. To achieve a downwind edge concentration of less than 35 ppm, the area must be no longer than approximately 520 meters on a side, which corresponds to a square area of approximately 67 acres.

(b) Worst 8-hour

For illustrative purposes, assume that for 8 hours, there are only three-fourths the number of vehicles as parking stalls and that only 4 percent of these vehicles are operating at any one time over the 8 hour period. The 8-hour emission density, E, is calculated as follows:

$$E_{8\text{-hr}} = \left(\frac{900\text{ g CO}}{\text{vehicle-hr}}\right)\left(\frac{1\text{ hr}}{3600\text{ sec.}}\right)\left(\frac{1\text{ stall}}{325\text{ Ft}^2}\right)\left(\frac{0.75\text{ vehicle}}{1\text{ stall}}\right)\left(\frac{10.8\text{ ft}^2}{\text{m}^2}\right)(0.04)$$
$$= 2.49 \times 10^{-4}\text{ g CO/sec-m}^2$$

From Figure 1 in Appendix O, to achieve a downwind edge concentration of less than 9 ppm (8-hour standard), the lot area must be no longer than approximately 400 meters on a side, which corresponds to a square area of approximately 40 acres.

Therefore, under the assumptions made above, CO standard would be the 8-hour standard, since the above calculations yielded a smaller area for the 8-hour condition than for the one-hour condition.

2. Parking lots for sports stadiums, and centers which cater to affairs in which patrons leave at one time.

Maximum mobile source activity from these facilities will probably occur over a short time period, perhaps an hour or less. Assume, for example, that the parking lot is full and that 15 percent of the vehicles are running at any one time. The one-hour emission density, E, is then calculated as follows:

$$E = \left(\frac{900\text{ g CO}}{\text{vehicle-hr}}\right)\left(\frac{1\text{ hr}}{3600\text{ sec}}\right)\left(\frac{1\text{ stall}}{325\text{ ft}^2}\right)\left(\frac{1\text{ vehicle}}{1\text{ stall}}\right)\left(\frac{10.8\text{ ft.}^2}{\text{m}^2}\right)(.15)$$
$$= 1.25 \times 10^{-3}\text{ g CO/sec-m}^2$$

From Figure 1 in Appendix O, to achieve a downwind edge concentration of less than 35 ppm (1-hour standard), the parking area must be no longer than approximately 260 meters on a side, which corresponds to a square area of approximately 17 acres.

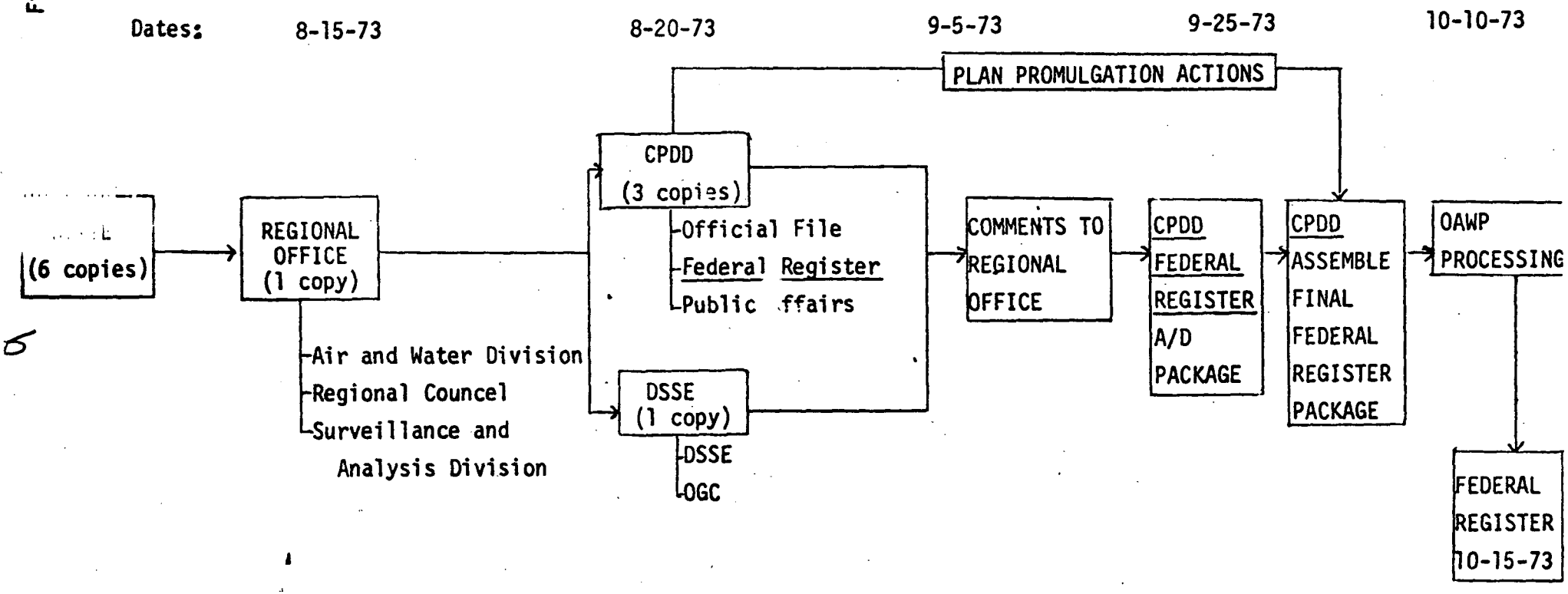
Figure 1

COMPLEX SOURCE TIME SCHEDULE
1973

1.	U.S. COURT OF APPEALS - DECISION NRDC v. EPA	JANUARY 31
2.	EPA MET WITH NRDC PETITION THE COURT - ESTABLISHED A TIME SCHEDULE FOR ACTIONS	MID FEBRUARY
3.	DISAPPROVAL OF SIP	MARCH 8
4.	PROPOSED REGULATIONS FEDERAL REGISTER	APRIL 18
5.	COMMENTS ON PROPOSED REGULATIONS	MAY 18
6.	COMPLEX SOURCE REGULATIONS	JUNE 18
7.	STATE IMPLEMENTATION PLANS	AUGUST 15
8.	APPROVAL/DISAPPROVAL NOTICES AND PLAN PROPOSALS	OCTOBER 15
9.	PUBLIC HEARINGS ON PROMULGATION	NOVEMBER 15-20
10.	REGIONAL FINDINGS TO CPDD	NOVEMBER 27
11.	COMPLETION OF FEDERAL REGISTER PROMULGATION PACKAGE	DECEMBER 10
12.	FINAL PROMULGATION	DECEMBER 15

Figure 2

PROCESSING PROCEDURE
COMPLEX SOURCE
STATE IMPLEMENTATION PLANS

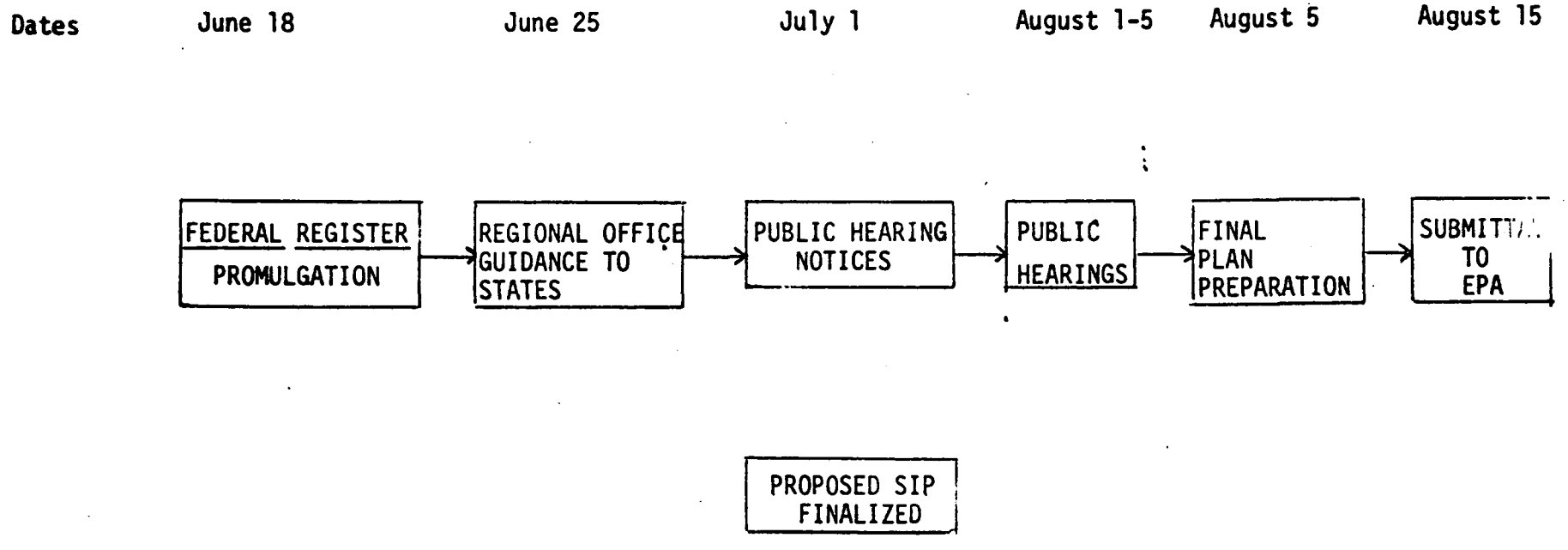


RESPONSIBILITIES

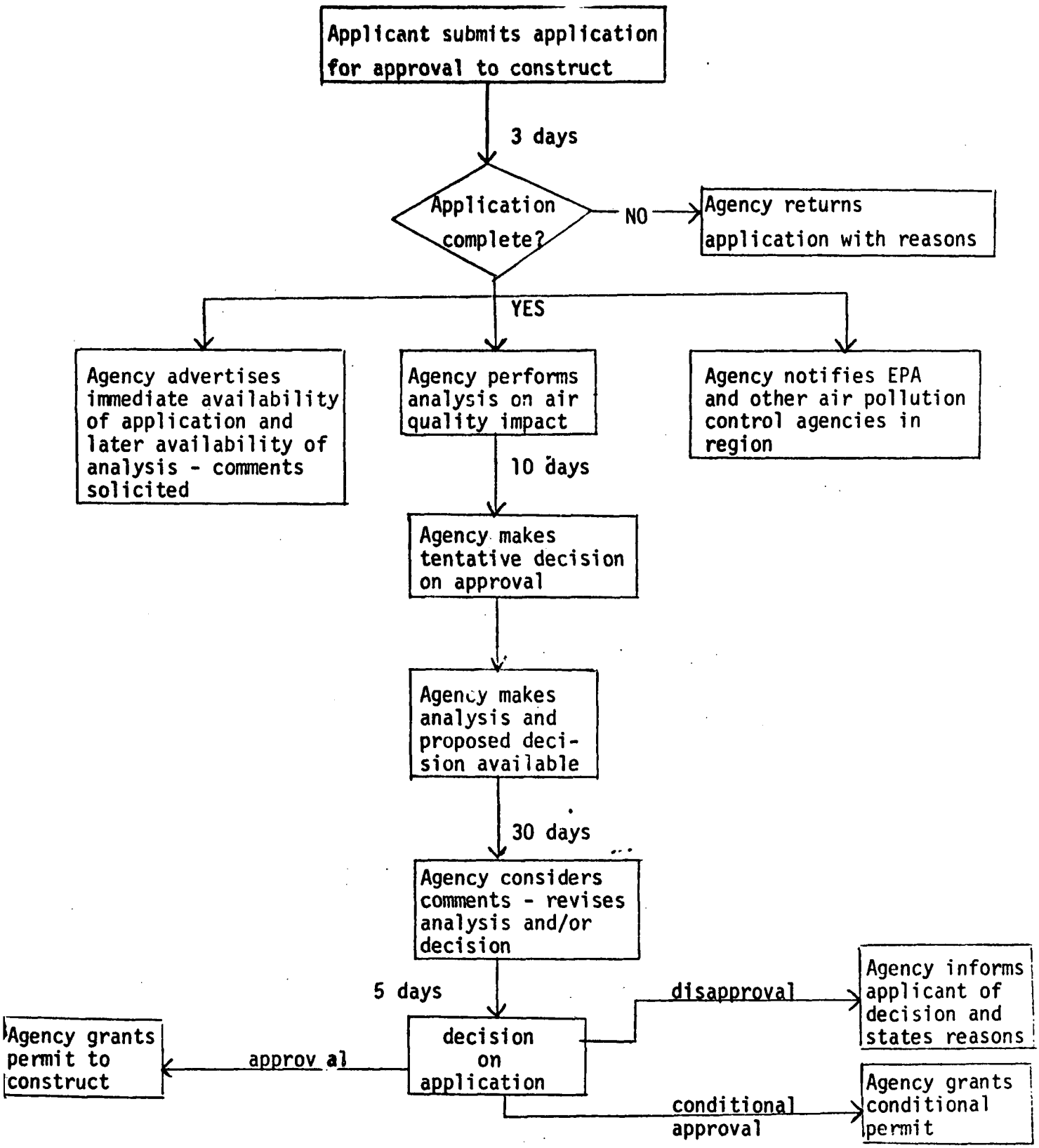
1. REGIONAL OFFICES - COMPREHENSIVE PLAN REVIEW, PREPARATION OF FEDERAL REGISTER APPROVAL/DISAPPROVAL ACTIONS
2. OEGC - GENERAL OVERVIEW OF 51.11 (LEGAL AUTHORITY) AND 51.18 (PROCEDURES). PROVIDE REVIEW AND COMMENT TO REGION OFFICES.
3. CPDD - GENERAL OVERVIEW OF PLAN SUBMITTALS, PROVIDE COMMENTS AND TECHNICAL SUPPORT TO REGIONAL OFFICES. WILL CONSOLIDATE TO REGIONAL OFFICES FEDERAL REGISTER APPROVAL/DISAPPROVAL PACKAGE FOR THE ADMINISTRATOR PUBLICATION. WILL PREPARE PROMULGATIONS WHERE STATES HAVE NOT ACTED

Figure 3

PLAN DEVELOPMENT SCHEDULE



TAB D


Applicant submits application for approval to construct
3 days
Application complete?
NO
Agency returns application with reasons
YES
Agency advertises immediate availability of application and later availability of analysis - comments solicited
Agency performs analysis on air quality impact
Agency notifies EPA and other air pollution control agencies in region
10 days
Agency makes tentative decision on approval
Agency makes analysis and proposed decision available
30 days
Agency considers comments - revises analysis and/or decision
5 days
decision on application
disapproval
Agency informs applicant of decision and states reasons
approval
Agency grants permit to construct
conditional approval
Agency grants conditional permit

TITLE 40 - PROTECTION OF ENVIRONMENT

Chapter I - Environmental Protection Agency

Subchapter C - Air Programs

Part 51 - Preparation, Adoption, and Submittal of Implementation Plans

Maintenance of National Ambient Air Quality Standards

On August 14, 1971 (36 FR 15486), the Administrator of the Environmental Protection Agency promulgated as 42 CFR Part 420 regulations for the preparation, adoption, and submittal of State Implementation Plans under section 110 of the Clean Air Act, as amended. These regulations were republished November 25, 1971 (36 FR 22369), as 40 CFR Part 51.

On April 18, 1973 (38 FR 9599), the Administrator proposed amendments to those regulations designed primarily to expand the scope of review prior to construction or modification of b i. ings, facilities, and installations so as to require consideration of the air quality impact not only of pollutants . tted directly from stationary sources (consideration of which was already required by 40 CFR 51) but also of pollution arising from mobile source activity associated with such buildings, facilities, and installations. The proposed amendments were, and still are, considered a necessary addition to the Federal-State system for implementing, and more particularly, for maintaining, the national ambient air quality standards.

In the preamble to the proposed amendments, the Administrator called attention to the importance of analyzing the general growth of population, industrial activity, and mobile sources in relation to regional air quality. The Administrator did not propose to require such analysis, but urged that States consider the use of such procedures. A number of comments were received urging that such analysis be required on the ground

that preconstruction review of individual sources could not adequately deal with generalized growth and its impact on regional air quality. It is the Administrator's judgment that such procedures, in addition to review of new or modified sources, are necessary to ensure maintenance of the national standards, particularly because source-by-source analysis is not an adequate means of evaluating, on a regional scale, the air quality impact of growth and development. Consequently, the regulation promulgated below includes the following additional requirements:

1. Within nine months, States must identify those areas (counties, urbanized areas, Standard Metropolitan Statistical Areas, etc.) which, due to current air quality and/or projected growth rate, may have the potential for exceeding any national standard within the next ten-year period.

2. Based on this information submitted by States, the Administrator will publish a list of potential problem areas which will be analyzed in more detail by the States; interested persons will have an opportunity to comment on the published list.

3. Within 24 months of the date of promulgation of these regulations, States must submit an analysis of the impact on air quality of projected growth in each potential problem area designated by the Administrator. Where necessary, plans must also be submitted describing the measures that will be taken to ensure maintenance of the national standards during the ensuing ten-year period.

The required analysis will have to deal with all the significant air quality implications of growth and development, including not only the increased air pollution arising directly from new commercial, industrial,

and residential development but also that arising from increases in demand for electricity and heat, motor vehicle traffic, and production of solid waste.

4. The above considerations must be reanalyzed at five-year intervals.

Individual source review generally is more practicable and meaningful with respect to the localized impact of a single source. Furthermore, for pollutants such as hydrocarbons and nitric oxide, which affect air quality through complex atmospheric reactions resulting in the formation of photochemical oxidants and nitrogen dioxide, analytical tools that can be used with confidence to predict the air quality impact of a single source are not now available.

As a result of the comments received, a number of additional changes have been made to the proposed amendments. The changes, described below, affect the implementation plan provisions which States will have to submit by August 15, 1973, in response to that portion of these regulations which prescribes new and modified source review procedures.

1. Where the State designates a governmental agency other than an air pollution control agency to carry out the new source review procedures, that agency is required to consult with the State air pollution control agency prior to rendering its decision. This requirement will assure proper coordination regarding air pollution matters and appropriate use of existing technical expertise.

2. State plans must describe the basis for determining which facilities will be subject to the new source review procedures.

3. State plans must describe the administrative procedures to be used in implementing the new source review requirements.

4. In States where the specified 30-day period for submittal of public comment conflicts with existing legal requirements for acting on requests for permission to construct or modify, the State may submit for approval a comment period which is consistent with the existing requirements.

5. The agency responsible for new source review must notify all State and local air pollution control agencies with jurisdiction within an air quality control region whenever it receives a request for permission to construct or modify a facility within the region. This requirement is intended to ensure that such agencies have adequate opportunity to comment on a proposed source which is to be located in another jurisdiction but may affect air quality in their own jurisdiction.

6. The suggestions previously included in Appendix O with respect to sizes of facilities to be covered by new source review procedures have been replaced by a description of a more objective technique which States can use in making this determination.

Several comments were received which questioned whether EPA has legal authority to promulgate requirements for review of the indirect impact of new or modified sources, i.e., the impact arising from associated mobile source activity. Essentially, the argument was made that EPA's authority in this regard is limited to requiring an assessment of the air quality impact of pollutants emitted directly from stationary sources. EPA believes that this argument is inconsistent with the provisions

of section 110(a)(2)(B), which requires that implementation plans include "...such other measures as may be necessary to insure attainment and maintenance of such primary and secondary standard, including, but not limited to, land-use and transportation controls." In the Administrator's judgment, review of the indirect impact of new or modified sources is just as necessary to ensure maintenance of the national standards as is review of the direct impact.

A number of comments were received suggesting that the Administrator specify or otherwise limit the responsibility for the new source review/approval procedure to certain types of governmental agencies (e.g., only the State or only an air pollution control agency). The changes discussed above are designed in part, to ensure proper coordination of, and input from, all appropriate agencies. It is the Administrator's judgment that the requirement for consultation with cognizant air pollution control agencies is adequate to ensure appropriate consideration of air quality in those cases where the State or local decision-making agency is not itself an air pollution control agency.

A number of air pollution control agencies suggested that the public comment requirements would impose an unnecessary burden, since it will involve the public in what they characterized as largely a technical judgment. Other groups requested that public participation be expanded to include opportunity for a public hearing, not just the opportunity to submit written comments. In the Administrator's judgment, the proposed requirement for public comment represented a reasonable

balance between these conflicting positions and was consistent with the emphasis in the Act on public participation in developing and carrying out the implementation plans. Accordingly, it is not being modified.

There were a number of suggestions as to the factors, other than the impact of mobile source activity, that should be examined during the new source review process, including:

1. The "displaced" stationary source emissions resulting from the operation of a new facility (e.g., the load a facility places on existing power plants and incinerators).
2. The construction phase of a facility.
3. Whether the facility itself may, in effect, create a new receptor point where air quality standards must be attained and maintained (e.g., a building constructed over a freeway or in an area impacted by an existing stack plume).
4. Whether a facility should be allowed to "use up" the entire air resource in a given area.

The Administrator believes that it is neither necessary nor practicable to specify in detail the possible considerations which States must examine in reviewing new facilities. In general, States should consider air pollution aspects of a new facility which are not adequately covered by other provisions in the implementation plan. For example, existing nuisance and fugitive regulations may be adequate to deal with the construction phase of a facility. "Displaced" stationary source emissions are much more significant as a by-product of general growth and development, and should be assessed in that context, rather than in relation to any individual source.

Finally, it would seem prudent for a State to avoid a situation where a source would "use up" the entire air resource in an area; however, the Administrator cannot require that States allocate their air resources in any given manner.

One comment suggested that the Administrator require that States adopt procedures to implement the authority required under 40 CFR 51.11(a)(4) to prevent operation of a new or existing source which intereferes with attainment or maintenance of a national standard. Under 40 CFR 51.11(a)(2) States already are required to have legal authority to enforce their implementation plans, including authority to seek injunctive relief. Furthermore, where an implementation plan is substantially inadequate to attain and maintain a national standard, it must be revised. Accordingly, it is EPA's position that it is not necessary to require States to adopt additional procedures for preventing the operation of sources.

It is emphasized that these regulations are not intended and should not be construed, to mean that the only choices open to State and local agencies are to approve or disapprove construction or modifications. Where a facility can be designed and/or located so as to be compatible with maintenance of national standards or provided with services, e.g., mass transit, that will make it compatible, States and local agencies, as well as facility owners and operators, should explore such possibilities.

EPA, through its Regional Offices, will provide assistance to the States in:

1. Determining types and sizes of sources which should be subject to the new source review procedures;

2. Developing the technical procedures to be used in analzying the air quality impact of individual sources;

3. Identifying areas which may exceed a national standard within the next ten years; and

4. Analyzing the impact of general growth and development in such problem areas.

These amendments are being promulgated pursuant to an order of the United States Court of Appeals for the District of Columbia Circuit in the case of Natural Resources Defense Council, Inc., et al. v. EPA, case No. 72-1522, and seven related cases, which order was entered January 31, 1973, and modified February 12, 1973. States will be required to submit their plan revisions to comply with these new requirements involving new source review procedures no later than August 15, 1973. After such submission, the Environmental Protection Agency will have two months to review and approve or disapprove the revisions and an additional two months to propose and promulgate regulations to replace any disapproved State procedures. As discussed above, the identification of potential problem areas must be submitted within 12 months and the detailed analysis and plan dealing with these problem areas are due within 24 months of the date of promulgation of these regulations.

These amendments to Part 51 of Chapter I, Title 40, are effective upon publication.

Authority: Sections 110 and 301(a) of the Clean Air Act, as amended (42 U.S.C. 1857c-5, 1857g(a)).

Dated_____

_____
Administrator

Part 51 of Chapter I, Title 40 of the Code of Federal Regulations is amended as follows:

1. In § 51.1, paragraphs (f) and (g) are revised to read as follows:

§ 51.1 Definitions.

* * * * *

(f) "Owner or operator" means any person who owns, leases, operates, controls, or supervises a facility, building, structure, or installation which directly or indirectly results or may result in emissions of any air pollutant for which a national standard is in effect.

* * * * *

(g) "Local agency" means any local government agency, other than the State agency, which is charged with the responsibility for carrying out a portion of a plan.

* * * *

2. In §51.5, paragraph (a)(3)is added as follows:

§51.5 Submission of plans; preliminary review of plans.

(a) * * *

(3) For compliance with the requirements of §§51.11(a)(4) and 51.18, no later than August 15, 1973.

3. In § 51.11, paragraph (a)(4) is revised to read as follows:

§ 51.11 Legal authority.

(a) * * *

(4) Prevent construction, modification, or operation of a facility, building, structure, or installation, or combination thereof, which directly or indirectly results or may result in emissions of any air pollutant at any location which will prevent the attainment or maintenance of a national standard.

4. In § 51.12, paragraphs (e), (f), (g) and (h) are added as follows:

§ 51.12 Control strategy: General

* * * * *

(e) The plan shall identify those areas (counties, urbanized areas, Standard Metropolitan Statistical Areas, etc.) which, due to current air quality and/or projected growth rate, may have the potential for exceeding any national standard within the subsequent ten-year period.

(1) For each such area identified, the plan shall generally describe the intended method and timing for producing the analysis and plan required by paragraph (g).

(2) The area identification and description of method and timing required by this paragraph shall be submitted no later than nine months following the effective date of this paragraph.

(3) At five-year intervals, the area identification shall be reassessed to determine if additional areas should be subject to the requirements of paragraph (g).

(f) Based on the information submitted by the States pursuant to paragraph (e) of this section, the Administrator will publish, within 12 months of the effective date of this paragraph, a list of the areas which shall be subject to the requirements of paragraph (g) of this section.

(g) For each area identified by the Administrator pursuant to paragraph (f) of this section, the State shall submit, no later than 24 months following the effective date of this paragraph, the following:

(1) An analysis of the impact on air quality of projected growth and development over the ten-year period from the date of submittal.

(2) A plan to prevent any national standards from being exceeded over the ten-year period from the date of plan submittal. Such plan shall include, as necessary, control strategy revisions and/or other measures to ensure that projected growth and development will be compatible with maintenance of the national standards throughout such ten-year period. Such plan shall be subject to the provisions of § 51.6 of this part.

(h) Plans submitted pursuant to paragraph (g) shall be reanalyzed and revised where necessary at five-year intervals.

5. Section 51.18 is revised to read as follows:

§ 51.18 Review of new sources and modifications.

(a) Each plan shall set forth legally enforceable procedures which shall be adequate to enable the State or a local agency to determine whether the construction or modification of a facility, building, structure, or installation, or combination thereof, will result in violations of applicable portions of the control strategy or will interfere with attainment or maintenance of a national standard either directly because of emissions from it, or indirectly, because of emissions resulting from mobile source activities associated with it.

(b) Such procedures shall include means by which the State or local agency reponsible for final decision-making on an application for approval to construct or modify will prevent such construction or modification if it will result in a violation of applicable portions of the control strategy or will interfere with the attainment or maintenance of a national standard.

(c) Such procedures shall provide for the submission, by the owner or operator of the building, facility, structure, or installation to be constructed or modified, of such information on:

(1) the nature and amounts of emissions to be emitted by it or emitted

by associated mobile sources; .

(2) the location, design, construction, and operation of such facility, building, structure, or installation as may be necessary to permit the State or local agency to make the determination referred to in paragraph (a) of this section.

(d) Such procedures shall provide that approval of any construction or modification shall not affect the responsibility of the owner or operator to comply with applicable portions of the control strategy.

(e) Each plan shall identify the State or local agency which will be responsible for meeting the requirements of this section in each area of the State. Where such responsibility rests with an agency other than an air pollution control agency, such agency shall consult with the appropriate State or local air pollution control agency in carrying out the provisions of this section.

(f) Such procedures shall identify types and sizes of facilities, buildings, structures or installations which will be subject to review pursuant to this section. The plan shall discuss the basis for determining which facilities shall be subject to review.

(g) The plan shall include the administrative procedures, which will be followed in making the determination specified in paragraph (a) of this section.

(h) (1) Such procedures shall provide that prior to approving or disapproving the construction or modification of a facility, building, structure, or installation pursuant to this section, the State or local agency will provide opportunity for public comment on the information submitted by the owner or operator and on the agency's analysis of the effect of such construction or modification on ambient air quality, including the agency's proposed approval or disapproval.

(2) For purposes of subparagraph (1) of this paragraph, opportunity for public comment shall include, as a minimum:

(i) availability for public inspection in at least one location in the region affected of the information submitted by the owner or operator and of the State or local agency's analysis of the effect on air quality.

(ii) a 30-day period for submittal of public comment, and

(iii) a notice by prominent advertisement in the region affected of the location of the source information and analysis specified in subdivision (i) of this subparagraph.

(3) Where the 30-day comment period required in subdivision (2)(ii) of this paragraph would conflict with existing requirements for acting on requests for permission to construct or modify, the State may submit for approval a comment period which is consistent with such existing requirements.

(4) A copy of the notice required by subparagraph (2) of this paragraph shall also be sent to the Administrator through the appropriate Regional Office, and to all other State and local air pollution control agencies having jurisdiction in the region in which such new or modified installation will be located. The notice also shall be sent to any other agency in the region having responsibility for implementing the procedures required under this section.

(i) Suggestions for developing procedures to meet the requirements of this section are set forth in Appendix O.

In this part, Appendix O is added as follows:

Appendix O

The following guidelines are intended to assist in the development of regulations and procedures to comply with the requirements of section 51.18.

1. With respect to facilities which would significantly affect air quality because of emissions arising from associated mobile source activity, review procedures should cover any facility which can reasonably be expected to cause or induce sufficient mobile source activity so that the resulting emissions might be expected to interfere with the attainment or maintenance of a national standard. The likelihood that there will be such interference will vary with local conditions, such as current air quality, meteorology, topography, and growth rates. For this reason, it is not practicable to establish definitive nationally applicable criteria as to the types or sizes of such facilities which should be reviewed. There are, however, certain types of facilities which generally should be considered for review. Experience and estimating techniques have indicated that the air quality impact of certain types and sizes of facilities is potentially significant regardless of their location. They include major highways and airports, large regional shopping centers, major municipal sports complexes or stadiums, major parking facilities, and large amusement and recreational facilities. The above examples are not meant to be exhaustive. Local conditions must be considered in determining which types of facilities will be subject to new source review.

New source review procedures must also consider the impact of a new or modified source in political jurisdictions other than the one in which it is located. Construction or modification of that source must be prevented if the impact in another political jurisdiction is great enough to

interfere with attainment or maintenance of a national standard, whether or not there is significant impact in the political jurisdiction of the facility.

2. Frequently, a substantial amount of information will be needed to make the determinations required by § 51.18. In addition to general information on the nature, design, and size of a facility, data on its expected mode of operation also will be needed in order to estimate the types and amounts of air pollutant emissions likely to be associated with it. The operational data needed to make such estimates may include time periods of operation, anticipated numbers of employees and/or patrons, expected transportation routes, modes, and habits of employees and/or patrons, and so on.

Data on present air quality, topography, and meteorology and on emissions from other sources in the affected area may also be necessary.

In those cases where an environmental impact statement (EIS) has been or will be prepared under the National Environmental Policy Act or similar State or local laws, the EIS may well be an excellent source of information to aid in making the determinations required by § 51.18. Accordingly, agencies responsible for new source reviews are encouraged to make such use of EIS wherever possible in order to avoid needless duplication of information gathering and analysis.

attainment or maintenance of a national standard, whether or not there is significant impact in the political jurisdiction of the facility.

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Data on present air quality, topography, and meteorology may also be necessary, as well as total emissions in the affected region if a sophisticated air quality simulation model is used.

In those cases where an environmental impact statement (EIS) has been or will be prepared under the National Environmental Policy Act or similar State or local laws, the EIS may well be an excellent source of information to aid in making the determinations required by § 51.18. Accordingly, agencies responsible for new source reviews are encouraged to make such use of EIS wherever possible in order to avoid needless duplication of information gathering and analysis.

3. Wherever possible, modeling techniques for approximating the effects of facilities with associated mobile source activity on air quality should be used. A simplified relationship between emission density (pollutant mass/time/area), size of an area (such as a parking lot) and maximum downwind concentration of carbon monoxide is given in Figure 1. This relationship was derived using a technique similar to one used by Hanna.[1] The relationships depicted in Figure 1 are based on assumptions of flat terrain, average atmospheric stability (Class D) with a steady wind speed of 1 meter/second, constant wind direction, even distribution of emissions at ground level over the area, and insignificant edge effects. Various assumptions are needed to calculate precisely the emission density from a facility, including vehicle speeds within the area, the distribution of automobile ages (which will determine which vehicle emission factor to use), the average area occupied by a vehicle, the fraction of the total area which may be occupied by vehicles, and the maximum number of vehicles running simultaneously for one-hour and eight-hour periods (to determine if either carbon monoxide ambient air quality standard will be exceeded).

Prior to employing the emission density-air quality relationships in Figure 1, other factors may first have to be considered in determining whether ambient air quality standards will be exceeded. These factors include measured or estimated existing air quality, the impact of any point sources planned on or near the facility and the impact of any traffic routes on or near the facility passing within close proximity of critical receptors. Also, consideration should be given to any factors which differ substantially from the assumptions made in the Figure 1 relationship, such as topography, meteorology, aerodynamic effects, and spatial

---

[1] Hanna, S.R., "A Simple Method of Calculating Dispersion from Urban Area Sources", Journal of the Air Pollution Control Association, Vol. 21, pp. 774-777 (1971).

distribution of motor vehicles, height of emission, and any facility configuration which would constrain the dispersion of pollutants (such as a parking deck).

In addition to providing an estimate of the impact of individual area sources, relationships similar to those depicted in Figure 1 can be of value in determining which types and sizes of facilities should be subject to review.

A technique incorporating the Figure 1 relationship exists and will be available to the States and through the Regional Offices. Several additional techniques to evaluate the impact of indirect sources of carbon monoxide are currently under study and will be made available when developed.

The following publications are among those describing other available techniques for estimating air quality impact of direct and indirect sources of emissions:

(1) Turner, D. B.; "Workbook of Atmospheric Dispersion Estimates," PHS No. 999-AP-26 (1969).

(2) US EPA; "Compilation of Air Pollutant Emission Factors"' OAP No. AP-42 (Feb. 1972).

(3) Briggs, G. A.; "Plume Rise"; TID-25075 (1969), Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(4) Mancuso, R. L., and Ludwig, F.L.; "Users Manual for the APRAC-1A Urban Diffusion Model Computer Program," "Stanford Research Institute Report" prepared for EPA under contract. CPA 3-68 (1-69) (Sept. 1972). Available at Clearinghouse for Federal Scientific and Technical Information Springfield, Va. 22151.

(5) Zimmerman, J.R.; and Thompson, R. S.; "User's Guide for HIWAY," paper under preparation, Met. Lab., EPA, RTP, N. C.

(6) USGRA: "Proceedings of Symposium on Multi-Source Urban Diffusion Models," OAP Publication No. AP-86 (1970).

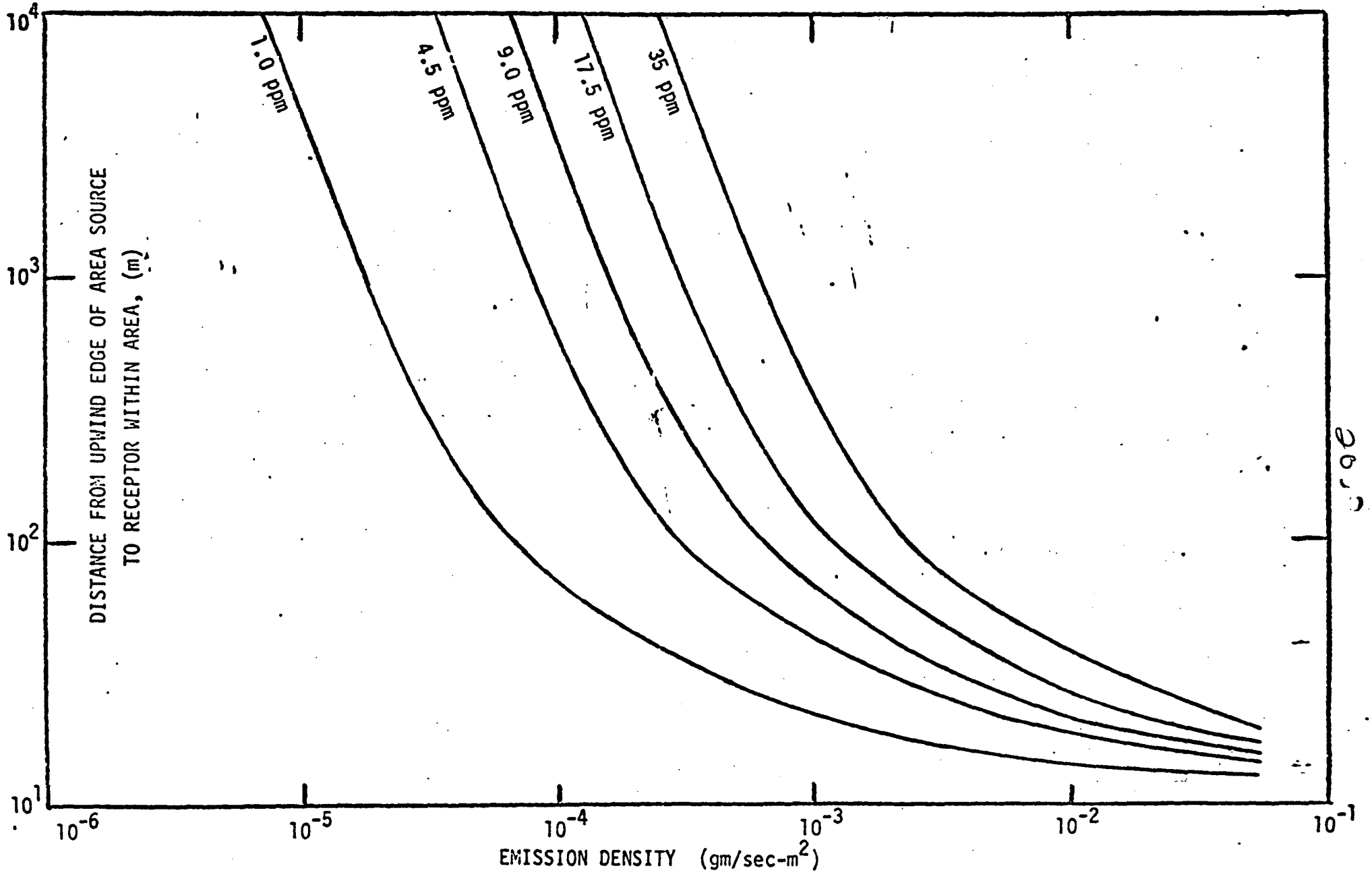
(7) Air Quality Implementation Planning Program, Volume I, Operators Manual, PB 198-299 (1970). Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(8) Hanna, S. R.; "Simple Methods of Calculating Dispersion from Urban Area Sources," paper presented at Conference on Air Pollution Meteorology, Raleigh, N. C. (Apr. 1971). Available at Clearinghouse for Federal Scientific and Technical Information, Springfield, Va. 22151.

(9) ASME: "Recommended Guide for the Prediction of Dispersion of Airborne Effluents," United Engineering Center, 345 E. 47th Street, New York, New York 10017 (1968).

(10) Slade, D. H. (editor): "Meteorology and Atomic Energy 1968," USAEC (1968).

Figure 1. - Relationships of emission density, area source size, and carbon monoxide concentrations



ENVIRONMENTAL PROTECTION AGENCY

Reply to Attn of: OAQPS, CPDD, SIB *Date:* June 22, 1973

Subject: Addition to Guidelines Series OAQPS No. 1.2-004, EPA Source Promulgation - Recordkeeping and Reporting - Public Availability of Data, March 14, 1973.

To: See Below

A computer program has been developed by the National Air Data Branch (NADB), Monitoring and Data Analysis Division (MDAD), to provide the Regional Offices with assistance in implementing the Federal regulation promulgation for recordkeeping and reporting and public availability of emission data. This program was written in an effort to supply the information discussed on pages 7 and 8 of the above mentioned Guidelines document. This information may also be used in determining those sources to be contacted for recordkeeping and reporting requirements. An example of the printout is enclosed showing the information that can be obtained for each source by this program.

The computed emissions are the actual emissions referred to in the Guidelines document as of the year of record. Since emission factors are often used to estimate emissions, NEDS has the computed emissions broken down as to the type of process of source category (Source Classification Codes). In some cases, two different source types may be vented through the same stack (point), as in the enclosed printout. Unfortunately, NEDS is not set up to provide this same breakdown for "allowed emissions", i.e., the emissions allowed under the approved control strategy. Thus, the allowed emissions when available are expressed on a per stack basis, even though the allowed emissions must be determined on source category basis. It should be noted that the allowed emissions and the applicable regulations under the approved control strategy have not generally been entered into the NEDS system as yet and will have to be entered by hand in the interim.

The printout may be obtained by writing to Jacob Summers, NADB, Mutual Building, Research Triangle Park, North Carolina 27711, or by calling 919-688-8395. This information cannot be accessed through the computer terminals at the regional offices at this time. The North Carolina facility is in the process of changing computers. This change should be completed by December 1973. Access through the Regional Office computer terminals will be made available at that time if the demand for information warrants it. It is important to specify the areas to be considered in any requests for data. These may be requested by EPA region; State; State-county; State-county-plant; State-county-plant-point; or AQCR.

Norman G. Edmisten, Chief
Standards Implementation Branch
Control Programs
Development Division

Addressees:

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Director, Division of Air and Water Programs, Regions I - X (3)
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D. Goodwin
J. Hammerle
J. Bosch
J. Summers
SIB Personnel

NATIONAL EMISSION DATA SYSTEM

ALLOWED VERSUS COMPUTED EMISSIONS

Date: June 05, 1973

State (41): Rhode Island
AQCR (120): Metropolitan Providence (Mass - R.I.)

Plant Name and Address: Cranston Print, 1381 Cranston St, Cranston

Point Number: 01

SCC Name				Year of Record
SCC_1: Extcomb Boiler	Industrial	Residual Oil	10-100MMBTU/HR	69
SCC_2: Extcomb Boiler	Industrial	Natural Gas	10-100MMBTU/HR	69

	Part	SOx	NOx	HC	CO
Allowed Emissions:					
Computed Emissions:					
SCC_1:	7	109	19	<1	<1
SCC_2:	<1	<1	11	2	<1
Total:	8	109	30	3	<1

Regulations:

Point Number: 02

SCC Name				Year of Record
SCC_1: Extcomb Boiler	Industrial	Residual Oil	10-100MMBTU/HR	69
SCC_2: Extcomb Boiler	Industrial	Natural Gas	10-100MMBTU/HR	69

	Part	SOx	NOx	HC	CO
Allowed Emissions:					
Computed Emissions:					
SCC_1:	6	91	25	<1	<1
SCC_2:	<1	<1	9	2	<1
Total	7	91	25	2	<1

Regulations:

lw

INSPECTION MANUAL FOR THE ENFORCEMENT OF NATIONAL EMISSION STANDARDS FOR ASBESTOS

by

TIMOTHY R. OSAG

GILBERT H. WOOD

GEORGE B. CRANE

OFFICE OF AIR QUALITY PLANNING AND STANDARDS

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF AIR QUALITY PLANNING AND STANDARDS
ENGINEERING SERVICES BRANCH
DOCUMENT DEVELOPMENT SECTION
JULY 1973

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1. INTRODUCTION

1.1 PURPOSE OF DOCUMENT.

This document has been issued to accompany promulgation of National Emission Standards for Hazardous Air Pollutants (NESHAPS). It is intended to function as an inspection manual for use in enforcing national emission standards for asbestos. Regional, State and other air pollution officials should find it useful for this purpose.

The Federal regulations for asbestos are given and the interface of EPA with other regulatory agencies is explained. The fabric filter or baghouse, is the device commonly used between asbestos source and atmosphere, and general procedures for inspecting a baghouse are presented. It is not possible to cover all details of the many kinds of baghouses; therefore the inspector should become familiar with the installations within his jurisdiction and with any unique features of these units.

Visible emissions to atmosphere from buildings are conceivable. Therefore, this manual discusses many sources of asbestos emissions from asbestos mills and manufacturing establishments. Process flow diagrams indicate points of asbestos emissions, and control techniques applicable to each source are mentioned. This information will help the inspector to trace visible emissions back to their source.

In all cases, inspectors will need to demonstrate the presence of asbestos in an air emission, or in a construction material. The requirements for satisfying this need are outlined.

1.2 GOVERNMENT AGENCIES THAT REGULATE ASBESTOS EMISSIONS.

This manual was written for the use of inspectors from the Environmental Protection Agency or for other air pollution enforcement personnel. However, other Government agencies have jurisdiction and interests in asbestos air emissions. Figure 1-1 illustrates those Federal agencies having responsibilities for controlling asbestos emissions. As the figure shows, these responsibilities are:

a.	EPA -	regulate and control emissions to atmosphere.
b.	Occupational Safety and Health Administration -	regulate and control working environment, indoors and out.
c.	Bureau of Mines -	regulate and control environments in and around mining properties.

Further information on OSHA and Bureau of Mines may be obtained from:

Occupational Safety & Health Administration

U. S. Department of Labor

1726 M Street N. W.

Washington, D. C. 20210

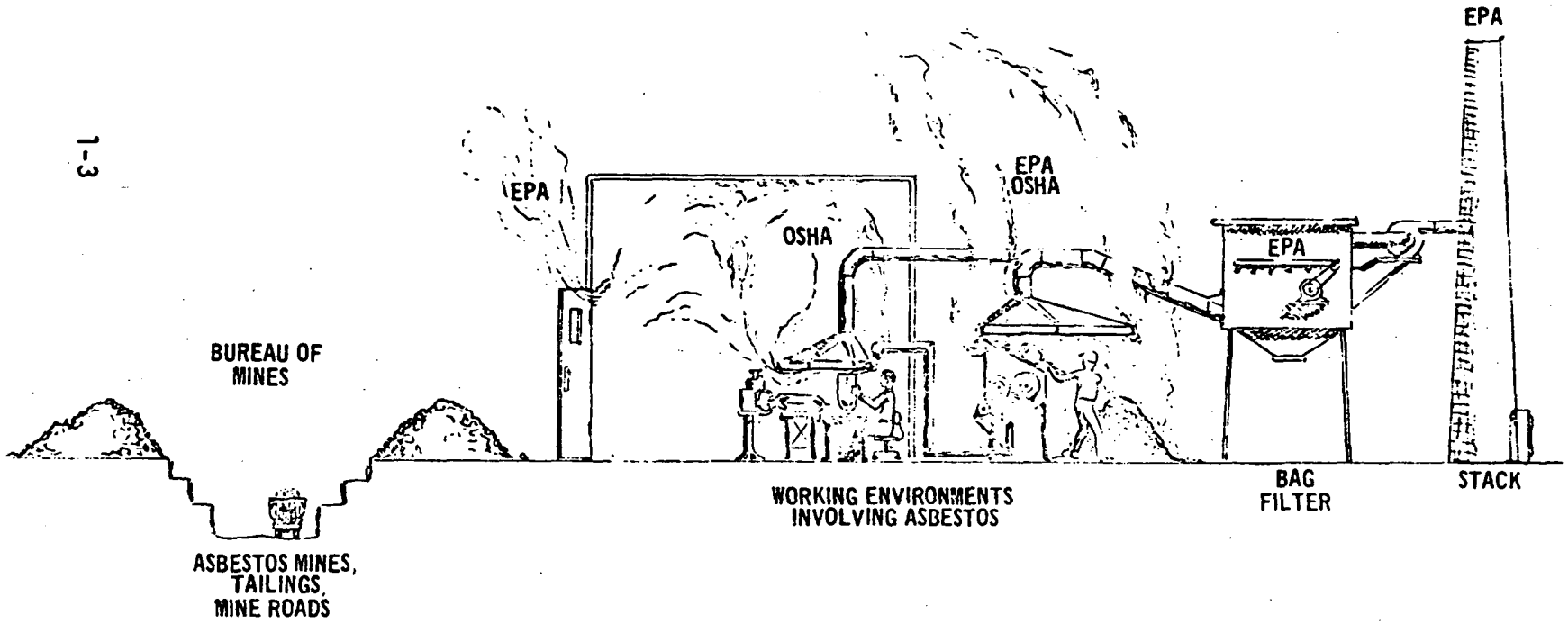


Figure 1-1. Regulatory responsibilities of Government agencies for controlling asbestos emissions.

Office of the Deputy Director
Health and Safety
U. S. Bureau of Mines
18th and C Streets N.W.
Washington, D.C. 20240

1.3 ASBESTOS EMISSION STANDARDS.

1.3.1 Intent of Standards

On April 6, 1973, the Administrator promulgated National Emission Standards for Hazardous Air Pollutants, including asbestos. The standards are intended to call attention to significant sources of asbestos air emissions and to control all of them so that an ample margin of safety for protection of public health will result. The standards avoid prohibition of essential uses of asbestos and give due account to operations already under control by other agencies.

1.3.2 Sources Covered

1.3.2.1 Asbestos mills

The promulgated standards prohibit visible emissions to the outside air from any asbestos mill. Outside storage of asbestos

materials is not considered a part of an asbestos mill. As an alternative to meeting a no-visible-emission requirement, an owner or operator may elect to use the following specified methods to clean air streams containing particulate asbestos material before the air streams are vented to the atmosphere. If this alternative is elected, the following requirements must be met:

(A) Fabric filter collection devices must be used, except as noted in paragraphs (B) and (C). Such devices must be operated at a pressure drop of no more than 4 inches water, as measured across the filter fabric. The air flow permeability, as determined by ASTM Method D737-69, must not exceed 30 cubic feet per minute per square foot (cfm/ft^2) for woven fabrics or 35 cfm/ft^2 for felted fabrics, except that 40 cfm/ft^2 for woven or 45 cfm/ft^2 for felted fabrics is allowable for filtering air from asbestos ore driers. Felted fabric must have a weight of at least 14 ounces per square yard of material and be at least 1/16 inch thick throughout. Synthetic fabrics must not contain fill yarn other than that which is spun.

(B) Where the use of a fabric filter would create a fire or explosion hazard, the Administrator may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 40 inches water.

(C) The Administrator may authorize the use of filtering devices other than the specified fabric filters and wet collectors provided the owner or operator demonstrates to the Administrator's

satisfaction that the filtering of particulate asbestos is equivalent to that achieved through the use of the specified equipment.

(D) All air-cleaning equipment authorized by this section must be properly installed, used, operated, and maintained. 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.

1.3.2.2 Roadways

Surfacing roadways with asbestos tailing is prohibited except for temporary roadways on areas of asbestos ore deposits. The deposition of asbestos tailings on roadways covered with snow or ice is considered surfacing.

1.3.2.3 Manufacturing

Any visible emission to the atmosphere from a building or structure in which any of the following operations are conducted - or directly from the operation itself if it is conducted outside of a building or structure - is prohibited.

Affected Manufacturing Operations

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

(B) The manufacture of cement products.

(C) The manufacture of fireproofing and insulating materials.

(D) The manufacture of friction products.

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

(F) The manufacture of floor tile.

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

(H) The manufacture of plastics and rubber materials.

(I) The manufacture of chlorine.

As an alternative to the no-visible-emissions regulation, the owner or operator of a manufacturing operation may elect to use a specified gas cleaning technique (Section 1.3.2.1) to remove asbestos particulate from air streams before they are emitted to the atmosphere.

1.3.2.4 Demolition

Operations involving the demolition of any institutional, commercial, or industrial building (including apartment buildings having more than four dwelling units), structure, facility, or installation which contains a boiler, pipe, or structural member that is insulated or fireproofed with friable asbestos material must comply with the following control procedures.

(A) Friable asbestos materials used as insulation or fireproofing for any boiler, pipe, or structural member must be wetted and removed before the commencement of any demolition operation.

Asbestos debris must be wetted sufficiently to remain wet during all stages of demolition and related handling.

(B) Any pipe or structural member that is covered with friable asbestos insulating or fireproofing material must be lowered to the ground.

(C) No friable asbestos debris may be dropped or thrown from any building, structure, facility, or installation to the ground or from any floor to a floor below. When the demolition operation involves buildings, structures, facilities, or installations 50 feet or greater in height, asbestos debris must be transported to the ground by dust-tight chutes or containers.

Any demolition operation is exempt from the previously listed requirements if the building, structure, facility, or installation is declared by the proper state or local authority to be structurally unsound and in danger of imminent collapse. Under this circumstance, the only requirement is the adequate wetting of asbestos debris prior to demolition.

1.3.2.5 Spraying

Visible emissions to the atmosphere from the spray application, to equipment or machinery ,of insulating or fireproofing material containing more than 1 percent asbestos on a dry weight basis (see Section 6) are prohibited. As an alternative to the no-visible-emission regulation, an owner or operator

may elect to clean emissions from air streams by using the methods discussed in Section 1.3.2.1 before such air streams are vented to the outside air. Spray-on materials used to insulate or fireproof buildings, structures, pipes, or conduits must contain less than 1 percent asbestos (dry weight basis).

2. ASBESTOS MILLS

2.1 PROCESS DESCRIPTION.

Asbestos ore is transported from the mine to the mill complex where it is treated in a series of primary and secondary crushers which produce material with a maximum diameter of 1 5/16 inches for the wet-ore stockpile. Ore from this stockpile serves as feed for the milling operation illustrated in Figure 2-1.

The wet ore is dried, treated in a fine crushing circuit to reduce the size to approximately 1/4 inch diameter, and introduced to a rock circuit. The rock circuit is composed of a series of crushing and screening operations and has the primary function of separating the asbestos fibers from the co-existing rock. Air suction hoods (aspirators) are used to entrain the asbestos fibers in an air stream and separate them from the waste rock. The circuit performs the secondary function of grading the fibers according to length.

Air streams convey the asbestos fibers from the rock circuit to a fiber-cleaning circuit. Cyclone collectors are used to remove the entrained fibers. Exhaust air from the cyclones is sent to a fabric filter before being vented to the atmosphere. The fiber cleaning circuits perform additional fiber opening, classify and separate opened fibers from unopened fibers and waste material, and permit additional fiber grading.

The final portion of the milling operation is the cleaning and bagging circuit. In this circuit, fibers receive additional cleaning and are separated into several standard grades before being packaged for shipping. A more detailed description of the milling operation is

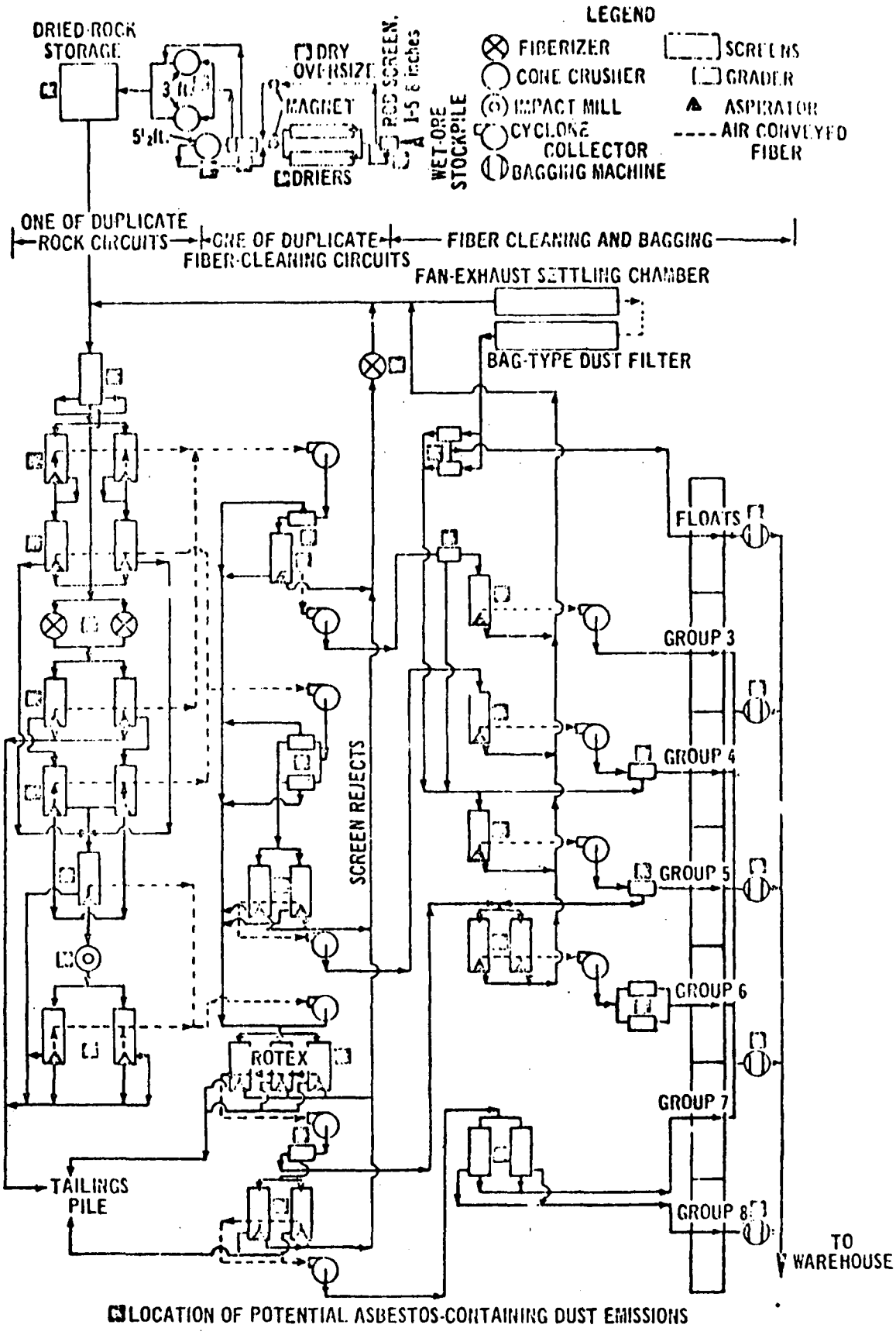


Figure 2-1. Asbestos milling.

available in the AP-117 control techniques document for asbestos emissions.[1] Inspectors should note Figures 3-4, 3-5, 3-6 and 3-8 and should read this document to become familiar with the processes they must inspect.

2.2 EMISSION POINTS.

A list of exhaust points for mill ventilation and process air streams must be obtained on an individual plant basis. This information can be obtained by contacting the mill owner or operator prior to the actual inspection. Major sources of emissions within the mill and applicable control techniques are as follows:

1. Emission Source -- open conveyor belts transporting ore or partially processed ore.

   Control Technique -- enclose conveyor and transfer points and exhaust to baghouse, or wet the transported material.

2. Emission Source -- primary and secondary crushers.

   Control Technique -- enclose and exhaust crusher inlet and outlet to baghouse.

3. Emission Source -- vibrating and shaking screens.

   Control Technique -- enclose screens and exhaust to baghouse.

4. Emission Source -- cyclone exhaust.

   Control Technique -- treat exhaust in baghouse.

5. Emission Source -- ore-drier exhaust.

   Control Technique -- treat exhaust in baghouse.

6. Emission Source -- mills and fiberizers.

Control Technique -- enclose inlets and outlets of mills and fiberizers and exhaust to baghouse.

7. Emission Source -- fiber grading circuits.

Control Technique -- enclose inlet and outlet ends of graders and exhaust to baghouse.

8. Emission Source -- bagging machines.

Control Technique -- install dust capture hoods and exhaust to baghouse.

9. Emission Source -- disposal of mill tailings.

Control Technique -- enclose conveyors carrying mill tailings and exhaust to baghouse or wet tailings before transporting.

2.3 INSPECTION PROCEDURES.

2.3.1 General Procedure

A visible emission, as defined by the standard, is any emission which is visually detectable without the aid of instruments and which contains particulate asbestos material.

If the no-visible-emission option is chosen, the first step in the inspection of an asbestos mill should be the visual examination of all exhaust points (stacks, vents, etc.) for mill ventilation and process air streams. The inspector should be a qualified smoke reader who has successfully completed the EPA course on visible emission evaluation or an equivalent course. The visual examination should be conducted in accordance with 40 CFR 60, Method 9 of the Appendix.

The visual detection of an emission must be followed by confirmation that asbestos material is present in the visible gas stream. Further guidance on collection and identification of asbestos samples will be provided by DSSE.

Exhaust streams from ore driers are unique, because water vapor in these streams can be sufficient to cause a visible plume. The inspector must read the opacity of the exhaust stream at the point where the steam plume disappears. A visible emission at this point would be considered a violation of the no-visible-emission requirement.

If the alternative to the no-visible-emission requirement is chosen and a baghouse is in use, either the design and operating specifications must match those presented in Section 1.3.2.1(A), or the owner or operator of the mill must demonstrate to the Administrator's satisfaction that the efficiency of the unit is equivalent to that of the specified control system. Design information, such as fabric specifications and operating pressure, can be obtained from the plant owner or operator. The presence of visible emissions in the baghouse exhaust gases is evidence of a probable malfunction. None of the acceptable baghouses that have been observed have exhibited visible emissions when in proper operating condition. Visible emissions from baghouses are possible during the start-up period, but should be eliminated as a filter cake forms on the clean cloth.

Inspection procedures for fabric filters and high-energy wet scrubbers are presented in the following sections. These procedures are also applicable to systems used to control emissions from the affected manufacturing operations or during the spray application of

asbestos-containing insulation or fireproofing onto equipment or machinery and therefore will not be duplicated in Sections 4 or 6. Unique situations that would alter the inspection scheme will be discussed whenever pertinent.

2.3.2 Inspection Procedure for Baghouses

Discussion

Fabric filters are produced by several different manufacturers and can have basic design differences. In general, they can be classified by (1) type of filter element (supported or unsupported), (2) the intended use (continuous or intermittent), and (3) the method of removing collected dust from the filter fabric (mechanical shaking, mechanical rapping, pulse-jet, etc). Examples of three common baghouse designs are presented in Figures 2-2 through 2-4. A brief description of each system is presented in this section. A more complete discussion can be obtained from the control techniques document for particulate air pollutants.[3]

The fabric filter shown in Figure 2-2 is an unsupported tubular uni-bag type. Bags are supported at their tops by a bag and shaker support and are attached at their bottoms to a collar sealed into the cell plate. The cell plate is the perforated metal plate that separates the classified section from the clean air chamber and channels dust-laden air into the filter elements.

Dust-laden air enters a classifier section in which the larger particles are removed by settling. The air then flows upward through the bag entrances, passes through the bag fabric and is exhausted to the atmosphere. Dust particles accumulate on the inside of the bags and must

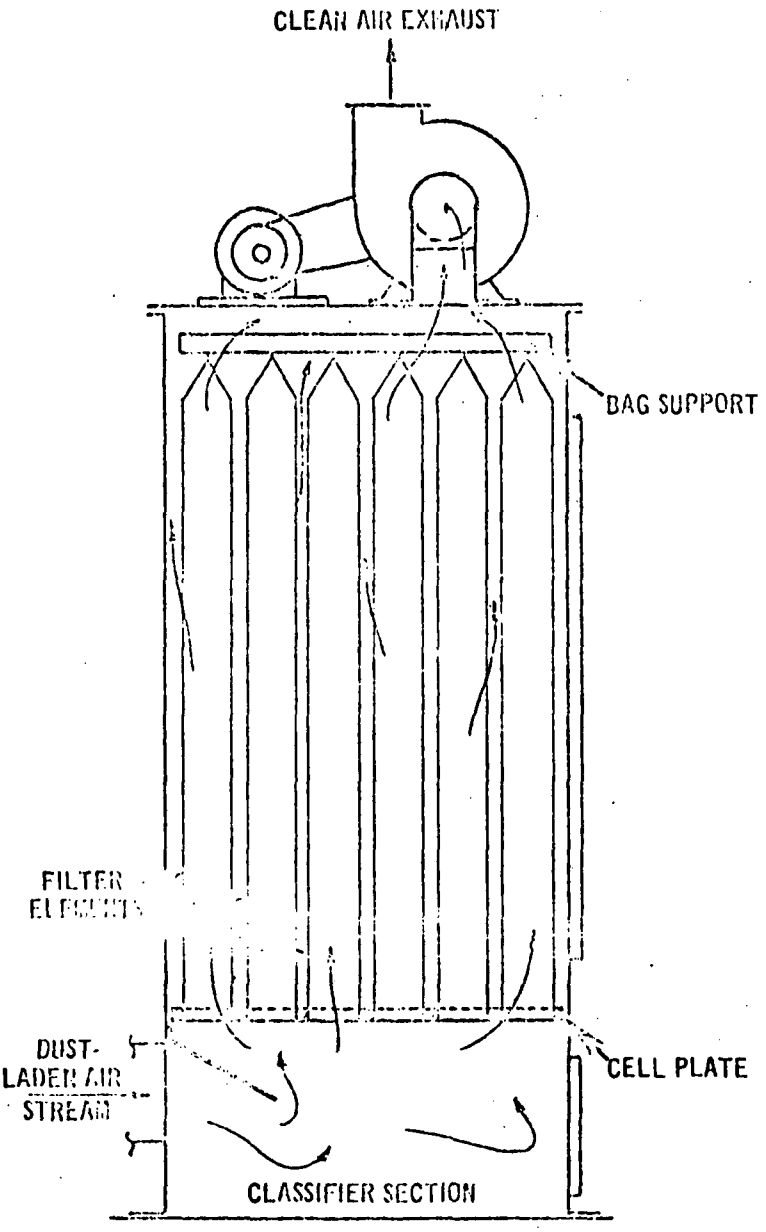


Figure 2-2. Unit type fabric collectors, unsupported tubular elements. [4]

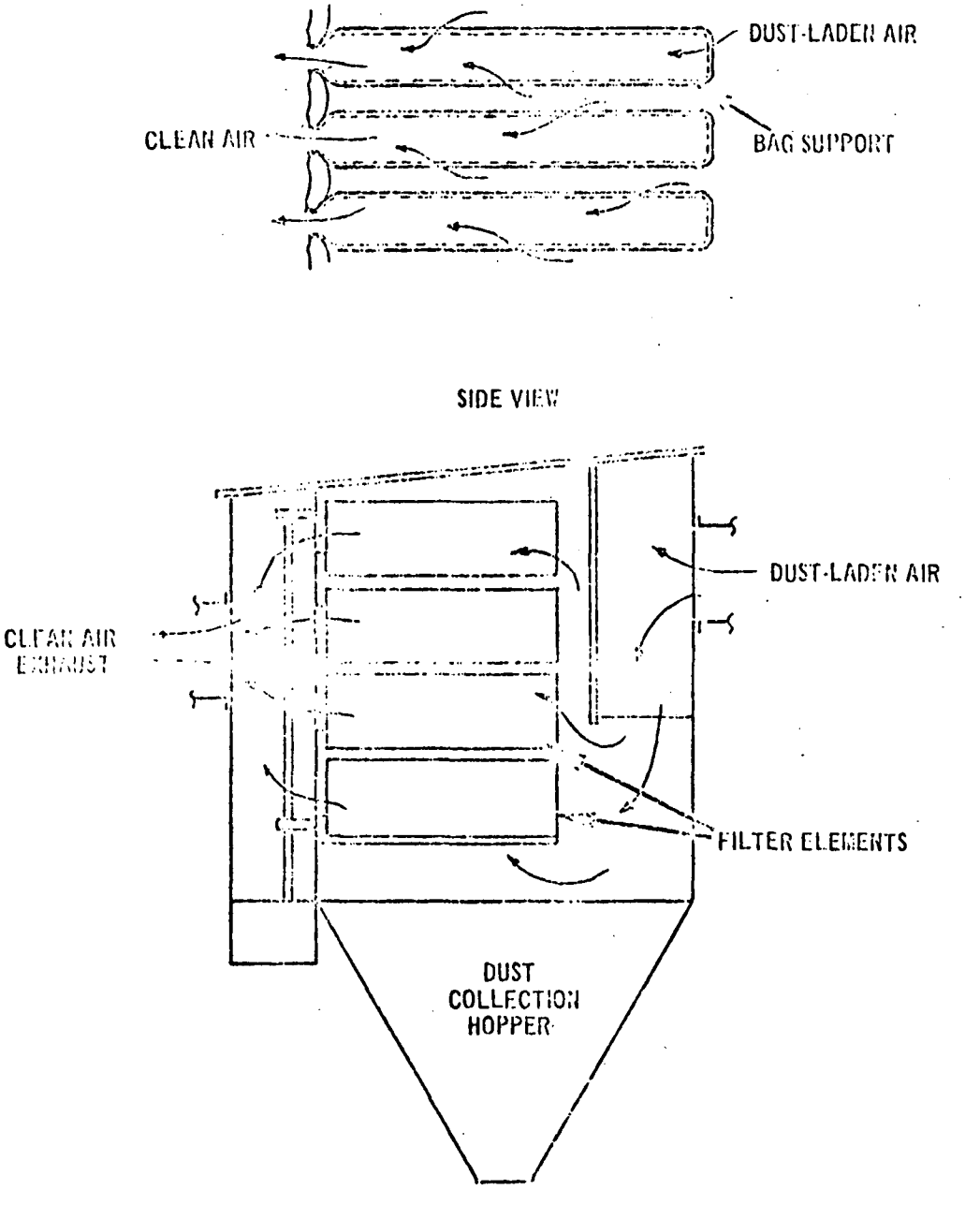


Figure 2-3. Screen or envelope type collector. [4]

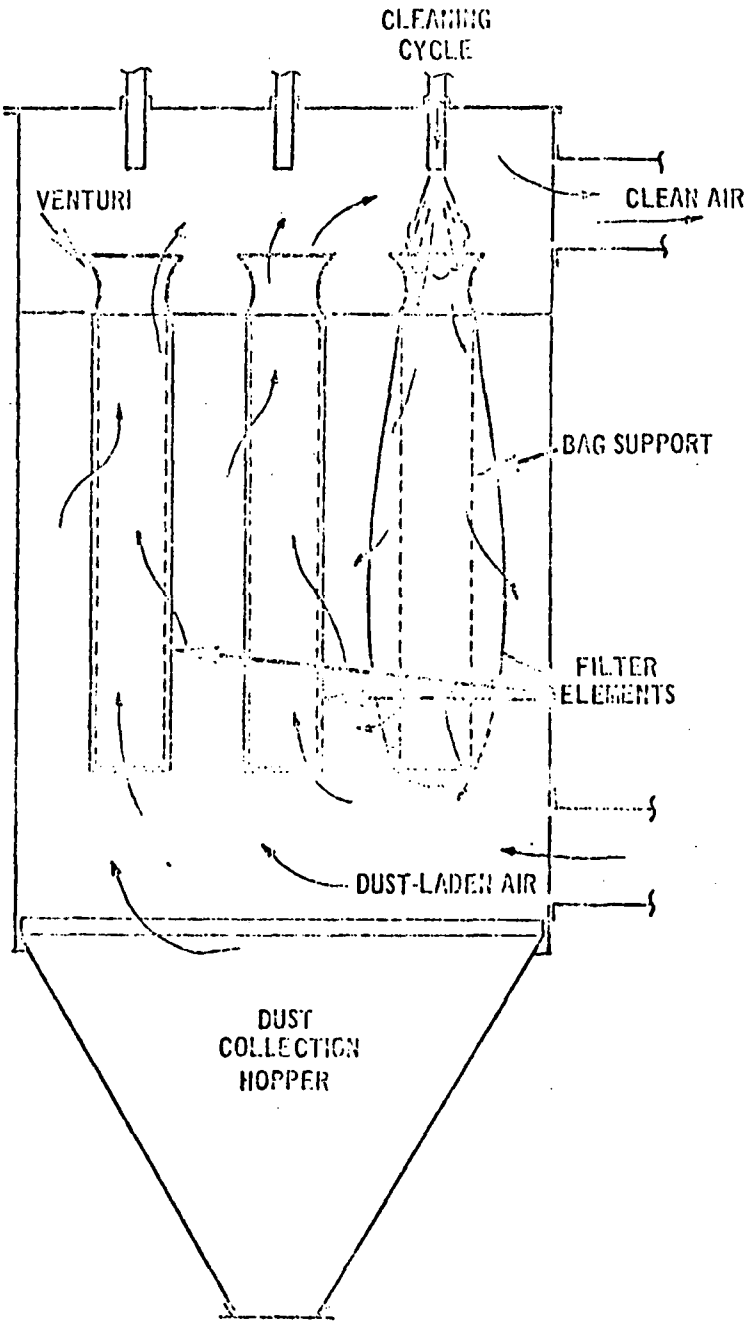


Figure 2-4. Pulse-jet cleaning type collector. [4]

be removed by periodic cleaning, usually with a mechanical shaker. The frequency and length of the cleaning cycle depends upon the specific operation.

When the filtration process is reversed, with the gas flowing from the outside to the inside of the filter element, it is necessary to support the filter media against the developed pressure. Supported filter elements are either of the envelope (Figure 2-3) or the tubular (Figure 2-4) type. In the case of a screen or envelope type of collector, dust-laden air entering the filter encounters a baffle plate that causes the stream to diffuse over the entire chamber. This diffusion assures uniform loading throughout the system and permits the heavier dust particles to settle out. The air then passes through the filter media to the inside of the bag and out the open end of the bag to the clean air chamber. Dust particles are deposited on the outside surface of the bags and must be removed by periodic cleaning. Cleaning is usually accomplished by mechanical shaking or rapping.

A schematic diagram of a fabric filter that utilizes a pulse-jet cleaning mechanism is presented in Figure 2-4. This system uses tubular-type, supported filter elements. The collector consists primarily of a series of cylindrical filter elements enclosed in a dust-tight housing. Dusty air is admitted to the housing and clean air withdrawn from inside the filter elements. Periodic cleaning is required to remove dust particles which accumulate on the outside of the bags. Cleaning is accomplished by introducing a jet of high-pressure air into a venturi mounted above each bag. The reverse flow of air created by the jet pulse is sufficient to loosen accumulated dust and clean the the filter media. Cleaning is continuous, with a complete cycle every 2 to 5 minutes.

The existence of several types of fabric filters complicates the procedure of evaluating specific systems. The inspection scheme provided in this manual, although somewhat general in nature, is adequate to allow a full evaluation of most fabric filters. It is suggested, however, that the inspector make an effort to obtain and review the operating instructions for the specific unit being examined whenever possible. Although many vendors do not include a separate inspection manual with their operating instruction package, the information provided might suggest some alteration in the listed procedure.

Procedure

1. Identify the type of fabric filter being used: manufacturer, model, type of bags, cleaning mechanism, capacity, and source of gas stream being treated.

2. Compare the fabric specifications of the bags being used with the referenced specifications. Air flow permeability (ASTM Method D 737-69) should not exceed 30 cfm/ft^2 for woven or 35 cfm/ft^2 for felted fabrics. Permeability is defined as the air flow in cubic feet per minute passing through a square foot of clean new cloth with a pressure differential of 0.50 inch water. An exception to this requirement will be allowed for fabric filters treating air from asbestos ore driers. In this case, an air flow permeability of 40 cfm/ft^2 for woven or 45 cfm/ft^2 for felted fabrics is acceptable. Felted fabrics must weigh at least 14 ounces per square yard and be at

least 1/16 inch thick. Synthetic fabrics must not contain fill yarn other than that which is spun. The inspector should determine if the user has installed bags differing from those specified in the original fabric filter design and the reason for any change.

3. Observe pressure drop across fabric filter. The most common differential pressure instrument used is a simple "U"-tube manometer filled with water or anti-freeze solution and connected across the filter media. Other devices that indicate differential pressure include well-type manometers, bourdon-type gauges, and diaphragm-actuated gauges. Pressure drop should be no more than 4 inches water . A reading several inches in excess of this value is a sign that a system malfunction (blinding, etc.) exists. A low pressure-drop reading would indicate a bag rupture or leak.

4. Search for bypass lines or ductwork. Determine the justification for them. Determine if any alternate atmospheric protection is available if these bypasses are used.

5. Inspect fabric filter for leaks. The approach will depend upon the collector design. In the case of filters using unsupported bags, the inspector can actually enter the collector and evaluate the condition of the bags. Filter elements should be examined for tears, ruptures, leaks, and signs of heavy wear. The inspection should be scheduled to concur with a period when the unit has been removed from service for cleaning. When examining a system

designed for continuous service, the inspection must be on a compartment-by-compartment basis.

Dust deposits on the clean air side of the bags or the cell plate are signs of collector malfunctions. Leaking bags will frequently have a streak of dust leading from the leak towards the clean air exit. Leaks in the cell plate are usually indicated by a small mound of accumulated dust surrounding the leak. The floor of the clean air chamber should be kept clean so that any dust deposits observed during an inspection can be attributed to a collector malfunction. Regular cleaning of the baghouse cell plate is not common at most operations, however, it is felt that the practice could be introduced without requiring an unreasonable amount of effort.

Special attention should be given to the inspection of the bags around the area where they are attached to the cell plate (collar), since this is a point of high wear. All bags should be firmly attached to the cell plate or to the collar attached to the cell plate. If a bag leak or rupture is located, the bag should be tied off below the leak or the cell plate entrance capped as a temporary measure until the bag can be replaced.

When evaluating fabric filters equipped with supported filter elements (gas flow from outside of filter element to inside), visual examination of the interior of the collector is restricted because of the presence of dust-laden air. Most fabric filters using supported elements employ continuous cleaning techniques

(pulse-jet, reverse jet) and are therefore not normally removed from service for cleaning (Figure 2-4). The units will have to be inspected when the systems are in operation. The major emphasis should be placed on the baghouse manometer reading and the cleanliness of the collector exhaust stream. At pulse-jet-cleaned units, the inspector should gain access to the upper plenum chamber (clean air exit) and observe the exhaust stream during a cleaning cycle (complete cycle every 2 to 5 minutes). The presence of a leak in any specific bag is indicated by the discharge of a puff of dust from the venturi immediately following the cleaning step.

The presence of dust in the clean air plenum chamber is an indication of a bag leak or tear. The chamber should be kept free of dust deposits so that any dust accumulation can be attributed to a collector malfunction. Regular cleaning of the clean air plenum chamber is not a common practice at most operations, but could be initiated without too much difficulty. Should a bag leak be discovered, the venturi can be capped as a temporary measure until the unit can be removed from service and the bag replaced.

6. Observe bag spacing. Sufficient clearance should be provided so that one bag does not rub another. This decreases the effective filter surface and increases bag wear.

7. Inspect ductwork and collector housing for leakage, wear, corrosion,

and general state of repair. The general location of leaks can be determined by the air noise. Leaks in the housing or ductwork should be sealed either by welding or the use of epoxy either on a temporary or permanent basis as conditions permit.

8. Inspect dust hoppers for accumulation of dust. In most cases, the hopper should not be allowed to become more than half full in order to avoid re-entrainment of the collected material.

9. Observe the emptying of dust hoppers. Note the type of waste containers being used and the presence or absence of visible emissions. Obtain information regarding ultimate fate of asbestos waste.

10. Review operating procedures and maintenance schedules. Frequent inspection and maintenance is essential to the effective operation of the collector. External maintenance inspection of the filter housing and system should usually be performed daily, while the filter elements should typically be inspected once a week. Note length and frequency of cleaning cycle. This will vary depending upon the specific applications.

11. Determine what preventive maintenance procedures are used to avoid fabric failures and what procedures are used to replace bags or correct malfunctions.

12. Gas streams from baghouses servicing asbestos ore dryers may show visible plumes of steam. The water content results both from the

hydrogen in the ore-dryer fuel and from the moisture in the asbestos being dried. The inspector should read the opacity at the point where the steam plume disappears. Any opacity here is evidence of a leak or system malfunction.

The inspector must remember that the baghouse temperature must be held above the dewpoint of the ore dryer exit gas. This dewpoint will depend upon the fuel being used and the moisture in the asbestos to be dried; more exactly, it will depend upon the weight (or mol) fraction of water vapor in the gas stream. For a specific mill, the dewpoint will fall within a limited temperature range. The inspector should therefore observe the condition of the insulation on the baghouse (gas temperature is maintained above dewpoint by preventing gas heat loss) and check the gas temperature history. A fall below the dewpoint would mean trouble for the baghouse operator, by caking, blinding and increased pressure drop, through the bags.

2.3.3 Inspection Procedure for Wet Scrubbers

Discussion

High-energy wet scrubbers could find application in controlling asbestos dust. Specifically, scrubbers might be used in situations in which the use of fabric filters would create a fire or explosion hazard. Low energy (6 to 8 inches water) scrubbers have been used as a control for asbestos emissions at Johns-Manville's Manville, New Jersey plant; Raybestos - Manhattan's Manheim, Pennsylvania plant;

Union Carbide's King City, California mill; and several Canadian mills. No high-energy scrubbers, however, are known to be in use as a control technique for asbestos in any of the mills or manufacturing operations covered by the standard. All existing scrubbing systems are expected to be replaced by fabric filters.

Procedure

1. Identify the type of wet scrubber being used: manufacturer, model, type, unit contacting energy, capacity, and source of gas stream being treated.

2. Compare design specifications with referenced specifications. The collector must be designed to operate with a unit contacting energy equivalent to 40 inches water pressure drop. Contacting energy is that portion of useful energy expended in producing contact of the particulate matter with the scrubbing liquid. Unit contacting energy is equal to the energy per unit weight of gas required to introduce the gas stream into the contact chamber, plus, the energy per unit weight of gas required to introduce scrubbing liquid into the contact chamber, plus the mechanical (shaft) energy per unit weight of gas applied to effect contact between the scrubbing liquid and the gas stream.[5] In the case of a venturi scrubber, the most common type of high-energy scrubber, the contribution of the liquid stream is small and most of the energy for contacting is derived from the gas stream. The contacting energy is therefore essentially equivalent to the gas stream pressure drop.

3. Note the design specifications for gas-stream volumetric flow

rate, gas-stream pressure drop, liquid-stream volumetric flow rate, and liquid-stream inlet pressure. Observe the pressure drops and flow rates if the necessary instruments have been installed.

4. Search for bypass lines or ductwork. Determine the justification for them. Determine if alternate atmospheric protection is available in case of their use.

5. Inspect ductwork and exterior of scrubber for leaks, wear, corrosion, and general state of repair.

6. Review operating procedures and maintenance schedules. Frequent inspection and maintenance is essential to the effective operation of the scrubber. Obtain information regarding ultimate fate of collected asbestos.

7. Determine what procedures are used in cases of scrubber malfunction.

2.4 REFERENCES FOR SECTION 2.

1. Control Techniques for Asbestos Air Pollutants. U. S. Environmental Protection Agency. Research Triangle Park, North Carolina. Publication Number AP-117. February 1973.

2. Hutcheson, J. R. M. Environmental Control in the Asbestos Industry of Quebec. 73rd Annual General Meeting of the Canadian Institute of Mining and Metallurgy, Quebec City, 25 p. 1971. p. 9, 23.

3. Control Techniques for Particulate Air Pollutants. U. S. Department of Health, Education, and Welfare. Washington, D. C. Publication Number AP-51. January 1969. p. 102-126.

4. Types of Fabric Filters. Industrial Gas Cleaning Institute, Inc. Stamford, Connecticut. Publication Number F-5. August 1972. 8 p.

5. Semrau, K. T. Dust Scrubber Design - A Critique on the State of the Art. Journal of the Air Pollution Control Association. 13:587-594, December 1963.

3. ROADWAYS

3.1 DISCUSSION.

The inspector should be familiar with sources of asbestos tailings in his jurisdiction. These sources include asbestos mines and mills, which have been and are a source of rock wastes. The large available quantities of such rock wastes have furnished incentive to use them to surface roads. It is economical to process asbestos rock to a residual asbestos content of about 3 percent. The inspector should maintain enough surveillance over mines and mills to be aware of the ultimate fate of such asbestos-containing solids wastes.

The inspector can maintain some surveillance over roads by visual examination of pieces of rock. Asbestos in such rock will probably have a color varying from white, through greenish or yellowish white to brownish. It will have a silky, metallic, dull and opaque luster. Fibres may be coarse or fine and probably are parallel with the walls. Sometimes they are felted. It is also interesting to note that a suspension of chrysotile in water has a pH of over 10.[1] This is alkaline to litmus and to phenolphthalein. Although this property is not unique, it is one added test to use for identification.

If the presence of asbestos is suspected, the inspector may take samples of rock or of apparently fibrous road materials and submit them for microscopic examination.

3.2 REFERENCES FOR SECTION 3.

1. Kirk-Othmer Encyclopedia of Chemical Technology, Second Edition, Vol. 2., pg. 738, Interscience Publishers, N. Y.

4. MANUFACTURING

4.1 ASBESTOS TEXTILES.

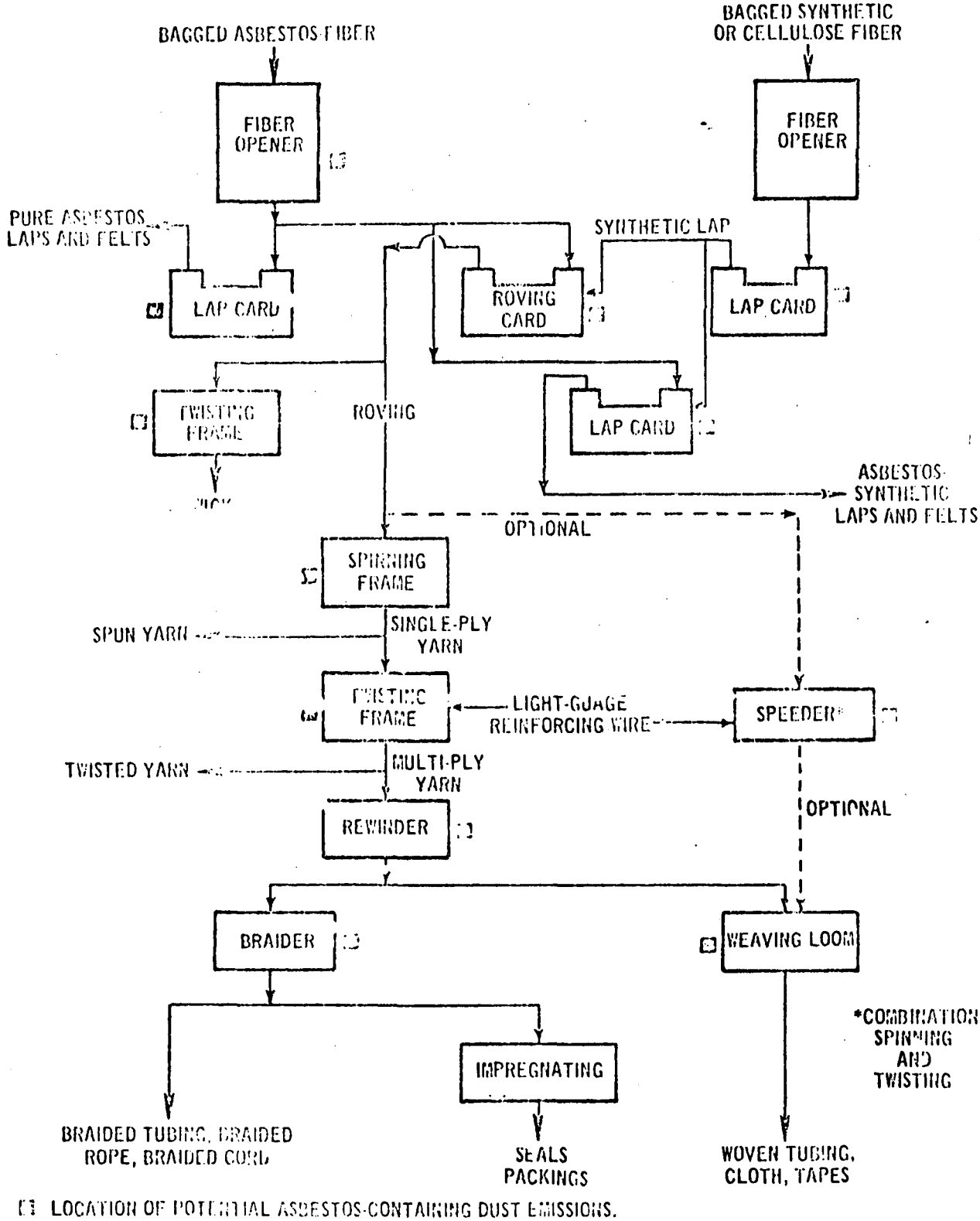
4.1.1 Process Description

The majority of the asbestos fibers received by a textile plant are of the milled variety. These fibers have frequently been compressed during packaging and therefore require willowing (fiber opening) before being sent to the carding operation.

Either in a preliminary mixing operation or during carding, small amounts of a carrier fiber (rayon or cotton) are blended with the asbestos fibers to improve the spinning characteristics of the asbestos. The asbestos content of the mixture will range from 80 percent to almost 100 percent depending upon the requirements of the end-product.

Carding is the preliminary step in the manufacture of textiles. The asbestos fibers undergo a final opening and cleaning process by the carding machine, which combs the fibers into a parallel arrangement thereby forming a coherent mat of material. This mat is separated into untwisted strands and wound onto spindles to form the roving from which asbestos yarn is produced.

Roving is converted into yarn by a conventional spinning operation. The yarn may then undergo a twisting, weaving, or braiding operation depending on the desired end-product. Figure 4-1 provides a schematic diagram of an asbestos textile plant. Additional information is available in the control techniques document for asbestos emissions.[1]



LOCATION OF POTENTIAL ASBESTOS-CONTAINING DUST EMISSIONS.

Figure 4-1. Asbestos textiles.

4.1.2 Emission Points

A complete list of all exhaust points (stacks, vents, etc.) for plant ventilation and process air streams is necessary for the inspection of any manufacturing operation. This information must be obtained from the plant owner or operator. Major sources of emissions within a textile plant and appropriate control techniques are as follows:

1. Emission Source -- opening and emptying of bags of asbestos into fiber openers and carding machines.

   Control Technique -- install dust capture hoods on bag opening stations and carding machines with exhaust to baghouse.

2. Emission Source -- carding operation.

   Control Technique -- install dust capture hoods with exhaust to baghouse.

3. Emission Source -- spinning and twisting machines.

   Control Technique -- enclose spindles with exhaust to baghouse or convert to wet process.

4. Emission Source -- looms and braiding machines.

   Control Technique -- install dust capture hoods with exhaust to baghouse.

5. Emission Source -- open carts of asbestos fiber, roving, or yarn.

   Control Technique -- cover carts.

6. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bag in enclosed container immediately after emptying and deposit in landfill.

4.1.3 Inspection Procedures

Ventilation and process air from the fiber opening (willowing) and carding machines could have loadings similar to the process gas streams of asbestos mills. Most of the other gas streams are expected to have lower fiber concentrations. The inspection procedures described for asbestos mills in Section 2.3 will apply to the manufacturing of textiles.

4.2 CEMENT PRODUCTS.

4.2.1 Process Description

Asbestos-cement products contain from 15 to 30 percent (by weight) asbestos, usually of the chrysotile variety. The largest sector of this industry is involved in the production of asbestos-cement pipe. Other products include siding shingles and flat or corrugated sheets.

Siding shingles and other sheet products may be produced by either a dry or wet process. In the dry process, a uniform thickness of the dry mixture (asbestos fibers, Portland cement, and silica) is distributed onto a conveyor belt, sprayed with water, and compressed by rolls to the desired thickness. This asbestos-cement sheet is then cut to size and sent to the curing operation.

The wet process produces dense sheets of asbestos-cement material by introducing a slurry into a mold chamber and compressing the mixture to remove excess water. A setting and hardening period of 24 to 48 hours precedes the curing operation.

The manufacture of asbestos-cement pipe is illustrated in Figure 4-2 with the individual manufacturing steps numbered and listed on the bottom portion of the figure. Asbestos fibers are normally received in pressure packed bags and therefore require fiber conditioning (opening) before being sent to the production-line storage bins. A more detailed discussion of the manufacturing operation is available in asbestos control techniques document.[1]

4.2.2 Emission Points

Major potential emission sources within the plant and suitable control techniques are presented in the following list.

1. Emission Source -- slitting and emptying of bags of asbestos into hopper of fiber opener.

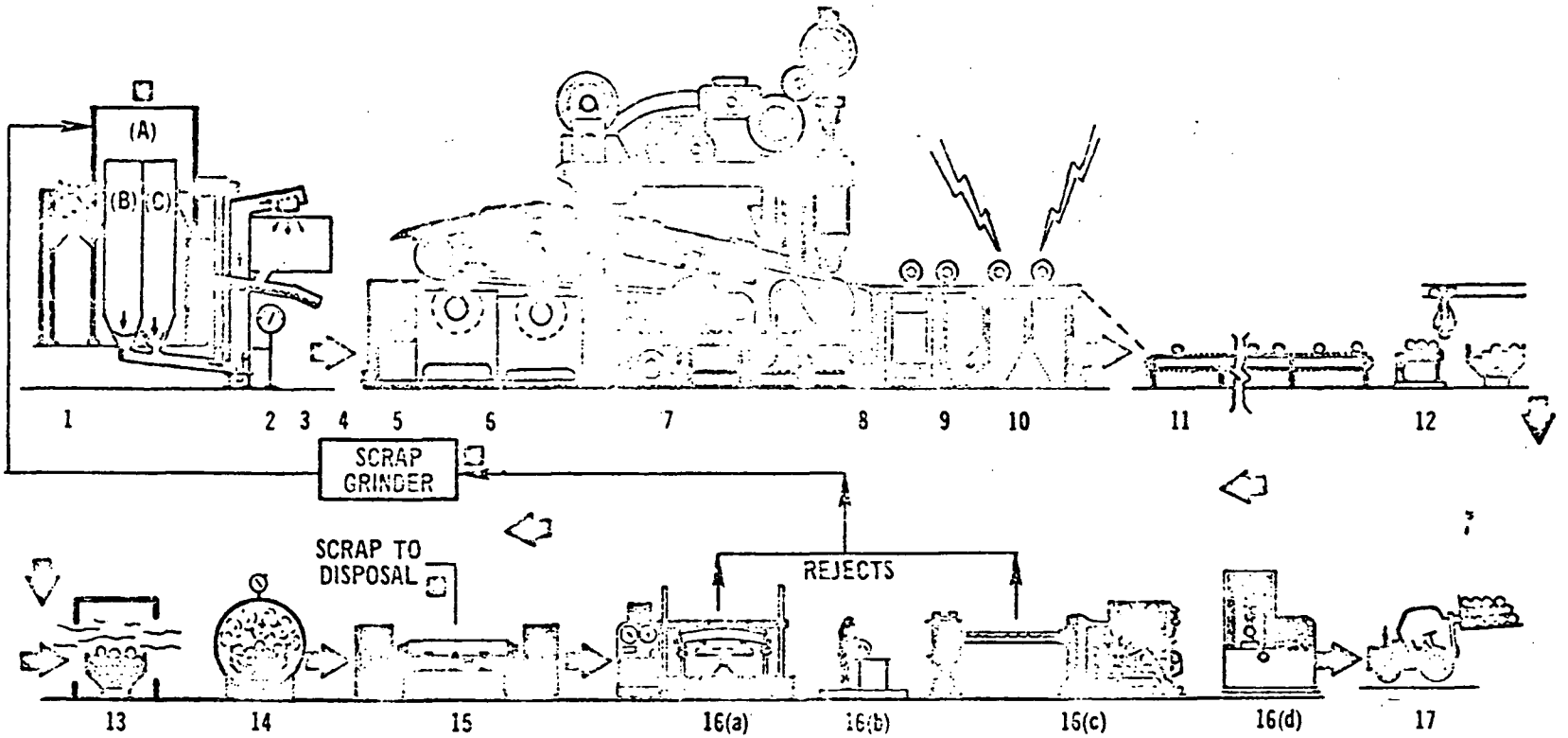
   Control Technique -- install dust capture hood over bag opening and emptying station with exhaust to baghouse.

2. Emission Source -- dry mixing of asbestos, cement, and silica.

   Control Technique -- install dust capture hood over mixing operation and exhaust to baghouse.

3. Emission Source -- finishing operations (machining, drilling, cutting, grinding).

   Control Technique -- install hoods over all finishing operations and exhaust to baghouse.



1. PRODUCTION LINE BINS
   - (A) ASBESTOS
   - (B) CEMENT
   - (C) SILICA
2. ELECTRONIC SCALES
3. DRY MIXER
4. CONVEYING TROUGH
5. WET MIX VAT
6. SCREEN CYLINDER MOLD
7. VACUUM BOX
8. FELT DEPOSITS STOCK ON MANDREL
9. MANDREL (WITH PIPE)
10. ELECTROLYTIC LOOSENER
11. SLOW-DOWN CONVEYOR
12. STENCILLING STATION
13. AIR CURE ROOM
14. AUTOCLAVES
15. FINISHING OPERATIONS
16. TESTING EQUIPMENT
    - (A) FLEXURE TESTING MACHINE
    - (B) INSPECTION
    - (C) HYDROSTATIC TESTER
    - (D) CRUSH TESTER (LABORATORY)
17. MATERIALS HANDLING EQUIPMENT

◘ LOCATION OF POTENTIAL ASBESTOS-CONTAINING DUST EMISSIONS

Figure 4-2. Manufacture of asbestos-cement pipe.

4. Emission Source -- loading of scrap and rejects into scrap grinder.

Control Technique -- install dust capture hood over loading area and exhaust to baghouse.

5. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bag in an enclosed container immediately after emptying and deposit in landfill.

4.2.3 Inspection Procedures

The inspection procedures discussed for asbestos mills should be appropriate. Heavy concentrations of asbestos fibers might be present in process and ventilation streams from fiber opening, mixing, and finishing operations.

4.3 FIREPROOFING AND INSULATING MATERIAL.

4.3.1 Process Description

Molded insulation and spray-applied mixtures used to fireproof steel-reinforced buildings are the principal asbestos-containing insulating and fireproofing materials. The preliminary step in the manufacture of molded insulation is the mixing of diatomaceous silica, lime, and asbestos with water. This mixture is pumped to a holding (gel) tank where the silica reacts with the calcium hydroxide to form hydrated calcium silicate which crystallizes around the asbestos fibers. The calcium silicate - asbestos slurry is then discharged to a molding press where the charge is dewatered and pressed into the desired forms (pipe shells, blocks, etc.). After being removed from

the molds, the pieces are heat cured in a series of autoclaves and drying tunnels and sent to a finishing operation (sizing, leg trimming, drilling, etc.) before being packaged for shipping.

Spray-applied fireproofing mixtures are a combination of asbestos and an inorganic dry bonding agent. The mixing operation is usually a batch process.

4.3.2 Emission Points

Major emission points in the manufacturing operations together with effective control measures are listed below.

1. Emission Source -- opening and emptying of bags of asbestos into fiber openers or mixers.

   Control Technique -- install dust capture hoods on bag opening stations and mixing operations with exhaust sent to a baghouse.

2. Emission Source -- finishing operations (sizing, leg trimming, drilling, planing, etc.).

   Control Technique -- install hoods over all finishing operations and exhaust to baghouses.

3. Emission Source -- packaging of pipe insulation or fireproofing mixture.

   Control Technique -- install dust capture hoods over packaging areas and vent to baghouse.

4. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place bag in enclosed container and deposit in landfill.

4.3.3 Inspection Procedures

Willowing and mixing operations can produce high fiber concentrations. The inspection procedures suggested for asbestos mills are applicable.

4.4 FRICTION PRODUCTS.

4.4.1 Process Description

Brake linings and clutch facings are the major asbestos-containing friction products. Methods of fabrication include molding (wet or dry), two-roll forming, and impregnating woven asbestos fabric with friction material. Molding and two-roll forming involve the preforming of the product under pressure in molds or between rolls. The preformed sheets are then cut into product sized segments, formed into the proper shape, and heat cured. Woven friction products are constructed of resin impregnated asbestos fabric that has been cut to length, formed into the desired shape, and heat cured.

Detailed descriptions of the various manufacturing operations are provided in the control techniques document for asbestos emissions.[1] Figures 4-3 through 4-6 illustrate these processes.

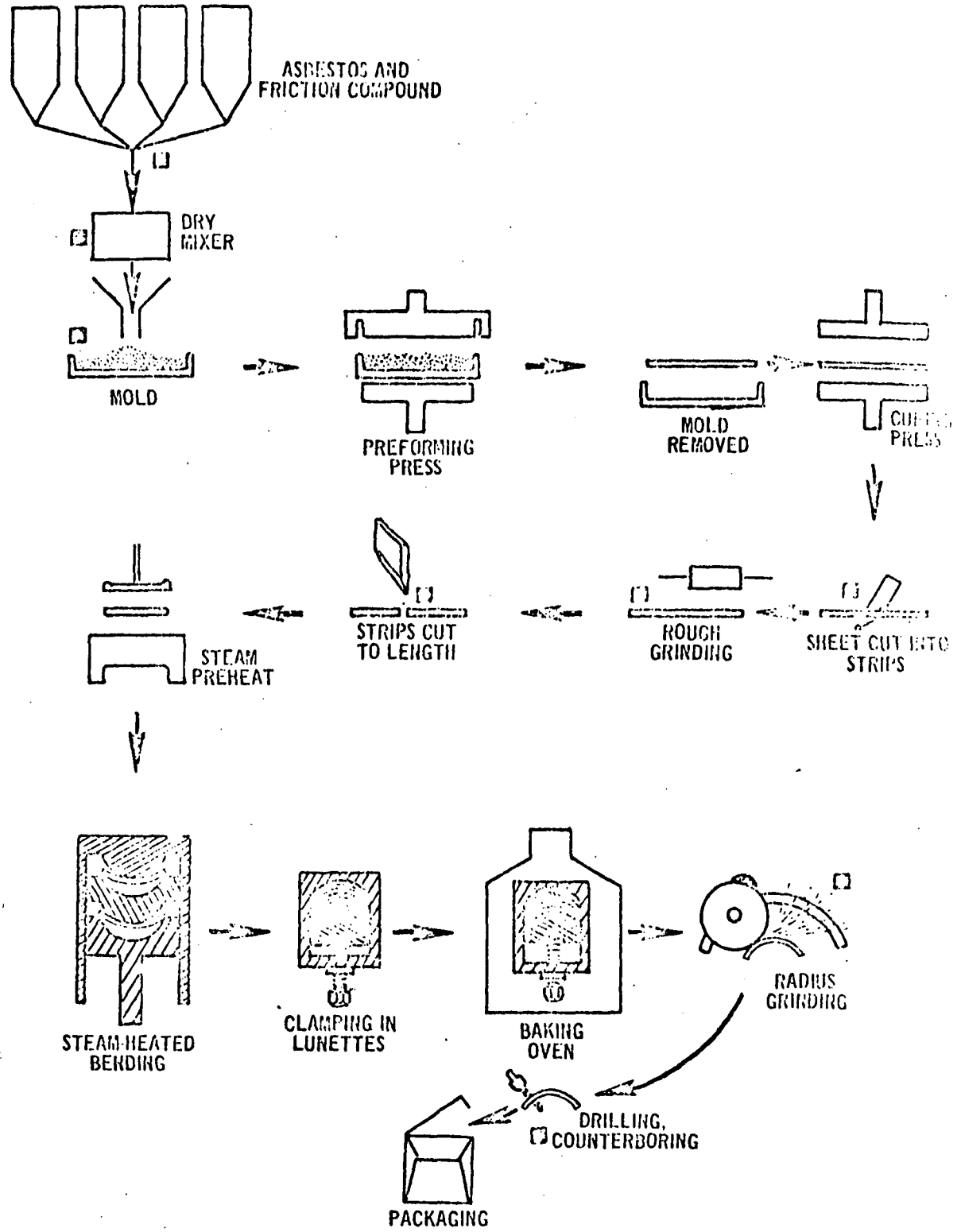


Figure 4-3. Friction products: dry-mixed brake linings.

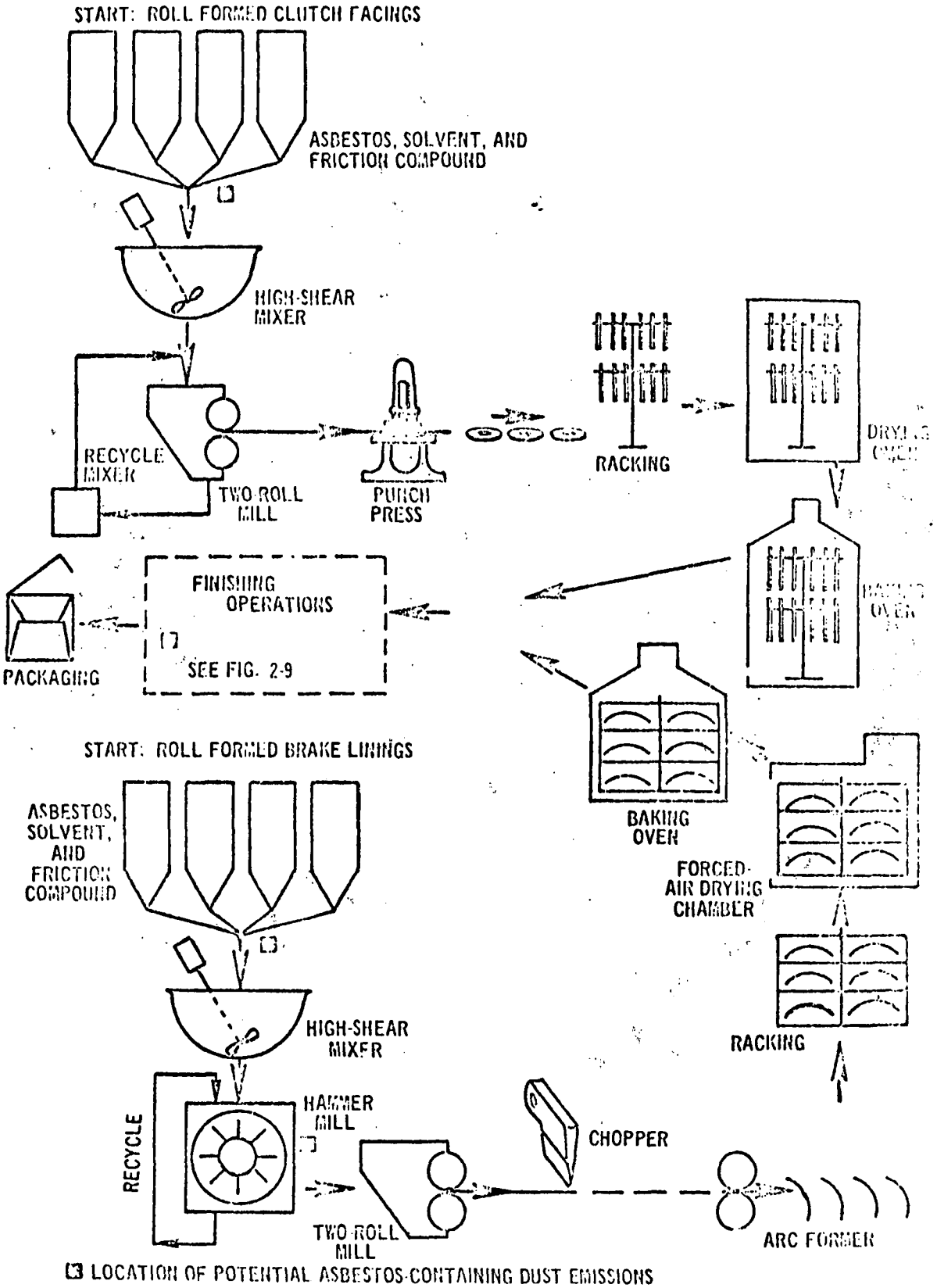


Figure 4-4. Friction products: roll-formed clutch facings and brake linings.

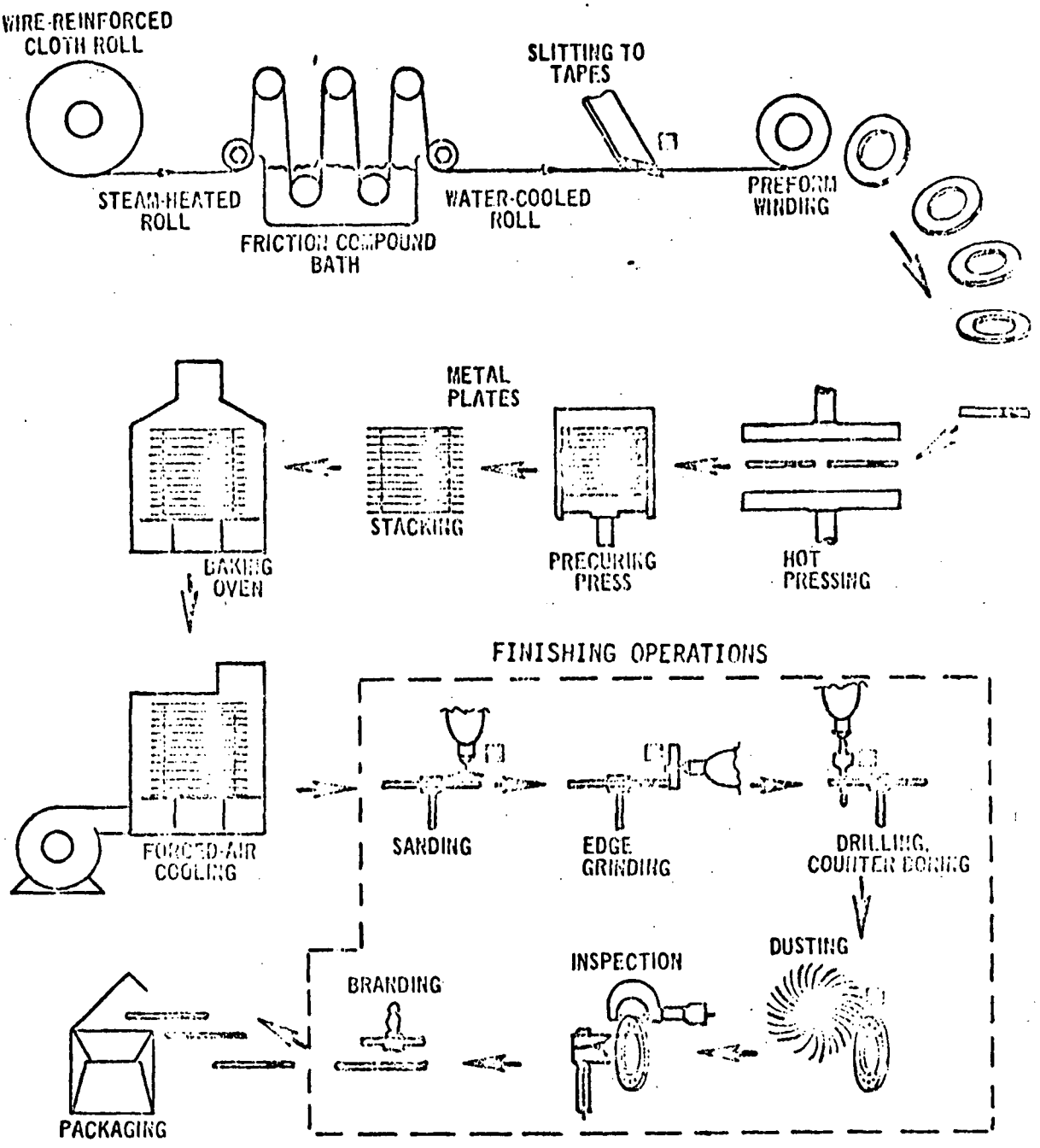


Figure 4-5. Friction products: endless woven clutch facings.

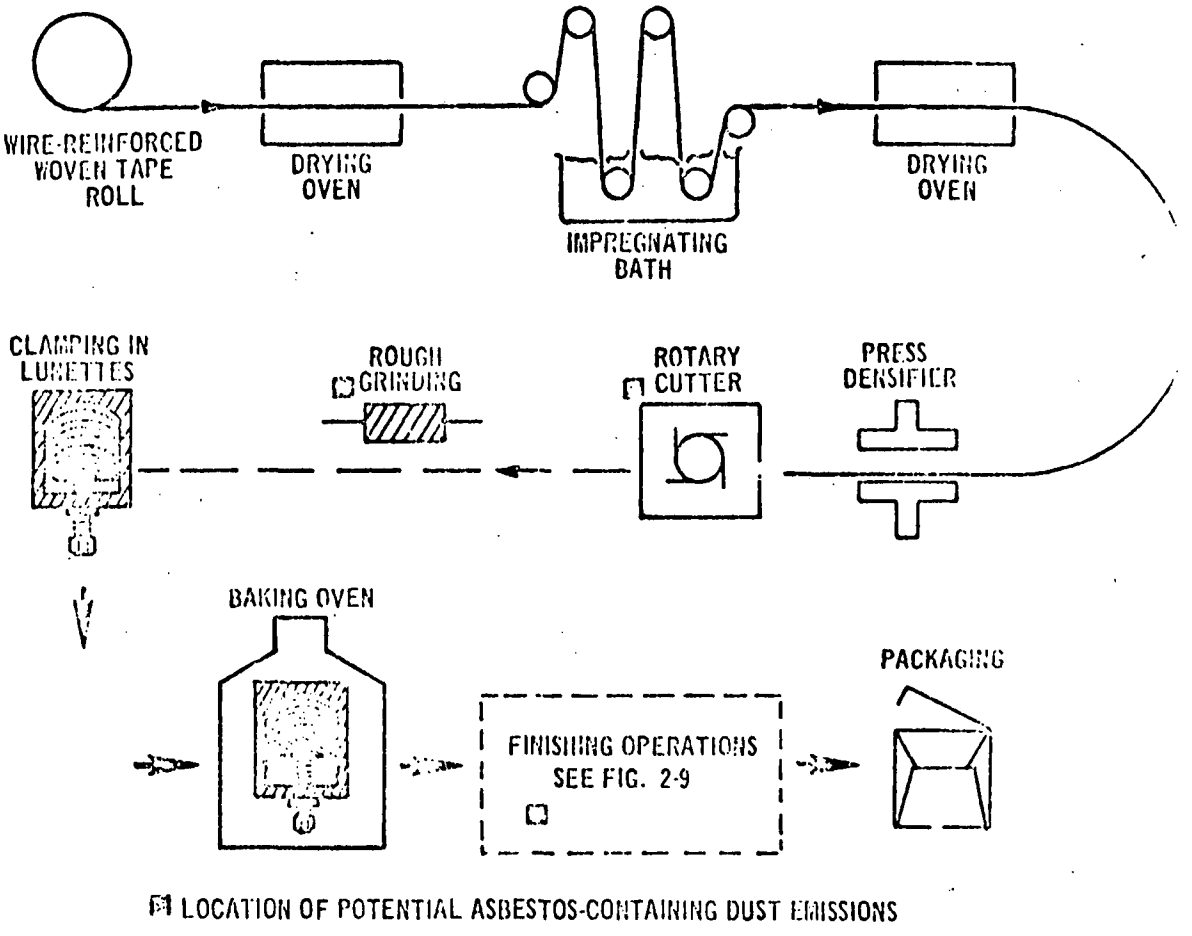


Figure 4-6. Friction products: woven brake linings.

4.4.2 Emission Points

Dry-Mixed Brake Linings

1. Emission Source -- opening and emptying of bags of asbestos.

   Control Technique -- install dust capture hoods over bag opening area and storage bins.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

   Control Technique -- install dust capture hood over weighing scales and exhaust to baghouse.

3. Emission Source -- discharging of asbestos from weighing scales to mixer.

   Control Technique -- enclose discharge area or install dust capture hood and exhaust to baghouse.

4. Emission Source -- discharging of mixer product to molds.

   Control Technique -- enclose discharge area and exhaust to baghouse.

5. Emission Source -- cutting of molded sheet into strips.

   Control Technique -- install dust capture hoods and exhaust to baghouse.

6. Emission Source -- rough grinding of molded strips.

   Control Technique -- install dust capture hoods and exhaust to baghouse.

7. Emission Source -- cutting of molded strips to length.

Control Technique -- install dust capture hood and exhaust to baghouse.

8. Emission Source -- finishing operations (grinding, drilling, counterboring).

Control Technique -- install dust capture hoods and exhaust to baghouse.

9. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bags in enclosed container immediately after emptying and deposit in landfill.

Roll-Formed Brake Linings

1. Emission Source -- opening and emptying of bags of asbestos.

Control Technique -- install dust capture hoods over bag opening area and storage bins and exhaust to baghouse.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

Control Technique -- install dust capture hoods over weighing scales and exhaust to baghouse.

3. Emission Source -- discharging of asbestos from weighing scales to mixer.

Control Technique -- install dust capture hoods over mixer and exhaust to baghouse.

4. Emission Source -- hammer mill.

Control Technique -- enclose discharge area and exhaust to baghouse.

5. Emission Source -- finishing operations (sanding, edge grinding, drilling, counter-boring, dusting).

Control Technique -- install dust capture hoods over finishing operations and exhaust to baghouse.

6. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bags in enclosed container immediately after emptying and deposit in landfill.

Roll-Formed Clutch Facings

1. Emission Source -- opening and emptying of bags of asbestos.

Control Technique -- install dust capture hoods over bag opening area and storage bins and exhaust to baghouse.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

Control Technique -- install dust capture hoods over weighing scales and exhaust to baghouse.

3. Emission Source -- discharging of asbestos from weighing scales to mixer.

Control Technique -- install dust capture hoods over mixer and exhaust to baghouse.

4. Emission Source -- finishing operations (sanding, edge grinding, drilling, counter-boring, dusting).

Control Technique -- install dust capture hoods over finishing operations and exhaust to baghouse.

5. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bags in enclosed container immediately after emptying and deposit in landfill.

Woven Brake Linings

1. Emission Source -- cutting of saturated tape.

Control Technique -- install dust capture hoods and exhaust to baghouse.

2. Emission Source -- rough grinding of tape.

Control Technique -- install dust capture hood and exhaust to baghouse.

3. Emission Source -- finishing operations (sanding, edge grinding, drilling, counter-boring, dusting).

Control Technique -- install dust capture hoods over all finishing operations and exhaust to baghouse.

Endless Woven Clutch Facings

1. Emission Source -- slitting of asbestos cloth into tapes.

Control Technique -- install dust capture hood and exhaust to baghouse.

2. Emission Source -- finishing operations (sanding, edge grinding, drilling, counter-boring, dusting).

Control Technique -- install dust capture hoods over all finishing operations and exhaust to baghouse.

4.4.3 Inspection Procedures

The inspection procedures presented in Section 2.3 can be used. High concentrations of asbestos could be present in ventilation air from the dry-mixing and finishing (drilling, grinding, etc.) operations. Visible emissions might also be detected from various other process steps (wet-mixing, impregnating bath, etc.) because of the use of volatile organic solvents. Asbestos emissions from these sources are expected to be small.

4.5 PAPER, MILLBOARD, FELT.

4.5.1 Process Description

Asbestos paper and felt are manufactured on machines of the Fourdrinier and cylinder types similar to those used to produce cellulose paper. The cylinder machine is the more widely employed.

Figure 4-7 illustrates the operation of a Fourdrinier paper machine. Short-fiber asbestos is combined with a binder and water in a pulp beater to form a mixture containing between 6 and 12 percent fibers. This slurry is fed to a machine chest where it is diluted to 2 to 4 percent solids. A thin uniform layer of the mixture is deposited by gravity onto an endless, moving wire screen to form the paper which is then transferred to a moving felt. Vacuum boxes, roll presses, and a series of steam heated drum rollers are used to

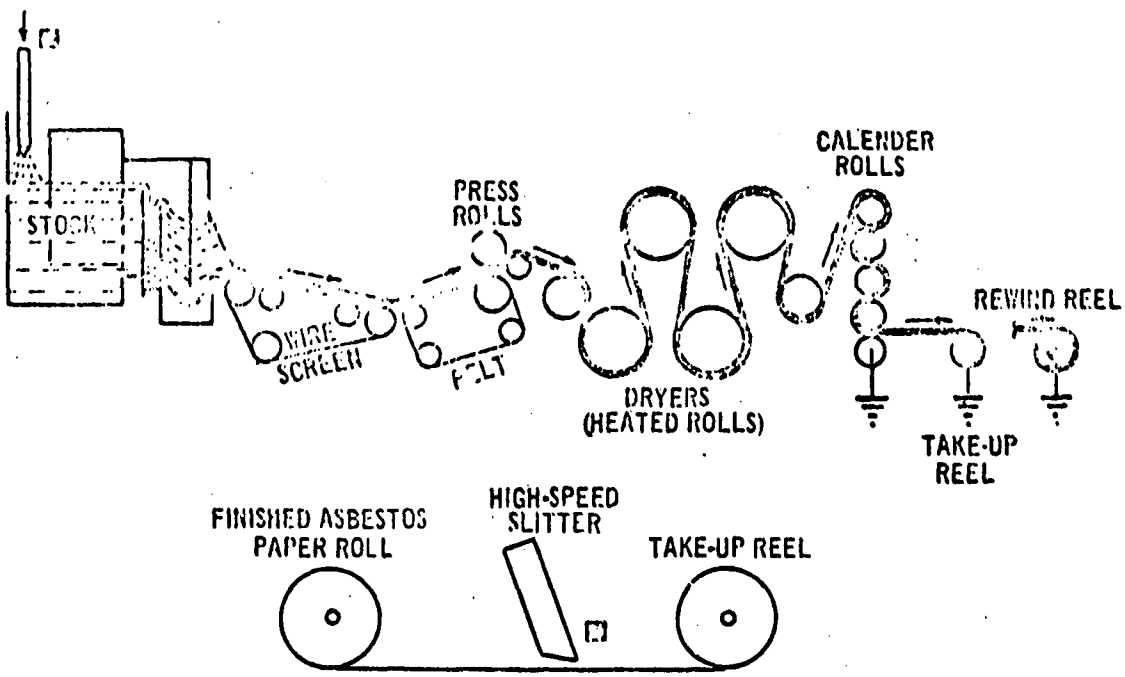


Figure 4-7. Asbestos paper.

dry the paper. This is followed by calendering to produce a smooth surface and cutting to size.

The operation of a cylinder paper machine includes a mixing step similar to that described for a Fourdrinier type machine. The slurry from the machine chest is pumped to one of several vats, each containing a rotating cylinder screen. Asbestos fibers are collected on the rotating cylinders and transferred to an endless belt conveyor to form the paper. The subsequent drying, calendering, and sizing operations are the same as those described for the Fourdrinier machine.

Millboard is produced from short fiber asbestos. The asbestos fibers, water, and a binder are mixed in a pulp beater, subjected to a screening operation, and pumped to the millboard machine. The asbestos slurry is fed to a large box containing a rotating cylinder screen. Fibers are deposited on the rotating cylinder, partially drained of water, and transferred to a conveyor belt to form the millboard sheet. This sheet is then pressed, molded, and cut to the size of commercial millboard. All remaining water is removed by a series of pressing and drying operations.

4.5.2 Emission Points

1. Emission Source -- opening and emptying of bags of asbestos into mixer.

   Control Technique -- enclose bag opening and emptying station and exhaust to baghouse, or convert to a wet process using pulpable bags.

2. Emission Source -- slitting and edge-trimming of paper.

Control Technique -- install dust capture hoods and exhaust to baghouse.

3. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bags in an enclosed container immediately after emptying and deposit in landfill.

4.5.3 Inspection Procedures

The inspection procedure developed for asbestos mills should be appropriate. The major emission source will be the opening and emptying of bags of asbestos.

4.6 FLOOR TILE.

4.6.1 Process Description

Vinyl-asbestos floor tile is produced from a mixture of asbestos fibers, ground limestone, and a resin binder. The various components are combined in a high shear mixer as indicated in Figure 4-8 to form the base material. After the base material passes through a two-roll mill, the relatively thick sheet is cut and joined to a similar piece that has been previously formed and is in the process of being calendered (smoothed and reduced in thickness between two revolving cylinders). A series of calendering operations produces a tile sheet of the desired thickness and surface finish.

Before the compound can cool and harden, a blanking press die cuts the tiles to final size. Waste material is recycled to the mixing operation. A more detailed discussion of the manufacture

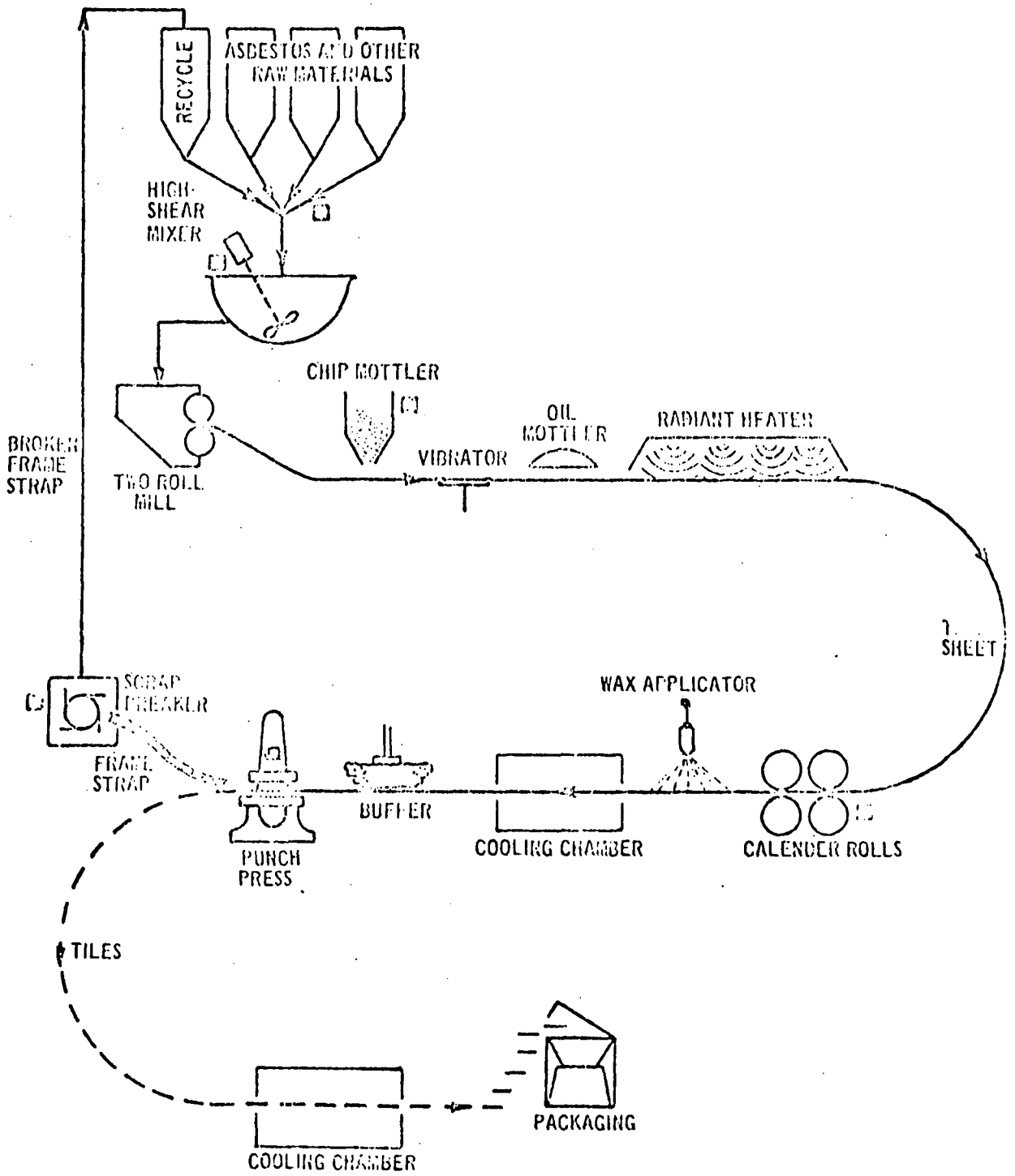


Figure 4-8. Vinyl-asbestos floor tile.

of vinyl-asbestos floor tile can be obtained from the control techniques document for asbestos emissions.[1]

4.6.2 Emission Points

Potential sources of asbestos emissions are:

1. Emission Source -- opening and emptying of bags of asbestos.

   Control Technique -- install dust capture hoods over bag opening and emptying stations and exhaust to baghouse.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

   Control Technique -- install dust capture hood over weighing scales and exhaust to baghouse.

3. Emission Source -- discharging of asbestos from weighing scale to mixer.

   Control Technique -- enclose discharge area or install dust capture hood over mixer inlet.

4. Emission Source -- mixing process.

   Control Technique -- close mixer inlet.

5. Emission Source -- loading of asbestos-containing chips into hoppers in preparation for mottling.

   Control Technique -- install dust capture hood over hoppers and exhaust to baghouse.

6. Emission Source -- deposition of mottling chips on the tile sheet as it emerges from the two-roll mill.

Control Technique -- install dust capture hood and exhaust to baghouse.

7. Emission Source -- grinding of scrap in preparation for recycle.

Control Technique -- install dust capture hoods over grinder inlet and outlet and exhaust to baghouse.

8. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place empty bags in an enclosed container immediately after emptying and deposit in landfill.

4.6.3 Inspection Procedures

Asbestos emissions are limited primarily to the introduction of asbestos into the process and to the mixing step. The inspection procedures outlined in Section 2.3 will be applicable.

4.7 PAINTS, COATINGS, CAULKS, ADHESIVES, AND SEALANTS.

4.7.1 Process Description

Most asbestos-containing paints, coatings, caulks, adhesives, and sealants are either asphalt or oil-based mixtures produced by batch mixing operations. A high percentage of short-fiber asbestos may be used.

4.7.2 Emission Points

Emissions are possible from the bag opening operations and

from the introduction of asbestos into the process.

1. Emission Source -- opening and emptying of bags of asbestos into storage bins or receiving hoppers.

   Control Technique -- install dust hoods over bag opening and emptying stations and exhaust to baghouse.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

   Control Technique -- enclose discharge area and exhaust to baghouse.

3. Emission Source -- discharging of asbestos from the weighing scales to the mixer.

   Control Technique -- enclose discharge area or install dust capture hood over mixer.

4. Emission source -- disposal of empty asbestos bags.

   Control Technique -- place bags in an enclosed container immediately after emptying and deposit in landfill.

4.7.3 Inspection Procedures

The inspection procedures provided in Section 2.3 are appropriate.

4.8 PLASTICS AND RUBBER MATERIALS.

4.8.1 Process Description

Asbestos-reinforced or-filled plastics and rubber materials may be produced by both batch and continuous operations and may make extensive use of both short and long fibers. Process

descriptions must be obtained on an individual basis from the plant owner or operator.

4.8.2 Emission Points

1. Emission Source -- opening and emptying of bags of asbestos into storage bins or receiving hoppers.

Control Technique -- install dust capture hoods over bag opening and emptying stations and exhaust to baghouse.

2. Emission Source -- transfer of asbestos from storage bins to weighing scales.

Control Technique -- enclose discharge area and exhaust to baghouse.

3. Emission Source -- discharge of asbestos from the weighing scales to the mixer.

Control Technique -- enclose discharge area or install dust capture hood over mixer.

4. Emission Source -- grinding of sheets of asbestos-reinforced plastic to form molding compound.

Control Technique -- enclose inlet and outlet of grinder and exhaust to baghouse.

5. Emission Source -- disposal of empty asbestos bags.

Control Technique -- place bags in an enclosed container immediately after emptying and deposit in landfill.

4.8.3 Inspection Procedures

Potential emission sources are the bag opening and the mixing operations. No alteration in the inspection procedures listed in Section 2.3 should be required.

4.9 CHLORINE.

4.9.1 Process Description:

Most chlorine is produced by the electrolysis of aqueous solutions of alkali-metal chlorides. All cell designs for this electrolytic process are variations of either the diaphragm cell (Figure 4-9) or of a cell which uses mercury metal as an intermediate cathode. In the diaphragm cell, an asbestos diaphragm separates the anode from the cathode. The diaphragm is applied by immersing the cathode into a bath of asbestos slurried in cell liquor and then applying a vacuum to the cathode. Asbestos is deposited on the steel-screen fingers of the cathode.

4.9.2 Emission Points

1. Emission Source --.opening and emptying of bags of asbestos.

   Control Technique -- install dust capture hoods over bag opening and emptying stations with exhaust to baghouse, or convert to wet process using pulpable bags.

2. Emission Source -- disposal of empty bags of asbestos.

   Control Technique -- place empty bags in enclosed container immediately after emptying and deposit in landfill.

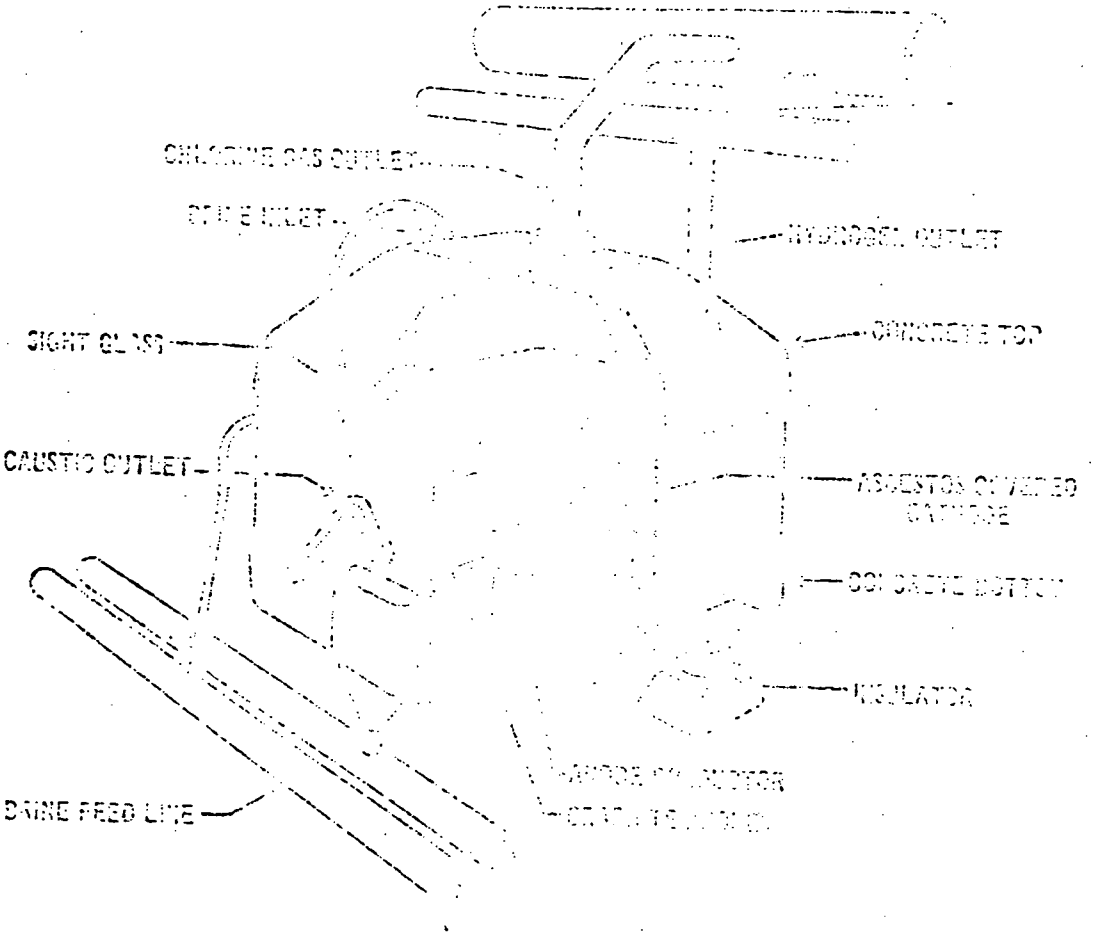


Figure 4-9. Diaghragm Cell, Hooker Type "S-3A".[2]

4.9.3 Inspection Procedures

Visible emissions of asbestos can occur during the bag opening and emptying operation. The inspection procedures developed for asbestos mills should be suitable.

4.10 REFERENCES FOR SECTION 4.

1. Control Techniques for Asbestos Air Pollutants. U. S. Environmental Protection Agency. Research Triangle Park, North Carolina. Publication Number AP-117. February 1973.

2. Shreve, R. M. Chemical Process Industries. New York, McGraw-Hill Book Company, 1967. p. 234.

5. DEMOLITION

A rewrite of the Demolition Section is being prepared by DSSE and will be distributed no later than at the July 19 NESHAPS seminar in Dallas, Texas.

6. SPRAYING

The only spray applied insulation or fireproofing now being produced that is known to contain more than 1 percent asbestos is MK 111 produced by the Zonolite Construction Products Division of the W. R. Grace Company. MK 111 contains from 10 to 12 percent asbestos. The Fireproofing Products Division of Carboine Co. of St. Louis manufacturers Pyrocrete I and Pyrocrete II. These are cement-plaster-asbestos mixtures used for structural steel fireproofing. They are not spray applied.

The asbestos limitation of 1 percent by weight for dry spray material applied to buildings, structures, pipes, or conduits suggests that the inspector may often want to check supplies allegedly containing less than 1 percent asbestos. Quantitative analysis for asbestos in a mixture is an extremely difficult procedure. Available methods are based on electron microscopy used by highly trained specialists. Determining asbestos content with these methods costs approximately $300, and the results are accurate within plus or minus 50 percent. The few available U. S. locations that have the required facilities and expertise include the following:

Battelle Columbus
Attention: Mr. William Henry
505 King Avenue
Columbus, Ohio 43201

California State Department of Health
Attention: Dr. Peter K. Mueller
2151 Berkeley Way
Berkeley, California 94704

McCrone Associates, Inc.
493 East 31st Street
Chicago, Illinois 60616

Mt. Sinai School of Medicine
City University of New York
Attention: Dr. Irving J. Selikoff
Environmental Sciences Laboratory
5th Avenue and 100th Street
New York, New York 10029

Johns Manville Research and Engineering Center
Attention: Dr. Sydney Spiel
Denver, Colorado

Obviously, speedy analysis, although highly desirable, will not normally be possible. However, the submission of samples at least serves as a deterrent to a contractor who would misrepresent, since action could be taken against him later if the analysis showed more than 1 percent asbestos.

In cases involving the spray application of asbestos containing insulating or fireproofing material containing more than 1 percent asbestos to equipment or machinery, the inspection procedures listed in Section 2.3 would be appropriate.

7. INSPECTION RECORDS

7.1 REPORTS.

Each stationary source of asbestos emissions must report the following information to the Environmental Protection Agency:

A. Name and address of owner or operator

B. Location of source

C. A description of the source and its operations with identification of all points of asbestos emissions

D. A description of control equipment for each emission point

E. The average weight per month of asbestos processed for the 12 months preceding the report date

These reports will provide most of the background data for on-site inspection of each source. The initial inspection should verify information in the reports.

7.2 CHECKLISTS AND OUTLINES.

Before any inspection, the inspector should review the source file to familiarize himself with the operations, potential emissions, and control strategy of the source. Each source file should contain verified process and equipment descriptions, accurate flowcharts showing emission points, current construction notices, compliance waiver requests, and other information the office finds necessary. If there is no flowsheet in the file, the inspector should sketch one noting emission points, control equipment at each point, and factors affecting the emission rate at each point. From the flowsheet and descriptions in the file,

a checklist or outline of the inspection can be made. It may be unnecessary to prepare an outline or checklist for some sources. A list of major items to observe or discuss and a sketch showing emission points will probably suffice for small, relatively simple processes.

The primary function of a checklist or outline is to prevent the inspector from overlooking any emission point during the inspection. Table 7-1 presents an outline which may be used as a guide. It will probably be necessary to modify the outline for each source, such as, omit the wet collector section or add instrument readings. On any checklist, outline or inspection log, the source being inspected should be completely identified. Code numbers should be included to allow easy reference to the HAPEMS computerized data handling system.[1] Comments on weather conditions or process operations affecting the inspection should be made. Any equipment failures or replacements affecting emission rates and any use of control equipment bypasses should be listed.

TABLE 7-1. INSPECTION CHECKLIST

Inspector _____

Date _____

Company Name _____

Address _____

HAPEMS Source Number _____

Source Description (e.g., Asbestos cement pipe plant) _____

Persons Interviewed _____

_____

_____

GENERAL OBSERVATIONS

Ductwork Leaks _____

Piping Leaks _____ _____

Collector Housing Leaks _____

Apparent Condition of Equipment _____

Disposal of Collected Material _____

Accumulated Dust or Fiber _____

Visible Emissions Ref. TM 9 _____
(Average Opacity)

Locations of Visible Emissions _____
(HAPEMS point numbers)

Samples Taken at Locations _____
of Visible Emissions

TABLE 7-1. (CONTINUED)

HAPEMS Source No. _____

Date _____

CONTROL DEVICES

I. Baghouse

HAPEMS Point Number _____

Gas Stream Description (e.g., exhaust from bagging machine hood) _____

Baghouse Manufacturer _____

Model _____

Fabric Description (type, permeability, etc.) _____

Length and Frequency of Cleaning Cycle _____

Baghouse Interior

Bag Condition: Torn _____

Leaking _____

Ruptured _____

Heavily Worn _____

Other _____

Dust on Floor _____

Baghouse Hopper

Unloading Frequency _____

Dust Generated by Unloading _____

Final Dust Disposal _____

Operating Variables

TABLE 7-1. (CONTINUED)

HAPEMS Source No. _____

Date _____

	Specification	Observed	Comment
Temperature			
Pressure Drop			
Gas Flowrate			

If any recordings instruments are used, examine the charts to discover abnormal situations.

Comments _____

(Bag replacements, equipment failures, equipment changes, additional instrumentation, etc.)

II. Wet Collectors

HAPEMS Point Number _____

Gas Stream Description _____

Type of Collector (e.g., venturi scrubber) _____

Collector Manufacturer _____

Model _____

Operating Variable

	Specification	Observed	Comment
Pressure Drop			
Gas Flowrate			
Liquid Flowrate			
Liquid Inlet Pressure			
Unit Contacting Energy			

TABLE 7-1. (CONTINUED)

HAPEMS Source No. _____

Date _____

If recording instruments are used, examine the charts to discover abnormal situations

Comments and recommendations _____

_____

_____

_____

ENVIRONMENTAL PROTECTION AGENCY

OAWP, OAQPS, CPDD, SIB

Date: July 10, 1973

Regulations for Indirect Source Review

See Below

As you recall, SIB distributed to the Regional Offices on June 15 a draft of guideline material intended to assist you in working with State agencies on complex source implementation plans. In addition, we discussed the complex source issue at the Regional Office staff meeting in Chicago on June 28. At that meeting, we promised additional guidance material for plan development. In this regard, we are enclosing:

1. A draft complex source regulation which EPA could promulgate to correct inadequate SIPs in this area.

2. Example justification procedures for determining the minimum size of source categories subject to new source review regulations.

This information may be used in providing guidance to the States in developing their indirect source regulations. It should be noted, however, that assumptions concerning the operating characteristics of motor vehicles within parking lots are rather arbitrary at this point. The example calculations illustrate the type of analysis that could be presented to support the complex source size ranges of concern.

I am also enclosing copies of the time schedule for development, proposal and promulgation of plans in accordance with the court stipulated dates. As far as EPA is concerned, the dates of October 15 for approval/disapproval and December 15 for final promulgation must be met. The CPDD/SIB would appreciate recieving any comment you would have on the enclosed regulation by July 23, 1973. We would make the desired changes and send copies of the revised regulations back to the Regional Offices to assist you in the preparation of plans where the states have failed to respond. As was discussed in Chicago, the Regional Office will prepare the draft of the Federal Register package for proposal and promulgation. You need not spend the effort to prepare the error-free copy but you must include all desirable substantive information for the briefing document and preamble. SIB will assemble one Federal Register package and forward to Headquarters for processing. Please note that comments on the proposed plans would be sent to the respective Regional Office similar to the transportation plan procedure. Since SIB will be functioning in a coordinating/supporting role, it is urgent that we be kept appraised of the status of plan development so we can prepare accordingly. Please advise us if our principal contact in the Regional Office for this matter is other than that individual designated as principal air contact.

It is further recognized that many, if not most, states lack adequate legal authority and will not be able to correct this deficiency in time to submit an approvable plan. This situation might tend to discourage many states from proceeding with plan development activities. I would suggest that you encourage the states to develop the kind of plan necessary to address the conditions and needs of their area. If the basic plan is acceptable and approvable to the EPA, we will fill in any deficient areas of the State-submitted plan; propose on October 15; hold public hearings around November 15; and promulgate on December 15. When the state has corrected the deficient portions, the EPA would rescind its actions and approve the State plan accordingly. Again, it is important that we have some advance warning of those states that would proceed in that manner.

As you know, the EPA will have to modify all previously promulgated new source review regulations applicable to stationary sources to be consistent with the new public comment requirements of 40 CFR 51. We will make this change along with the complex source schedule. If you have any comments as to other desirable changes, please let us know.

We would appreciate any comments you may have on the enclosed material. If you have any ideas or procedures that would be of benefit to the other Regional Offices, please forward them to SIB immediately.

Norman G. Edmisten, Chief
Standards Implementation Branch
Control Programs
Development Division

Enclosures

Addressees:

Director, Division of Air and Water Programs, Regions I - X (3)
Principal Air Contacts, Regions I - X (3)
J. Schueneman
I. Auerbach
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E. Reich

Basis for Determination of Facilities Subject to New Source Review

I. Direct sources of emissions

All stationary sources of emissions, with the exception of the exemptions listed are subject to review. The cutoff sizes for fuel burning equipment were chosen because the maximum amounts of emissions from these exempted sources are considered insignificant. These cutoffs depend on the type of fuel burned:

(1) Equipment which has a heat input of not more than 250 million B.t.u. per hour and which burn gaseous fuel containing not more than 0.5 grains H_2S per 100 standard cubic feet would emit negligible particulate matter and less than two tons of sulfur dioxide per year.

(2) Equipment which has a heat input of not more than 1 million B.t.u. per hour and which burns distillate oil would emit negligible particulate matter and approximately two tons of sulfur dioxide per year.

(3) Equipment which has a heat input of not more than 350,000 B.t.u. per hour and which burns any other fuel would emit between five to seven tons of sulfur dioxide per year.

II. Indirect sources of emissions

The criterion which was used in the selection of sizes of facilities was that a facility would be subject to review if its associated motor vehicle activity resulted in local CO concentrations in excess of 10 percent of the national ambient air quality standard.

(1) Facilities with parking facilities

For estimating the size of a parking lot for a particular facility, above which will result in local carbon monoxide concentrations which exceed 10 percent of the carbon monoxide standard, assumptions must be made concerning the behavior of motor vehicles in that parking lot under estimated worst conditions. One reference on parking lot design* gives dimensions of parking spaces. A parking unit is defined as two parking stalls plus an aisle. For parking stalls at 90^{o} to the aisle, the maximum dimensions for the unit is 65 feet by 10 feet, for a two-way aisle. This amounts to a space requirement of 650 ft^2/2 stalls = 325 ft^2/stall. This arrangement permits a capacity of 135 cars per acre.

Assumptions were made concerning automobile behavior in a parking lot. Assuming for a worst-case example that vehicles travel an average of five miles per hour in the lot (which includes the time they are idling) and the travel is of an urban (stop-and-go) rather than a rural (more or less steady speed) type, Compilation of Air Pollution Factors** yields an emission factor of 60 g CO/vehicle-mile for a 1975 distribution of automobile age and use, and an (extrapolated) speed adjustment factor of 3.0. Therefore, the emission rate, Q, is:

$$Q = \left(\frac{60 g CO}{\text{vehicle mile}}\right)\left(\frac{5 \text{ miles}}{\text{hour}}\right)(3.0) = \frac{900 \text{ g CO}}{\text{vehicle hours}}$$

Assumptions concerning the behavior of motor vehicles in a parking lot depend upon the type of facility and the intensity of use over a time

*Parking in the City Center, prepared by Wilbur Smith and Associates, New Haven, Connecticut, under commission from the Automobile Manufacturers Asso., May 1965.
**Compilation of Air Pollutant Emission Factors (Revised), U.S. Environmental Protection Agency, Office of Air Programs, Research Triangle Park, N. C., February 1972, Publication No. AP-42.

period. Assuming a constant wind speed of 1 m/sec, and constant wind direction with class "D" atmospheric stability, the graphical relationship given in Figure 1 of Appendix O of 40 CFR Part 51 can be used to determine the maximum parking area for a given downwind concentration and a given emission density. Interpolation between curves was necessary to determine the relationships for the conditions of 10 percent of the CO ambient air quality standards (i.e., 0.9 p.p.m. and 3.5 p.p.m.).

The following calculations yield a size of two general categories of complex sources above which should be subject to review; facilities whose associated motor vehicle activity is spread out over the period of a day and facilities whose associated motor vehicle activity occurs over a short period. The size for both categories is 5 acres.

(a) Parking lots for facilities whose associated motor vehicle activity is spread out over the period of a day.

These facilities will include shopping centers, airports, commercial and industrial developments, amusement parks, and recreational areas. Activity in terms of trips generated by these facilities will probably occur over an 8-12 hour period with a peak-to-off-peak hour ratio of perhaps 2 to 4. Two worst condition analyses will be necessary--one for the worst peak hour and one for the worst 8-hour period.

(i) Worst peak hour period

Assume that the parking lot contains one vehicle per stall (full lot) and that of these, 2.2 percent are operating at any one time. The emission density, E, is then calculated as follows:

$$E_{1\text{-hr}} = \left(\frac{900 \text{ g CO}}{\text{vehicle hour}}\right)\left(\frac{1 \text{ hour}}{3600 \text{ sec.}}\right)\left(\frac{1 \text{ stall}}{325 \text{ ft.}^2}\right)\left(\frac{1 \text{ vehicle}}{1 \text{ stall}}\right)\left(\frac{10.8 \text{ ft.}^2}{1 \text{ m}^2}\right) \quad (0.022)$$

$$= 1.8 \times 10^{-4} \text{ g CO/sec-m}^2$$

From Figure 1 in Appendix O, to achieve a downwind edge concentration of less than 10 percent of the one hour CO standard (10% of 35 p.p.m. = 3.5 p.p.m.), the area must be no longer than approximately 140 meters on a side, which corresponds to a square area of approximately 5 acres (675 stalls).

(ii) Worst 8-hour period

Assume that for 8 hours, the parking lot contains only three-fourths the number of vehicles as parking stalls and that only 0.7 percent of these vehicles are operating at any one time over the 8-hour period. The 8-hour emission density, E, is calculated as follows:

$$E_{8\text{-hr}} = \left(\frac{900 \text{ g CO}}{\text{vehicle hour}}\right)\left(\frac{1 \text{ hour}}{3600 \text{ sec}}\right)\left(\frac{1 \text{ stall}}{325 \text{ ft}^2}\right)\left(\frac{0.75 \text{ vehicles}}{1 \text{ stall}}\right)\left(\frac{10.8 \text{ ft}^2}{1 \text{ m}^2}\right)(0.007)$$

$$= 4.4 \times 10^{-5} \text{ g CO/sec-m}^2$$

From Figure 1 in Appendix O, to achieve a downwind edge concentration of less than 10 percent of the 8-hour CO standard (10% of 9.0 p.p.m. = 0.9 p.p.m.), the lot area must be no longer than approximately 140 meters on a side, corresponding to a square area of approximately 5 acres (675 stalls).

(b) Facilities whose associated motor vehicle activity occurs over a short period, perhaps an hour or less.

These facilities include sports stadiums and centers which cater to affairs from which patrons leave at one time. Assume that the lot is full (1 vehicle/parking stall) and that an average of 2.2 percent of the vehicles are running during the one-hour period. Although the number of cars running at any one time may be much higher than 2.2%, it is anticipated that a 5 acre lot could

empty in much less than an hour, thus, reducing the average number of cars running during the hour to 2.2%. The one-hour emission density, E, is then calculated as follows:

$$E_{1\text{-hr}} = \left(\frac{900 \text{ g CO}}{\text{vehicle hour}}\right)\left(\frac{1 \text{ hour}}{3600 \text{ sec.}}\right)\left(\frac{1 \text{ stall}}{325 \text{ ft}^2}\right)\left(\frac{1 \text{ vehicle}}{1 \text{ stall}}\right)\left(\frac{10.8 \text{ ft.}^2}{\text{m}^2}\right)(0.022)$$

$$= 1.8 \times 10^{-4} \text{ g CO/sec-m}^2$$

From Figure 1 in Appendix O, to achieve a downwind edge concentration of less than 10 percent of the 1-hour standard (10% of 35 p.p.m. = 3.5 p.p.m.), the parking area must be no longer than approximately 40 meters, which corresponds to a square area of approximately 5 acres.

(2) Highways

To estimate the sizes of highways above which will result in local CO concentrations which exceed 10 percent of the carbon monoxide standard, the line source model HIWAY* was used to develop Figure 1 (enclosed) which depicts CO concentration as related to traffic on the roadway. The following assumptions were made in the development of Figure 1:

- 1 lane roadway of 400 m in length
- Receptor located as indicated in the diagram in Figure 1, at 2 m above ground,
- Angle between the direction of the wind and the roadway 20 degrees,
- Mobile sources emitting CO at 0 m above ground,
- Flat terrain,
- Class "D" atmospheric stability,
- Wind speed of 1 m/sec,
- Vehicle speed of 30 mph,
- 1975 automobile age and use distribution operating under urban conditions.

*Zimmerman, J.R., and Thompson, R. S., "User's Guide for HIWAY", paper under preparation ,Met. Lab., EPA, Research Triangle Park, N.C.

Although the assumption of a 1 lane roadway was used, this was done solely for calculation purposes. The HIWAY model has an option for entering the total line source density rather than the traffic in each lane--this option was chosen with the value set at 0.0031 grams/second-meter for the one lane. This value corresponds to 100 vehicles per hour for the 1975 vehicle age and use distribution operating at 5 mph under urban driving conditions. To obtain the concentrations corresponding to the 30 mph condition, the concentrations were multiplied by a factor of 0.33.

For a 1-hour CO concentration of 3.5 p.p.m. (10% of 35 p.p.m.), Figure 1 yields a maximum roadway volume of approximately 700 vehicles/hr. For an 8-hour CO concentration of 0.9 p.p.m. (10% of 9 p.p.m.), Figure 1 yields a maximum roadway volume of approximately 180 vehicles/hr (i.e., 1440 vehicles over 8 hours).

These volumes will be periodically revised to reflect changing vehicle emission factors resulting from changes in vehicle age and use distributions which will occur after 1975.

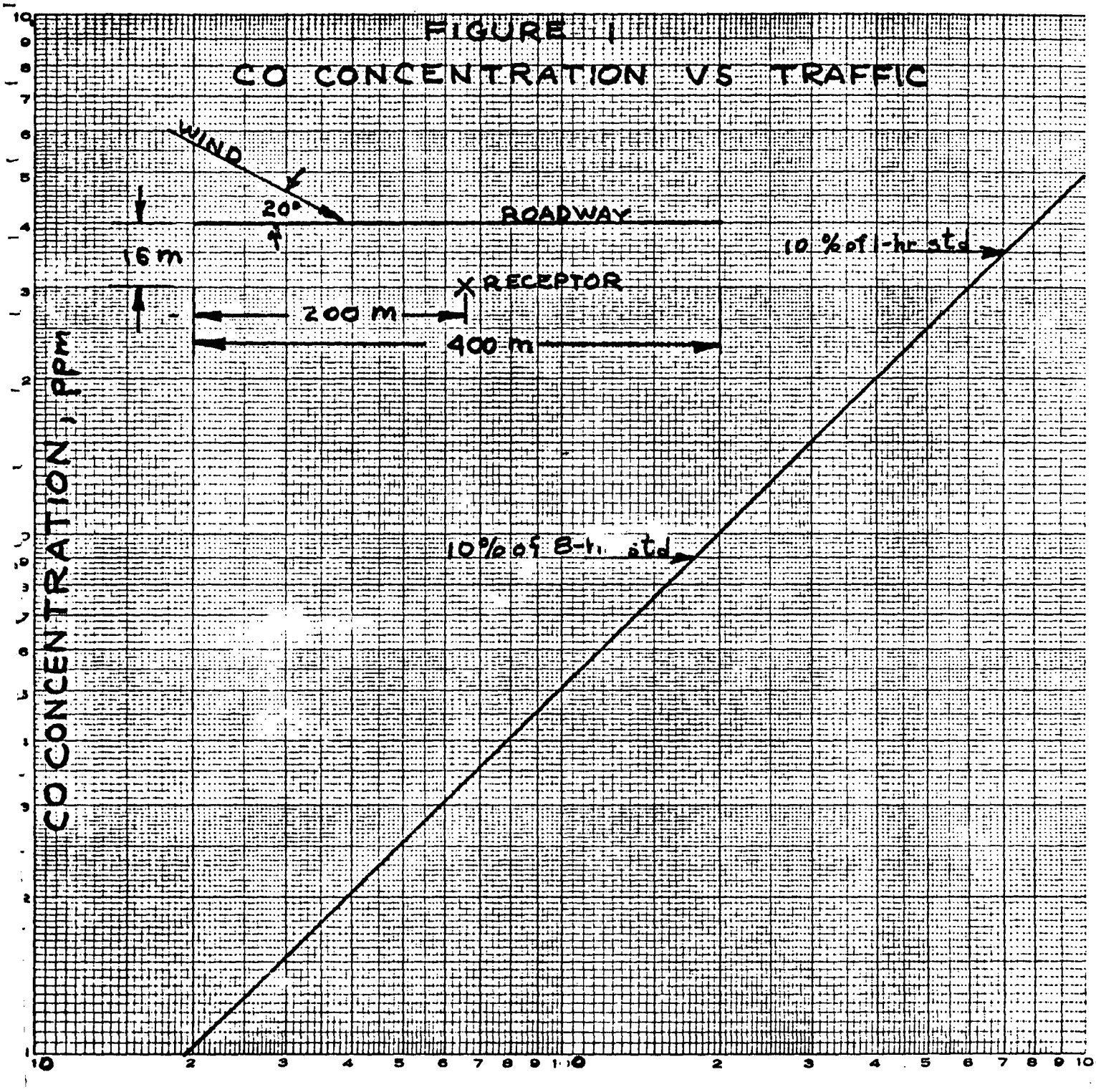


FIGURE 1
CO CONCENTRATION VS TRAFFIC
WIND
20°
ROADWAY
16 m
RECEPTOR
200 m
400 m
10 % of 1-hr std
10% of 8-hr std
CO CONCENTRATION, PPM
TRAFFIC, vehicles/hr

(b) Regulation for review of new or modified indirect sources

(1) Definitions:

(i) "Indirect source " means a facility, building, structure, or installation, or combination thereof, which causes emissions to be generated through associated mobile source activity.

(ii) "Modification" means any change to an indirect source which increases the vehicle capacity of such facility.

(2) The requirements of this paragraph are applicable to the following indirect sources in the State of _____, the construction or modification of which is commenced after the effective date of this paragraph:

(i) Any new facility with an associated parking area with a capacity of 700 or more cars.

(ii) Any modified facility which:

(a) Increases parking capacity from less than 700 cars to 700 or more cars, or

(b) Increases existing parking capacity which is in excess of 700 cars by more than 25 percent, or more than 700 cars, whichever is less.

(iii) Airports served by regularly scheduled airlines.

(iv) Roads with a maximum expected traffic volume within ten years of completion of:

(a) 1440 vehicles in eight hours, or

(b) 700 vehicles in one hour.

(3) No owner or operator of an indirect source subject to this paragraph shall commence construction or modification of such source after the effective date of this paragraph without first obtaining approval from the Administrator of the location and design of such source.

(i) Application for approval to construct or modify shall be made on forms furnished by the Administrator, or by other means prescribed by the Administrator, and shall include the following information:

(a) The name and address of the owner and/or operator.

(b) The location of the facility.

(c) The total motor vehicle capacity before and after the construction or modification of the facility.

(d) The normal hours of operation of the facility and the enterprises and activities which it serves.

(e) The number of people using or engaging in any enterprises or activities which the facility will serve.

(f) The maximum number of motor vehicles expected to use the facility on an one-hour and eight-hour basis.

(g) A projection of the geographic areas in the community from which people and motor vehicles will be drawn to the facility. Such projections shall include data concerning the availability of public transit from such areas.

(h) Maximum measured or estimated ambient air quality data for carbon monoxide for one and eight-hour periods.

(i) An estimate of maximum emissions of carbon monoxide resulting from mobile source activity on the premises, calculated for one and eight-hour periods.

(j) An estimate of the maximum one and eight-hour concentrations of carbon monoxide occurring on the premises as a result of the emissions calculated pursuant to subdivision (i)(i) of this subparagraph.

(ii) A separate application is required for each indirect source.

(iii) Each application shall be signed by the owner or operator, which signature shall constitute an agreement that the applicant will assume responsibility for the construction, modification or operation of the source in accordance with applicable rules and regulations, and the design submitted in the application.

(iv) Any additional information, plans, specifications, evidence or documentation that the Administrator may require shall be furnished upon request.

(4) No approval to construct or modify will be granted unless the applicant shows to the satisfaction of the Administrator that:

(i) The source will be operated without causing a violation of the control strategy which is part of the applicable plan, and

(ii) The emissions resulting from the mobile source activity associated with the facility will not prevent or interfere with the attainment or maintenance of the national ambient air quality standard for carbon monoxide.

(5) Within 30 days after receipt of an application, the Administrator will notify the public by prominent advertisement in the region affected, of the opportunity for public comment on the information submitted by the owner or operator.

(i) Such information, including the Administrator's analysis of the effect of the facility on air quality and the Administrator's proposed approval or disapproval, will be available in at least one location in the region affected.

(ii) Public comments submitted within 30 days of the date such information is made available will be considered by the Administrator in making his final decision on the application.

(iii) The Administrator will take final action on an application within 30 days after the close of the public comment period. The Administrator will notify the applicant in writing of his approval, conditional approval, or denial of the application, and will set forth his reasons for conditional approval or denial.

(6) The Administrator may impose any reasonable conditions on an approval, including conditions requiring the source owner or operator to conduct ambient air quality monitoring in the vicinity of the site of the source for a reasonable period prior to commencement of construction or modification, and/or for any specified period after the facility has commenced operation.

(7) Approval to construct or modify shall not relieve any owner or operator of the responsibility to comply with the control strategy and all local, State, and Federal regulations which are part of the applicable plan.

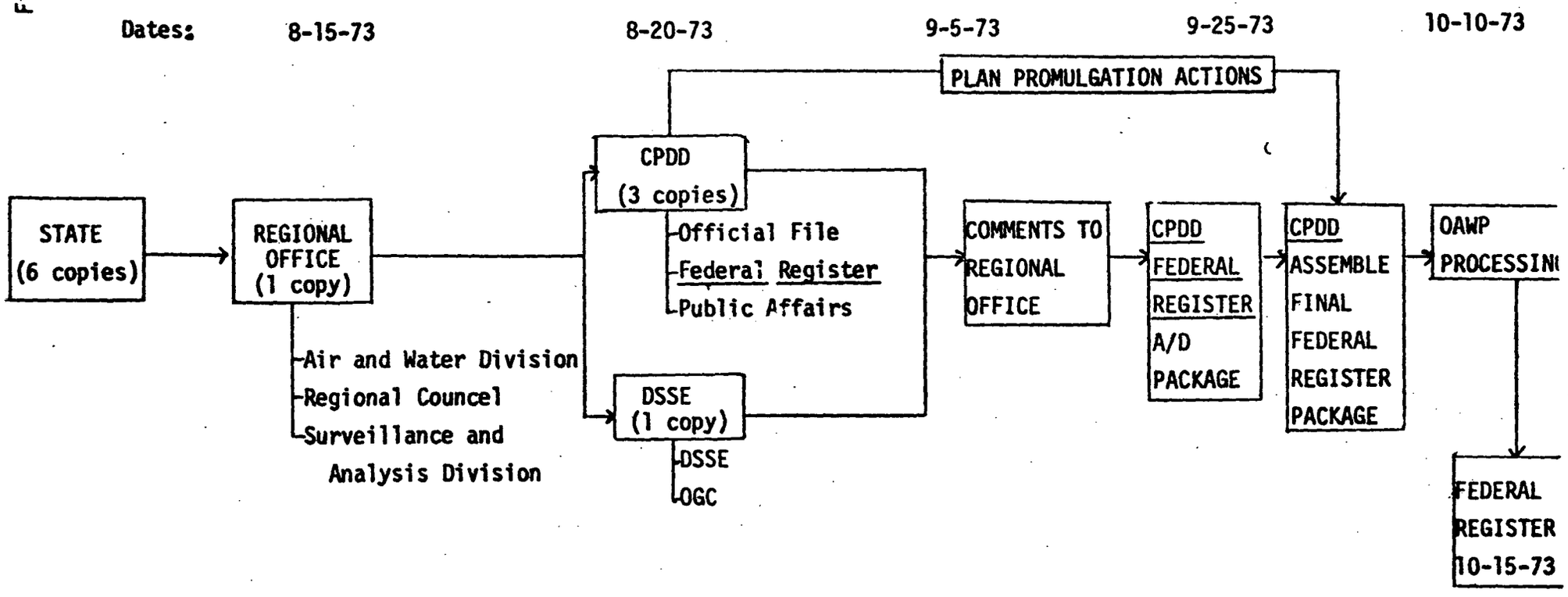
Figure 1

COMPLEX SOURCE TIME SCHEDULE
1973

1.	U.S. COURT OF APPEALS - DECISION NRDC v. EPA	JANUARY 31
2.	EPA MET WITH NRDC PETITION THE COURT - ESTABLISHED A TIME SCHEDULE FOR ACTIONS	MID FEBRUARY
3.	DISAPPROVAL OF SIP	MARCH 8
4.	PROPOSED REGULATIONS FEDERAL REGISTER	APRIL 18
5.	COMMENTS ON PROPOSED REGULATIONS	MAY 18
6.	COMPLEX SOURCE REGULATIONS	JUNE 18
7.	STATE IMPLEMENTATION PLANS	AUGUST 15
8.	APPROVAL/DISAPPROVAL NOTICES AND PLAN PROPOSALS	OCTOBER 15
9.	PUBLIC HEARINGS ON PROMULGATION	NOVEMBER 15-20
10.	REGIONAL FINDINGS TO CPDD	NOVEMBER 27
11.	COMPLETION OF FEDERAL REGISTER PROMULGATION PACKAGE	DECEMBER 10
12.	FINAL PROMULGATION	DECEMBER 15

Figure 2

PROCESSING PROCEDURE
COMPLEX SOURCE
STATE IMPLEMENTATION PLANS

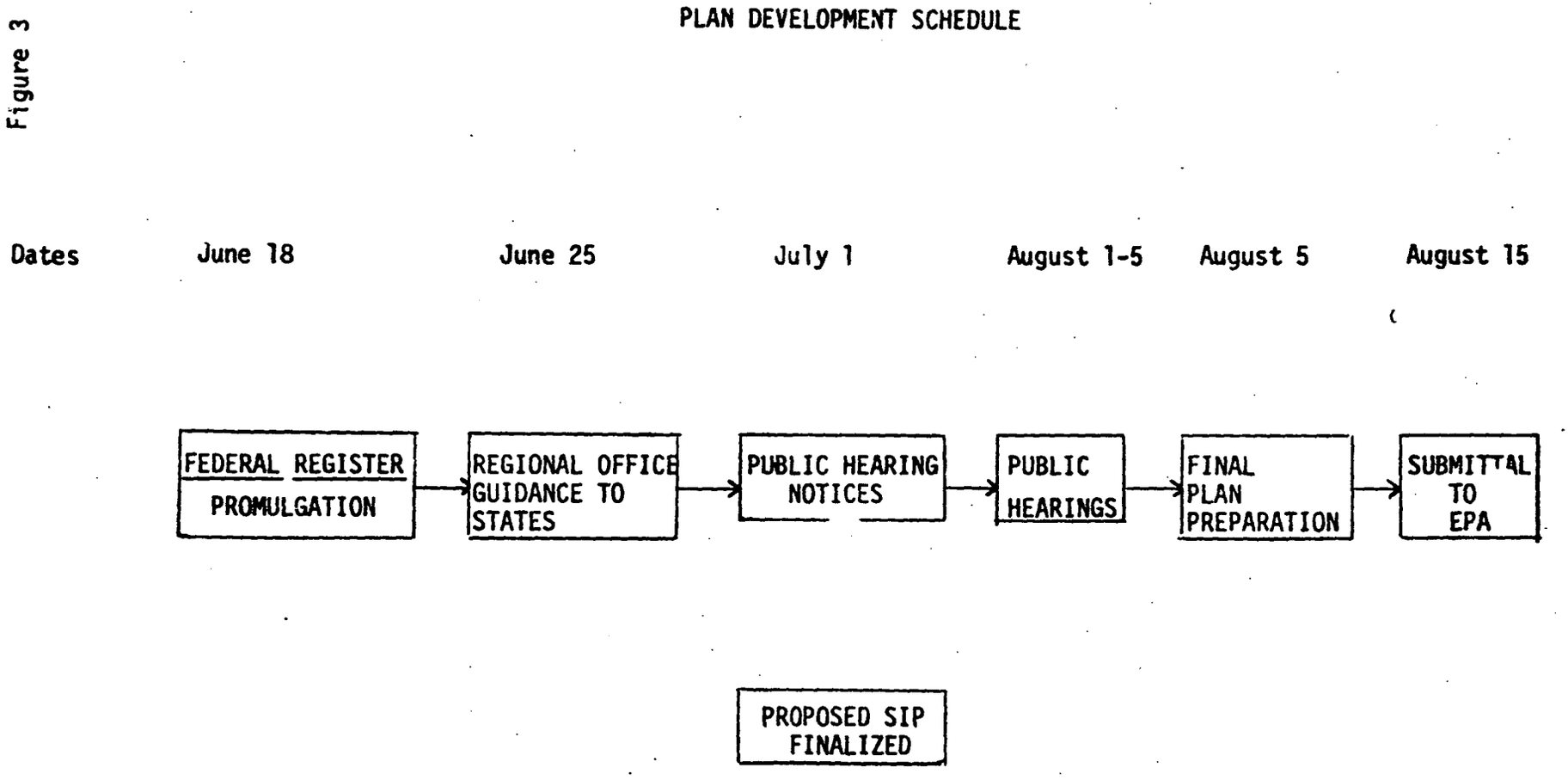


RESPONSIBILITIES

1. REGIONAL OFFICES - COMPREHENSIVE PLAN REVIEW, PREPARATION OF FEDERAL REGISTER APPROVAL/DISAPPROVAL ACTIONS
2. OEGC - GENERAL OVERVIEW OF 51.11 (LEGAL AUTHORITY) AND 51.18 (PROCEDURES). PROVIDE REVIEW AND COMMENT TO REGION OFFICES.
3. CPDD - GENERAL OVERVIEW OF PLAN SUBMITTALS, PROVIDE COMMENTS AND TECHNICAL SUPPORT TO REGIONAL OFFICES. WILL CONSOLIDATE TO REGIONAL OFFICES FEDERAL REGISTER APPROVAL/DISAPPROVAL PACKAGE FOR THE ADMINISTRATOR AND PUBLICATION. WILL PREPARE PROMULGATIONS WHERE STATES HAVE NOT ACTED.

Figure 3

PLAN DEVELOPMENT SCHEDULE



Example Application of HIWAY Model

Enclosed is a sample run of EPA's interactive line source diffusion model "HIWAY". A brief description of this program is given first, followed by the actual run. In this example, a roadway of 1 kilometer was chosen, with a receptor located half-way down the roadway, 15 meters from the side of the road on the downwind side and 2 meters above ground. The emission density ("line source strength vector") of .00308 grams/second-meter corresponds to a traffic volume of 100 vehicles/hour travelling at 5 miles per hour in urban traffic conditions. Assumed is a 1975 vehicle age and use distribution, class "D" atmospheric stability, a wind speed of 1 meter/second. The angle between the direction of the wind and the roadway is 20 degrees. The resulting concentration of 1.529 p.p.m. carbon monoxide can be multiplied by the following factors to obtain the correct concentration corresponding to other vehicle speeds:

Vehicle Speed (mph)	Factor
10	0.70
15	0.50
20	0.40
30	0.33
50	0.30

For the 30 mph condition, the resulting concentration is .505 p.p.m. To obtain a plot of CO concentration in p.p.m. vs. traffic in vehicles per hour, use two endpoints of (.505 p.p.m., 100 vehicles/hr), and (5.05 p.p.m., 1000 vehicles/hr).

```
EPA/RTCC/RTP NC   Time Sharing System
 TSL- Time Sharing Library System is now released.
READY
hiway

DO YOU WANT A DESCRIPTION OF THE EPA "HIWAY" MODEL
BEFORE APPLYING IT?(YES OR NO)

yes

1.THE EPA "HIWAY" MODEL COMPUTES INERT POLLUTANT CONCENTRATIONS IN THE
  VICINITY OF A ROADWAY ON A SHORT TERM BASIS (HOURLY AVERAGES) USING
  THE GAUSSIAN PLUME FORMULATION. IF MORE THAN ONE ROADWAY IS PRESENT,
  SUPERPOSITION APPLIES. THE MODEL CAN BE USED FOR AT GRADE AND CUT
  SECTIONS.
2.THE COORDINATE SYSTEM IS ARRANGED SUCH THAT THE X-AXIS INCREASES FROM
  WEST TO EAST WHILE THE Y-AXIS INCREASES FROM SOUTH TO NORTH.THE UNITS
  RELATED TO HIGHWAY MEASUREMENTS ARE INDICATED BY A SCALE FACTOR OF
  USER UNITS TO KILOMETERS. THE MOST FREQUENTLY USED FACTORS ARE:
                  UNITS          SCALE FACTOR
                KILOMETERS         1.0
                METERS             0.001
                FEET               0.000305
                MILES              1.61
  SCALE FACTOR UNITS APPLY EXCEPT WHEN OTHER UNITS ARE SPECIFICALLY
  REQUESTED.
3.THE EMISSION DATA IS DEPENDENT ON VEHICLE SPEED,TYPES AND NUMBER OF
  VEHICLES,AND EMISSION CONTROL DEVICES.THE PROGRAM WILL GENERATE AN
  EMISSION RATE BASED ON AN ESTIMATE OF AVERAGE ROADWAY SPEED AND
  VOLUME OF TRAFFIC.ALTERNATIVELY,THE USER CAN ELECT TO SPECIFY HIS
  OWN EMISSION RATES IN GRAMS PER SECOND-METER.THE LATTER APPROACH IS
  HIGHLY PREFERABLE SINCE THE INTERNALLY GENERATED RATE IS BASED UPON
  A SPECIFIC AUTOMOBILE MIX WHICH DOES NOT APPLY ACCURATELY IN MOST CASES
  INPUTS ARE ENTERED FOR EACH LANE STARTING WITH THE DOWNWIND LANE.
4.COORDINATES OF THE ROAD CORRESPOND TO THOSE OF A LINE ON THE DOWNWIND
  EDGE. WIND DIRECTION IS DERIVED BY MEASURING CLOCKWISE(EAST) FROM
  DUE NORTH.(E.G.,WIND FROM NORTH IS 0 DEGREES;EASTERLY WIND IS 90.)
5.THE PROGRAM CONTAINS THE OPTION TO EVALUATE ANY NUMBER OF
  RECEPTOR LOCATIONS AND/OR TYPES OF ROADS.
6.YOU MUST SEPARATE MULTIPLE INPUTS WITH COMMAS.
7.FOR MOST APPLICATIONS,THE HEIGHTS OF THE RECEPTOR AND
  SOURCES ARE ASSUMED TO BE THE SAME.


ENTER SCALE FACTOR.
?
1
ENTER LINE(ROAD) ENDPOINTS.(ORDERED PAIRS:X1,Y1,X2,Y2)
?
```

```
0,0,0,0
ENTER EMISSION HEIGHT. (METERS)
?
0
ENTER WIND DIRECTION (DEG).  NORTH IS ZERO.
?
250
ENTER WIND SPEED (METERS/SEC).
?
1
ENTER MIXING HEIGHT (METERS).
?
3000
ENTER PASQUILL-TURNER STABILITY CLASS (1-5).
?
4
ENTER THE NUMBER OF LANES.
?
1
DO YOU WISH TO ENTER YOUR OWN EMISSION RATES?(YES OR NO)
yes
ENTER LINE SOURCE STRENGTH VECTOR.(A VALUE FOR EACH LANE)
?
.00308
IS THIS A CUT SECTION?  (YES OR NO)
no
ENTER HIWAY WIDTH (METERS).
?
5
ENTER WIDTH OF CENTER STRIP (METERS).
?
0


ENTER NUMBER OF RECEPTOR LOCATIONS DESIRED.(MAXIMUM OF 25)
?
1
IKJ54017A TERMINAL ERROR, REENTER INPUT
1
ENTER RECEPTOR COORDINATE SETS.(X&Y IN SCALE FACTOR UNITS;Z IN METERS)
?
.5,.015,2



ENDPOINTS OF THE LINE SOURCE
     0.0   ,      0.0  AND      1.000,      0.0
EMISSION HEIGHT IS    0.0   METERS
EMISSION RATE (GRAMS/SECOND*METER) OF    1 LANE(S)
    0.003
WIDTH OF AT-GRADE HIGHWAY IS      5.000 METERS
WIDTH OF CENTER STRIP IS      0.0   METERS
WIND DIRECTION IS   250.  DEGREES
WIND SPEED IS     1.0 METERS/SEC
STABILITY CLASS IS     4
HEIGHT OF LIMITING LID IS  3000.0 METERS
THE SCALE FACTOR IS      1.0000KM.
```

RECEPTOR LOCATION X	Y	HEIGHT Z (M)	CONCENTRATION UGM/CU METER	PPM
0.5000	0.0150	2.0000	1757.417	1.529

YOU HAVE THE OPTION TO RUN THE MODEL FOR A NEW RECEPTOR LOCATION (LOC),OR TO CHANGE THE ROADWAY TYPE,OR TO END THE PROGRAM.
ENTER LOC, OR TYPE, OR END.
end
READY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: Additional Programs which are now Available DATE: July 11, 1973

FROM: Gerald Nehls, Chief
Data Management Section

TO: NEDS/SAROAD Contacts

We have some programs which are now operational in a batch mode. Since we shall be devoting most of our efforts to conversion over the next 5-8 months, we shall not be able to add these to the TSO system. However, we would like to make them available to you so that you can run them on your RJE terminal if you so desire.

Upon request we can send card decks and operating instructions for the following programs.

Program #1: SAROAD hourly listing.

Lists all data with a sampling interval of 12 hours or less. Also creates running averages.

Program #2: NEDS emission summary

Summarizes emissions data by various categories for county, state, AQCR, and nation.

Program #3: NEDS condensed point source listing

Lists selected point source information for various parameters sorted in various orders. A sample request sheet is enclosed.

Program #4: NEDS Stationary Source Fuel Summary

Presents a summary of fuel use by various categories for the nation, a state, county, or air quality control region.

Program #5: NEDS Source Counts

Counts the number of plants, plant-points, and plant-point-SCC's by state.

Program #6: Allowed vs Computed Emissions

Lists for a plant by point and SCC the computed emissions

vs allowed emissions. A memo defining the availability of this program should have been sent to the regional offices by the Standards Implementation Branch.

We are enclosing sample outputs.

If you want any or all of these programs and their documentation, please contact either Carolyn Chamblee or me.

There are two other programs which we are now developing and hope to make available to you by the end of August.

1. Emissions/Air Quality report
   A report by AQCR containing the following information:

   AQCR population
   Land area of AQCR
   Priority of pollutants in AQCR
   Point and area source emission totals by pollutant
   For a year or multiple of years and by pollutant
   the number of stations, maximum value, and maximum yearly average for the stations meeting criteria.

2. Standards exception reporting system

   A report defining the number of observations and the number of times the standards have been exceeded by sampling site.

Enclosure

OFFICE OF STATISTICAL SERVICES
ENVIRONMENTAL PROTECTION AGENCY

NEW JERSEY
NEWARK
WASHINGTON STREET AND [illegible]
(31340002F01)

CARBON MONOXIDE
4210111
CONCENTRATION IN PARTS PER MILLION
INSTRUMENTAL NONDISPERSIVE INFRA-RED

DEC 1972

1-HOUR DATA LISTING

DAY	AM 12	1	2	3	4	5	6	7	8	9	10	11	PM 12	1	2	3	4	5	6	7	8	9	10	11	DAILY MEAN	NO
1	1.[illegible]	1.1	.9	.8	.8	1.0	1.6	3.1	2.4	2.0	1.9	2.0	2.0	2.5	2.6	3.8	12.9	12.6	6.0	7.1	7.3	6.6	5.2	7.1	3.5	24
2	5.3	3.7	2.7	1.4	.7	.5	.9	1.2	1.3	2.1	2.6	3.5	8.0	10.1	12.3	10.6	7.6	4.1	5.9	6.0	4.4	7.7	7.3	2.7	5.0	24
3	6.5	6.2	5.5	3.6	2.6	2.5	2.5	3.7	2.4	2.4	2.0	1.4	1.0	1.4	1.1	1.5	1.9	2.2	3.5	2.5	1.2	1.3	1.2	1.4	2.6	24
4	1.3	.9	.6	.5	.6	.7	1.4	3.0	5.5	3.0	4.0	6.6	5.5	5.9	6.2	6.4	11.5	9.0	5.2	4.0	2.1	3.0	2.7	1.4	3.4	24
5	1.2	.8	.4	.3	.5	.7	1.9	4.1	8.2	7.0	8.8	6.1	6.2	6.1	6.8	9.5	10.5	15.4	9.6	10.2	10.5	8.6	7.8	6.0	6.1	24
6	4.4	4.0	3.6	2.8	2.7	2.6	4.9	9.1	12.6	14.1	13.7	14.7	18.0	16.9	7.8	7.8	13.0	21.5	8.9	7.4	1.0	1.0	.9	.5	8.1	24
7	.4	.2	.5	.7	.8	.8	1.5	2.8	2.9	1.5	2.1	2.0	2.0	2.4	3.0	3.3	8.9	8.9	3.9	2.8	2.3	3.0	2.1	1.6	2.5	24
8	1.2	1.0	.7	.5	.3	1.1	2.1	4.8	6.2	4.7	4.9	5.5	7.5	6.1	7.5	9.6	16.0	15.3	16.3	15.5	18.5	14.2	7.8	4.1	7.4	24
9	4.6	3.5	3.1	2.9	2.2	1.6	2.4	3.2	3.6	6.9	7.2	11.4	8.3	10.3	11.6	13.6	11.5	13.8	9.9	7.9	4.9	3.6	2.8	3.2	6.5	24
10	3.9	2.5	3.0	1.7	1.7	1.9	2.1	2.2	3.4	3.3	3.2	3.5	4.7	3.9	6.5	5.5	5.7	3.5	4.0	2.2	1.9	1.5	1.6	1.5	3.1	24
11	1.[illegible]	1.1	.9	.7	.5	.5	1.1	2.0	3.3	2.2	2.5	2.8	3.0	2.9	3.3	3.8	7.0	5.2	3.2	2.6	2.5	3.8	2.7	3.8	2.7	24
12	1.2	1.1	1.0	.8	.7	1.1	1.8	4.3	5.7	5.8	5.5	4.6	5.8	5.7	7.4	9.5	10.6	10.3	8.5	8.5	6.2	7.5	7.1	5.3	5.5	24
13	5.7	4.9	5.8	6.1	4.6	4.2	4.9	7.8	5.0	4.7	5.0	2.5	3.5	3.2	3.3	3.8	5.7	5.7	3.8	2.6	2.9	2.7	2.0	1.5	4.3	24
14	1.2	.9	.8	.9	.9	1.1	2.1	5.0	7.0	6.5	7.4	6.3	6.8	6.9	4.1	5.9	8.3	7.0	7.0	5.3	4.7	4.8	2.0	2.1	4.4	24
15	1.5	1.2	.7	.4	.2	.5	1.5	3.3	6.4	4.5	5.4	5.6	5.3	5.5	6.8	7.2	13.4	7.7	5.0	3.7	2.5	3.2	2.1	2.2	4.0	24
16	1.9	1.5	1.3	1.2	1.5	1.7	.9	.1	.7	.5	.7	[illegible]	3.2	3.4	4.2	2.9	3.0	1.4	1.7	1.2	1.3	2.0	2.0	1.7	1.4	24
17	.4	.3	.2	.1	.1	.5	.5	.8	.8	.8	.8	1.0	1.1	1.3	.7	.9	.9	.4	.3	.1	.7	.5	1.1	.7	.6	24
18	1.9	2.5	4.2	1.7	2.0	2.9	3.5	8.3	8.4	6.6	7.3	12.2	11.7	12.6	9.3	10.5	20.5	8.6	4.0	7.5	8.3	6.9	2.6	2.7	6.9	24
19	2.7	2.6	1.7	2.2	2.9	3.7	6.6	13.2	14.0	14.1	10.8	13.0	12.9	14.2	13.3	15.6	27.7	25.9	18.4	11.7	7.3	12.4	7.1	4.1	11.0	24
20	5.4	5.9	5.5	5.0	4.8	3.5	5.9	11.3	14.6	11.0	10.3	6.4	8.5	10.9	9.0	10.0	13.7	13.3	7.1	7.2	5.1	5.6	2.6	1.7	7.7	24
21	1.5	1.3	1.1	1.1	1.0	1.5	2.4	4.7	5.7	5.0	5.9	7.0	7.9	7.9	7.2	8.6	14.2	10.3	6.6	5.0	4.7	5.2	2.7	2.3	5.1	24
22	2.1	1.8	1.0	.9	.8	.9	1.3	2.7	4.4	3.5	2.9	5.6	7.4	8.4	8.1	8.4	11.4	10.4	6.4	6.6	3.7	4.5	5.0	2.1	4.5	24
23	2.1	2.0	1.5	1.1	1.1	1.0	1.0	1.0	1.0	2.1	4.0	5.5	11.0	5.9	6.5	8.5	9.6	10.4	4.5	3.1	3.6	3.0	2.8	1.9	3.5	24
24	2.2	1.5	1.7	1.2	1.3	1.3	.8	.9	1.1	1.0	1.5	2.8	2.2	2.5	3.6	3.6	3.6	4.9	4.2	4.4	3.2	3.0	2.4	2.9	2.4	24
25	2.[illegible]	2.7	4.8	3.7	3.3	3.2	3.4	3.9	3.3	2.7	3.3	3.3	3.4	4.5	4.7	5.1	3.5	4.6	3.9	4.2	4.5	5.0	4.0	4.3	3.[illegible]	24
26	4.3	4.1	4.2	3.2	3.0	3.0	3.7	5.9	5.5	6.7	7.0	4.7	7.3	7.9	7.7	7.0	8.1	8.6	7.0	8.3	6.7	3.1	1.9	2.0	5.5	24
27	1.6	.8	.5	.5	.7	1.3	2.2	3.4	3.4	2.4	2.4	2.6	3.7	4.0	2.7	3.0	3.6	3.7	3.0	3.9	5.6	3.3	3.2	5.8	2.4	24
28	4.3	3.0	2.5	1.2	1.1	1.0	1.3	2.0	2.3	2.1	2.3	2.8	3.2	3.0	2.9	2.3	3.0	4.5	4.3	2.0	1.5	1.9	1.4	.4	2.4	24
29	.5	.3	.6	.9	1.0	.7	.8	1.6	2.4	2.0	3.2	3.0	3.9	3.9	5.5	6.6	9.0	6.4	4.7	5.0	5.1	4.1	3.4	3.8	3.3	24
30	5.[illegible]	4.7	5.6	2.3	2.1	2.3	2.5	3.1	3.6	5.4	6.8	8.5	5.9	9.3	7.3	6.8	7.6	7.2	5.3	3.7	3.4	3.7	3.1	4.0	5.0	24
31	2.[illegible]	2.3	2.3	1.6	1.7	1.5	1.0	.3	.9	1.3	1.7	2.1	2.4	3.0	4.3	6.4	7.8	7.8	10.3	6.3	3.5	3.2	3.7	3.5	3.4	24
AVG	2.7	2.3	2.3	1.7	1.6	1.6	2.3	4.0	4.8	4.5	4.7	5.3	5.9	6.2	6.1	6.7	9.4	8.4	6.2	5.4	4.6	4.5	3.4	3.4	4.5	
NO.	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31		74
MAX	5.[illegible]	6.2	6.1	6.1	4.8	4.2	6.6	13.2	14.6	14.1	13.7	14.7	18.0	16.9	13.3	15.6	27.7	25.9	18.4	15.5	18.5	14.2	7.8	9.1	27.7	

NATIONAL EMISSIONS DATA SYSTEM

ENVIRONMENTAL PROTECTION AGENCY

STATE EMISSIONS REPORT

TENNESSEE

RUN DATE: JULY 11, 1973
EMISSIONS AS OF: APRIL 19, 1973

	PARTICULATES TONS / YR	SOX TONS / YR	NOX TONS / YR	HC TONS / YR	CO TONS / YR
FUEL COMBUSTION					
EXTERNAL COMBUSTION					
RESIDENTIAL FUEL (AREA)					
BITUMINOUS COAL	6374	23105	956	6374	28683
DISTILLATE OIL	238	1365	286	71	119
NATURAL GAS	423	13	1114	178	446
WOOD	917	18	367	73	73
TOTAL (RESIDENTIAL)	7953	24502	2723	6697	29322
ELEC GENERATION (POINT)					
BITUMINOUS COAL	197521	787570	147327	2193	7309
DISTILLATE OIL	0	1	3	0	0
NATURAL GAS	39	5	3369	346	3
TOTAL (ELEC GEN)	197560	7875 6	150700	2538	7312
INDUSTRIAL FUEL					
BITUMINOUS COAL					
POINT SOURCES	73017	54546	28852	979	2376
RESIDUAL OIL					
AREA SOURCES	154	691	617	31	2
POINT SOURCES	182	2357	535	27	2
DISTILLATE OIL					
AREA SOURCES	98	1205	254	13	1
POINT SOURCES	89	432	271	13	1
NATURAL GAS					
AREA SOURCES	677	23	6766	1504	15
POINT SOURCES	358	3087	4054	513	6
PROCESS GAS					
AREA SOURCES	1	0	18	3	0
POINT SOURCES	1460	5000	0	0	0
WOOD					
POINT SOURCES	2859	204	2187	437	437
LIQUID PETROL GAS					
POINT SOURCES	91	22	608	203	1
TOTAL (INDUSTRIAL)					
AREA SOURCES	930	1919	7656	1550	18

CO[illegible] INSTITUTIONAL FUEL					
BITUMINOUS COAL					
AREA SOURCES	5752	8301	865	188	677
POINT SOURCES	937	1633	415	29	61
RESIDUAL OIL					
AREA SOURCES	7	73	19	1	0
POINT SOURCES	3	18	7	0	0
DISTILLATE OIL					
AREA SOURCES	1282	4964	5126	256	17
POINT SOURCES	2	19	7	0	0
NATURAL GAS					
AREA SOURCES	373	12	1965	157	393
POINT SOURCES	43	1	447	18	46
TOTAL (COMM-INST)					
AREA SOURCES	7414	13349	7975	602	1087
POINT SOURCES	985	1671	877	48	106
TOTAL (EXTERNAL COMB)					
AREA SOURCES	16297	39770	18353	8850	30426
POINT SOURCES	276601	854895	188084	4759	10241
TOTAL (FUEL COMBUSTION)					
AREA SOURCES	16297	39770	18353	8850	30426
POINT SOURCES	276601	854895	188084	4759	10241
INDUSTRIAL PROCESS (POINT)					
CHEMICAL MANUFACTURING	26187	52341	12084	29877	5579
FOOD/AGRICULTURAL	4473	0	0	0	0
PRIMARY METAL	21861	505	3	1484	63
SECONDARY METALS	4516	4521	18	0	59330
MINERAL PRODUCTS	69894	19165	2552	14	115
WOOD PRODUCTS	6418	10	115	160	0
EVAPORATION	292	0	148	2321	146
TEXTILE MANUFACTURING	15	0	0	0	0
INPROCESS FUEL	6272	6239	140	452	4
OTHER/NOT CLASSIFIED	28	0	0	0	0
TOTAL (INDUSTRIAL)	139956	82782	15061	34307	65237
SOLID WASTE DISPOSAL					
GOVERNMENT (POINT)					
MUNICIPAL INCINERATION	145	18	15	20	248
TOTAL (GOVERNMENT)	145	18	15	20	248
RESIDENTIAL (AREA)					
OPEN BURNING	1328	83	498	2822	7055
TOTAL (RESIDENTIAL)	1328	83	498	2822	7055
COMMERCIAL-INSTITUTIONAL					
ON SITE INCINERATION					
POINT SOURCES	12	4	5	5	18

AREA SOURCES	446	28	167	947	2367
TOTAL (COMM-INST)					
AREA SOURCES	446	28	167	947	2367
POINT SOURCES	12	4	5	5	18
INDUSTRIAL					
ON SITE INCINERATION					
POINT SOURCES	650	68	101	725	4380
OPEN BURNING					
AREA SOURCES	934	58	350	1986	4964
POINT SOURCES	10	0	3	18	55
TOTAL (INDUSTRIAL)					
AREA SOURCES	934	58	350	1986	4964
POINT SOURCES	660	69	103	743	4435
TOTAL (SOLID WASTE DISP)					
AREA SOURCES	2708	169	1015	5754	14386
POINT SOURCES	818	92	123	769	4701
TRANSPORTATION (AREA)					
LAND VEHICLES					
GASOLINE					
LIGHT VEHICLES	6832	4099	97928	196566	1000764
HEAVY VEHICLES	850	510	28348	53561	211706
OFF HIGHWAY	356	22.	7840	24632	134965
TOTAL (GASOLINE)	8039	4832	134115	274760	1347436
DIESEL					
HEAVY VEHICLES	972	1944	27537	2754	16198
OFF HIGHWAY	414	859	11777	1178	7162
RAIL	1312	3412	3936	2624	3674
TOTAL (DEISEL)	2698	6215	43250	6556	27034
AIRCRAFT					
MILITARY	120	23	58	280	301
CIVIL	254	50	229	1124	6420
COMMERCIAL	1185	263	741	2844	6745
TOTAL (AIRCRAFT)	1559	336	1028	4248	13466
VESSELS					
DIESEL FUEL	548	1425	1644	1096	1534
GASOLINE	56	35	1243	3906	21399
TOTAL (VESSELS)	604	1460	2887	5002	22934
GAS HANDLING EVAP LOSS	0	0	0	20097	0
TOTAL (TRANSPORTATION)	12900	12843	181281	310662	1410870
MISCELLANEOUS (AREA)					

TOTAL (MISCELLANEOUS)	0	0	0	13270	0

GRAND TOTAL
****

AREA SOURCES	31906	52782	200650	338537	1455682
POINT SOURCES	417374	937768	203268	39835	80179
TOTAL	449280	990550	403918	378371	1535861

Request for Condensed Point Source Listing

The first card image shown on the accompanying form is used to supply control information which is used by the job throughout one computer run. Basically, there are six items of information contained on this card. The information is:

1) Pollutant. The user must select one pollutant to base the run on. The computed emissions for this pollutant are used in the value check against the specified minimum.

2) Minimum Value. The user can specify a value to be used in the comparison to select only records for which the computed emissions for the specified pollutant are greater than or equal to the value entered. Zero is used if no value is entered which causes all records satisfying other criteria to be selected.

3) Sort Information. A maximum of 20 sort parameters can be specified by the user. The order the parameters are entered controls the order of the output. For example, if the user wanted to list all plants within a state in alphabetical order by name, the code 01 would be entered in the two columns under "SORT 01" and 10 would be entered in the two columns under "SORT 02". The possible sort codes are listed on the form.

4) Confidentiality. This option was allowed for future use but is not currently implemented. Currently all data is selected regardless of confidentiality and should be considered confidential. When the status of confidentiality has been determined, this option will be revised so that the user will have to specify confidential data to receive that data in a request.

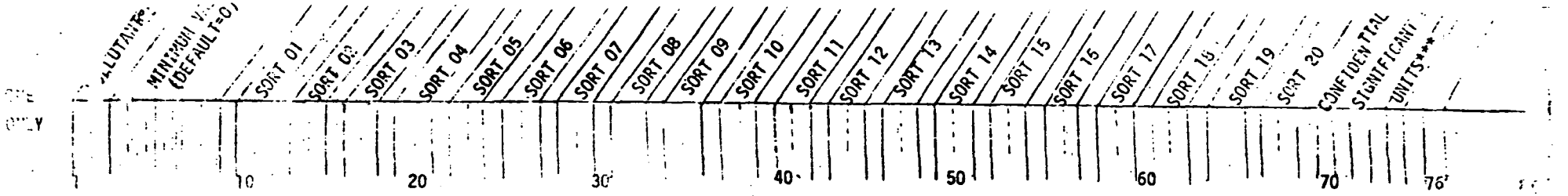
5) Significant Digits. This option allows the user to specify the number of significant digits to be printed for each number. If a value is not entered, three is used.

6) Units. If the units field is blank, the emissions are listed in English units, i.e., short tons. If one is entered the metric units, megagrams, are used.

Following the control card, the user can enter any number of selection cards. The selection cards allow the user to specify state,

county, plant number, point number, any or all of the four parts of the source classification code (SCC), ownership, standard industrial classification code (SIC), estimation method, and Air Quality Control Region (AQCR) to select on. Any one of these fields can be specified or valid combinations can be specified. For example, if the user was interested in retrieving information for all federally operated plants in Tennessee, he would enter 44 in the first two columns and an "F" in column 21.

Please note that when you are specifying a county retrieval you must enter both the state and county. Also when requesting a particular plant number you must enter state, county, and plant. To request a point you must specify state, county, plant, and point.



*DEFAULTS TO NON-CONFIDENTIAL DATA ONLY. IF YOU WANT ALL DATA, ENTER A "1" IN COLUMN 70.

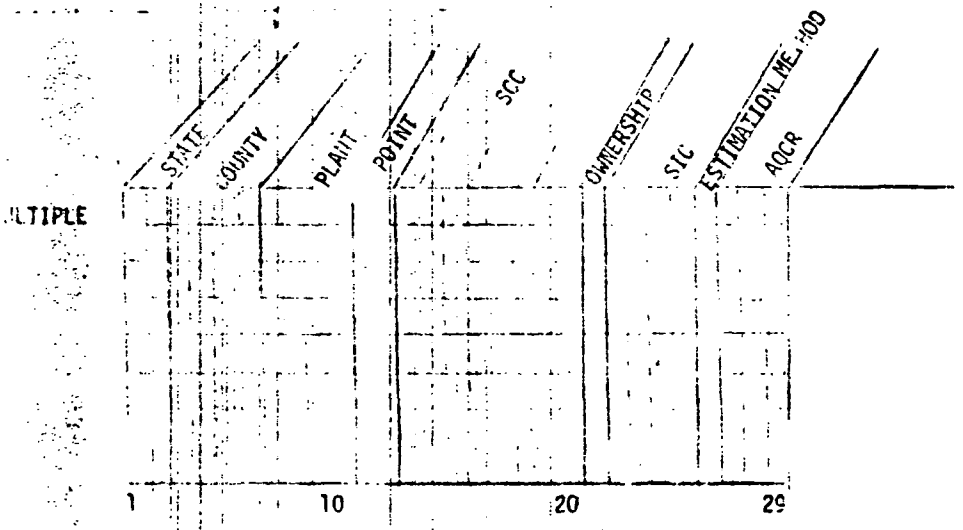
**NUMBER OF SIGNIFICANT DIGITS DESIRED IN VALUES (DEFAULT=5) IN COLUMN 72

***BLANK FOR ENGLISH UNITS (SHORT TONS); "1" FOR METRIC UNITS (MEGAGRAMS) IN COLUMN 74

CHOOSE THE SORT SEQUENCE DESIRED FROM THE TABLE AT THE RIGHT AND ENTER THE CORRESPONDING PAIRS OF TWO DIGIT CODES IN THE ORDER DESIRED IN THE FORM ABOVE.

SORT OPTIONS

01	STATE	11	POLLUTANT VALUE
02	COUNTY	12	YEAR OF RECORD
03	PLANT NUMBER	13	CONTROL EQUIP
04	POINT NUMBER	14	CONTROL EFFIC
05	SCC(SOURCE CLASSIFICATION CODE)	15	SULFUR CONTENT
06	OWNERSHIP	16	ASH CONTENT
07	SIC(STANDARD INDUSTRIAL CLASS)	17	CITY
08	ESTIMATION METHOD	18	UTM COORDINATES
09	AQCR	19	OPERATING PATT
10	PLANT NAME	20	CONFIDENTIALITY



FILE CREATED ON THURSDAY APRIL 29, 1976

NATIONAL EMISSION DATA SYSTEM

CONDENSED POINT SOURCE LISTING FOR PARTICULATE
FOR ALL VALUES > THAN OR = TO 0
EMISSIONS ARE IN SHORT TONS PER YEAR

	PART	S O X	N O X	H C	C O
0005: TENN. VALLEY AUTH. SHAWNEE PLT 42001 OWNERSHIP: FEDRL GOVT 18: KENTUCKY 2460: MC CRACKEN YEAR OF RECORD: 1971 072: PADUCAH-CAIRO (ILL-KY) THIS DATA MAY BE CONFIDENTIAL 007: CENTRIFUGAL COLLECTOR - HIGH EFFICIENCY EFF = 98.5% POINT: 09 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-005-01	<1	2	6	<1	<1
0005: TENN. VALLEY AUTH. SHAWNEE PLT 42001 OWNERSHIP: FEDRL GOVT 18: KENTUCKY 2460: MC CRACKEN YEAR OF RECORD: 1971 072: PADUCAH-CAIRO (ILL-KY) THIS DATA MAY BE CONFIDENTIAL 007: CENTRIFUGAL COLLECTOR - HIGH EFFICIENCY EFF = 98.5% POINT: 10 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-005-01	<1	2	5	<1	<1
0004: TENN.VALLEY AUTH. PARADISE PLT 42337 OWNERSHIP: FEDRL GOVT 18: KENTUCKY 2960: MUHLENBERG YEAR OF RECORD: 1971 072: PADUCAH-CAIRO (ILL-KY) THIS DATA MAY BE CONFIDENTIAL 010: ELECTROSTATIC PRECIPITOR - HIGH EFFICIENCY EFF = 98.0% POINT: 01 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-005-01	<1	18	60	1	<1
0004: TENN.VALLEY AUTH. PARADISE PLT 42337 OWNERSHIP: FEDRL GOVT 18: KENTUCKY 2960: MUHLENBERG YEAR OF RECORD: 1971 072: PADUCAH-CAIRO (ILL-KY) THIS DATA MAY BE CONFIDENTIAL 010: ELECTROSTATIC PRECIPITOR - HIGH EFFICIENCY EFF = 98.0% POINT: 02 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-005-01	<1	19	64	1	<1
0004: TENN.VALLEY AUTH. PARADISE PLT 42337 OWNERSHIP: FEDRL GOVT 18: KENTUCKY 2960: MUHLENBERG YEAR OF RECORD: 1971 072: PADUCAH-CAIRO (ILL-KY) THIS DATA MAY BE CONFIDENTIAL 010: ELECTROSTATIC PRECIPITOR - HIGH EFFICIENCY EFF = 98.0% POINT: 03 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-005-01	<1	21	69	1	<1
0001: ALLEN STEAM PLANT MEMPHIS OWNERSHIP: FEDRL GOVT 44: TENNESSEE 3080: SHELBY YEAR OF RECORD: 1970 018: METROPOLITAN MEMPHIS (ARK-MISS-TENN) 010: ELECTROSTATIC PRECIPITOR - HIGH EFFICIENCY EFF = 70.0% POINT: 03 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-002-02	14,700	28,700	4,250	71	236
0001: ALLEN STEAM PLANT MEMPHIS OWNERSHIP: FEDRL GOVT 44: TENNESSEE 3080: SHELBY YEAR OF RECORD: 1970 018: METROPOLITAN MEMPHIS (ARK-MISS-TENN) 010: ELECTROSTATIC PRECIPITOR - HIGH EFFICIENCY EFF = 70.0% POINT: 02 ESTIMATE BY (3) USED EMISSIONS FACTORS SIC = 4911 SCC = 1-01-002-02	12,900	25,200	3,740	62	208

NATIONAL EMISSION DATA SYSTEM

STATIONARY SOURCE FUEL SUMMARY REPORT

STATE FUEL REPORT: TENNESSEE

	ANTH COAL TONS	BITM COAL TONS	RESID OIL 1000 GALS	DIST OIL 1000 GALS	NAT GAS 10E6 CUFT	PROC GAS 10E6 CUFT	COKE TONS	WOOD TONS
AREA SOURCES								
RESIDENTIAL		637,410		47,600	44,570			73,400
INDUSTRIAL			[illegible]	20,560	75,180	160		
COMM-INSTL		187,960	[illegible]	170,870	39,300			
TOTAL		825,370	9,[illegible]16	239,030	159,050	160		73,400
POINT SOURCES								
EXT COMB								
ELEC GEN		14,617,200		66	17,278			
INDUSTRIAL		3,102,257	17,844	9,113	29,124	7,835		443,035
COMM-INSTL		56,724	[illegible]	261	4,552			
TOTAL		17,776,181	18,[illegible]8	9,443	50,954	7,835		443,035
INPROCESS		73,000						
INTERNL COMB								
ELEC GEN								
INDUSTRIAL								
COMM-INSTL								
TOTAL								
GRAND TOTAL		18,674,551	27,138	248,473	210,004	7,995		516,435

	LIGNITE TONS	BAGASSE TONS	SW/COAL TONS	LPG 1000 GALS	DIESEL 1000 GALS	GASOLINE 1000 GALS	JET FUEL 1000 GALS
POINT SOURCES							
EXT COMB							
ELEC GEN							
INDUSTRIAL				104,000			
COMM-INSTL							
INTERNL COMB							
ELEC GEN							
INDUSTRIAL							
COMM-INSTL							
ENG-TEST							
GRAND TOTAL				104,000			

ST NO	STATE	TOTAL NUMBER PLANTS	TOTAL NUMBER PLANT-POINTS	TOTAL NUMBER PLANT-POINT-SCC'S
01	ALABAMA	357	556	723
02	ALASKA	53	101	102
03	ARIZONA	171	258	639
04	ARKANSAS	248	313	315
05	CALIFORNIA	1,068	1,988	2,361
06	COLORADO	106	253	332
07	CONNECTICUT	152	477	516
08	DELAWARE	41	197	261
09	DIST COLUMBIA	44	108	121
10	FLORIDA	75	2[illegible]	258
11	GEORGIA	424	92[illegible]	1,512
12	HAWAII	114	402	430
13	IDAHO	197	351	509
14	ILLINOIS	637	2,403	3,040
15	INDIANA	535	1,624	1,924
17	KANSAS	229	343	403
18	KENTUCKY	435	1,361	1,794
19	LOUISIANA	208	426	453
20	MAINE	224	382	410
21	MARYLAND	221	1,559	2,076
22	MASSACHUSETTS	659	1,048	1,168
23	MICHIGAN	451	1,124	1,482
24	MINNESOTA	506	716	1,213
26	MISSOURI	268	514	752
27	MONTANA	114	342	347
28	NEBRASKA	120	210	336
29	NEVADA	46	67	80
30	NEW HAMPSHIRE	224	287	[illegible]17
31	NEW JERSEY	334	1,469	1 [illegible]59
32	NEW MEXICO	102	298	[illegible]5
35	NORTH DAKOTA	113	181	[illegible]
36	OHIO	1,306	3,242	4, [illegible]
37	OKLAHOMA	153	472	542
38	OREGON	344	1,468	1,471
39	PENNSYLVANIA	687	2,510	2,650
40	PUERTO RICO	240	343	364
41	RHODE ISLAND	96	164	185
42	SOUTH CAROLINA	173	295	395
43	SOUTH DAKOTA	76	114	131
44	TENNESSEE	307	1,451	1,896
45	TEXAS	496	4,027	4,549
46	UTAH	48	102	105
47	VERMONT	119	146	182
48	VIRGINIA	310	846	1,218
49	WASHINGTON	233	915	1,174
50	WEST VIRGINIA	182	546	622
51	WISCONSIN	281	897	1,193
52	WYOMING	69	188	263
54	GUAM	12	12	12

Iowa
Miss
NH
NC
V.I.
Am. Samoa

ALLOWED VERSUS COMPUTED EMISSIONS

DATE: JULY 23, 1973 FILE CREATED ON: JULY 20, 1973

STATE(55): VIRGIN ISLANDS
AQCR(247): U.S. VIRGIN ISLANDS

PLANT NAME AND ADDRESS: HESS OIL V I CORP,KINGSHILL ST CROIX

POINT NUMBER: 01

SCC NAME					YEAR OF RECORD
SCC1:	INDUSTRIAL PROCES PETROLEUM INDY	PROCESS HEATER	OIL		71
SCC2:	INDUSTRIAL PROCES PETROLEUM INDRY	PROCESS HEATER	GAS		71

	PART	SOX	NOX	HC	CO
ALLOWED EMISSIONS:					
COMPUTED EMISSIONS:					
SCC1:	52	17	182	9	
SCC2:	15	6	167	22	
TOTAL:	67	23	350	31	

REGULATIONS:

POINT NUMBER: 02

SCC NAME					YEAR OF RECORD
SCC1:	INDUSTRIAL PROCES PETROLEUM INDRY	PROCESS HEATER	OIL		71
SCC2:	INDUSTRIAL PROCES PETROLEUM INDRY	PROCESS HEATER	GAS		71

	PART	SOX	NOX	HC	CO
ALLOWED EMISSIONS:					
COMPUTED EMISSIONS:					
SCC1:	11	4	39	2	
SCC2:	3	1	35	5	
TOTAL:	14	5	74	6	

REGULATIONS:

POINT NUMBER: 03

SCC NAME					YEAR OF RECORD
SCC1:	INDUSTRIAL PROCES PETROLEUM INDRY	PROCESS HEATER	OIL		71
SCC2:	INDUSTRIAL PROCES PETROLEUM INDRY	PROCESS HEATER	GAS		71

	PART	SOX	NOX	HC	CO
ALLOWED EMISSIONS:					
COMPUTED EMISSIONS:					
SCC1:	4	1	15	<1	
SCC2:	1	<1	14	2	
TOTAL:	6	2	29	3	

REGULATIONS:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

N1

Research Triangle Park, North Carolina 27711

NASN Decentralization

July 23, 1973

Robert E. Neligan, Director
Monitoring and Data Analysis Division

Original signed by
Robert E. Neligan

Surveillance and Analysis Division Directors
Regions I-X

The enclosed list identifies the NASN station in your Region which should be maintained, at least through calendar year 1975. It is the same listing that was distributed during my April visits to most of your offices and it was also included in the material that I distributed at the Las Vegas meeting.

I believe that there is a consensus that the continuation of the NASN program is vital to EPA. I also believe that we jointly agreed to continue the operation of these sites and that any terminations would only be done by mutual agreement. If it becomes necessary to terminate any of these sites, please inform us in writing immediately. In our discussions, I stated that if in your opinion that some of these sites should be turned over to the States, that this would be acceptable. The only criteria that we asked is that the States desire the transfer and have sufficient resources to provide timely valid data.

Data obtained from most of these stations were used in preparation of the "trends" report which summarized national progress in reducing ambient levels of SO_2 and TSP. Continued collection of these data should greatly assist EPA in tracking additional progress in achieving standards and in relating causative factors (regulations and emission reductions) to nationwide and regional air improvements. Currently, the NASN provides the only data which can be used to present these long-term historical air quality assessments. Furthermore, the NASN stations in some cases were used in the design of the control strategy for the State Implementation Plans. Thus, continued operation of these stations will enable EPA to detect if the SIPs are effective in reducing the high concentrations. In addition, it will enable us to verify and assess whether the air quality models used are effective, predictive tools.

Because of the value of these data, it is hoped that a high priority will be given to maintaining these stations and that commensurate priority will be given to assure accurate analysis of the collected samples.

CONCURRENCES

SYMBOL								
SURNAME								
DATE								

EPA FORM 1320-1

OFFICIAL FILE COPY

Region I (13 urban, 4 non-urban) (8 SO_2/NO_2)

07	0060	001	A01*	Conn., Bridgeport
07	0420	001	A01*	Hartford
07	0700	001	A01*	New Haven
07	1240	001	A01*	Waterbury
20	0960	002	A01	Me., Portland
22	0240	001	A01*	Mass., Boston
22	0580	002	A01	Fall River
22	2160	002	A01*	Springfield
22	2640	001	A01*	Worcester
30	0120	001	A01	N. H., Concord
41	0120	001	A01	R. I., E. Providence
41	0300	001	A01*	Providence
47	0140	001	A01	Vt., Burlington
20	0010	001	A03	Me., Acadia National Park
30	0140	001	A03	N. H., Coos County
41	0380	002	A03	R. I., Washington Co.
47	0360	001	A03	Vt., Orange Co.

Together, the ten Regional lists contain a total of 183 urban stations. At 102 of these stations (identified by asterisks), the SO_2 bubbler samplers should also be maintained. The ten lists contain a total of 31 separately identified as nonurban stations. These stations are of unique importance and should remain under direct EPA operation indefinitely, not only for the continuity of rural or background trends but also for the singular opportunity to analyze the samples for background levels of trace constituents.

Enclosure

cc: A&W Division Directors
Dave Shearer
Elbert Tabor

MDAD:RENeligan:lwr-rm 634, NCM Bldg., X447-7-23-73

Region III (28 urban, 3 non-urban) (13 SO_2/NO_2)

08	0140	001	A01*	Del., Newark
09	0020	001	A01	D. C., Washington
09	0020	003	A01	Washington
21	0120	001	A01*	Md., Baltimore
39	0120	001	A01*	Penn., Allentown
39	0140	001	A01	Altoona
39	0780	002	A01	Bethlehem
39	3060	002	A01	Erie
39	3880	001	A01	Harrisburg
39	3960	001	A01	Hazleton
39	4480	001	A01*	Johnstown
39	7140	001	A01*	Philadelphia
39	7260	001	A01*	Pittsburgh
39	7620	001	A01*	Reading
39	8040	001	A01*	Scranton
39	9160	001	A01*	Warminster
39	9430	001	A01	Wilkes Barre
39	9560	001	A01*	York
48	0920	001	A01	Va., Danville
48	1440	001	A01	Hampton
48	1840	001	A01	Lynchburg
48	2120	001	A01	New Port News
48	2140	001	A01*	Norfolk
48	2440	001	A01	Portsmouth
48	2660	002	A01*	Richmond
48	2700	001	A01	Roanoke
50	0280	001	A01*	W. Va., Charleston
50	1760	001	A01	S. Charleston
39	1760	001	A03	Penn., Clarion Co.
48	2890	001	A03	Va., Shenandoah National Park
48	3440	001	A03	Wythe Co.

Region II (20 urban, 1 non-urban) (11 SO_2/NO_2)

31	0660	002	A01*	N. J., Burlington Co. (Marleton)
31	0720	001	A01*	Camden
31	1300	002	A01	Elizabeth
31	1700	001	A01*	Glassboro
31	2320	001	A01*	Jersey City
31	3480	001	A01*	Newark
31	4140	001	A01*	Paterson
31	4220	001	A01	Perth Amboy
31	5400	001	A01	Trenton
33	0660	001	A01*	N. Y., Buffalo
33	4680	001	A01*	New York City
33	4740	001	A01	Niagara Falls
33	5760	001	A01*	Rochester
33	6620	001	A01	Syracuse
33	6880	001	A01	Utica
40	0380	002	A01*	P. R., Bayamon
40	0560	002	A01	Catano
40	1080	002	A01*	Guayanilla
40	1920	002	A01	Ponce'
40	2140	001	A01	San Juan

33	3340	001	A03	N. Y., Jefferson Co.

Region V (40 urban, 2 non-urban) (24 SO_2/NO_2)

14	1220	001	A01	Ill., Chicago
14	1220	002	A01*	Chicago
14	5620	002	A01	N. Chicago
14	5080	001	A01	Peoria
14	6700	001	A01	Rock Island
14	7280	001	A01	Springfield
15	1180	001	A01*	Ind., E. Chicago
15	1300	001	A01*	Evansville
15	1380	001	A01	Fort Wayne
15	1520	001	A01*	Gary
15	1780	001	A01*	Hammond
15	2040	001	A01*	Indianapolis
15	2980	002	A01*	New Albany
15	3880	002	A01*	South Bend
15	4080	001	A01	Terre Haute
23	1180	001	A01*	Mich., Detroit
23	1580	001	A01*	Flint
23	1820	001	A01*	Grand Rapids
23	2840	001	A01*	Lansing
23	4860	001	A01*	Saginaw
23	5120	001	A01	Trenton
24	1040	001	A01	Minn., Duluth
24	2260	001	A01*	Minneapolis
24	2320	001	A01	Moorhead
24	3300	001	A01	St. Paul
36	0060	001	A01*	Ohio, Akron
36	1000	001	A01*	Canton
36	1220	001	A01*	Cincinnati
36	1220	002	A01*	Cincinnati
36	1300	001	A01*	Cleveland
36	1460	001	A01*	Columbus
36	1660	001	A01*	Dayton
36	6600	001	A01*	Toledo
36	7760	001	A01*	Youngstown

Region IV (24 urban, 3 non-urban) (14 SO_2/NO_2)

01	1480	001 A01	Ala., Gadsden
01	1860	001 A01	Huntsville
01	2460	001 A01*	Montgomery
10	1960	002 A01	Fla., Jacksonville
10	2700	002 A01*	Miami
10	3980	002 A01*	St. Petersburg
10	4360	002 A01*	Tampa
11	0200	001 A01*	Ga., Atlanta
11	1280	001 A01*	Columbus
11	4500	001 A01*	Savannah
18	0080	002 A01	Ky., Ashland
18	0320	001 A01	Bowling Green
18	0800	001 A01*	Covington
18	2300	001 A01*	Lexington
18	2380	002 A01*	Louisville
34	0700	001 A01	N. C., Charlotte
34	1160	001 A01	Durham
34	1740	001 A01*	Greensboro
34	4460	002 A01	Winston-Salem
42	1180	001 A01	S. C., Greenville
44	0380	001 A01*	Tenn., Chattanooga
44	1740	002 A01	Knoxville
44	2340	001 A01*	Memphis
44	2540	001 A01*	Nashville

10	1680	001 A03	Fla., Hardee Co.
34	0590	001 A03	N. C., Cape Hatteras
44	0680	001 A03	Tenn., Cumberland Co.

Region VI (13 urban, 4 non-urban) (9 SO_2/NO_2)

04 1440 001 A01	Ark, Little Rock
04 2740 001 A01	W. Memphis
19 0280 001 A01	La., Baton Rouge
19 2020 002 A01*	New Orleans
19 2740 001 A01	Shreveport
32 0040 001 A01*	N. M., Albuquerque
37 2200 001 A01*	Okla., Oklahoma City
37 3000 001 A01*	Tulsa
45 1310 002 A01*	Tex., Dallas
45 1880 001 A01*	Fort Worth
45 2560 001 A01*	Houston
45 4060 002 A01*	Pasadena
45 4570 001 A01*	San Antonio

04 1760 001 A03	Ark., Montgomery Co.
37 0480 001 A03	Okla., Cherokee Co.
45 3530 001 A03	Tex., Matagorda Co.
45 5200 001 A03	Tom Green Co.

Region V (Cont'd)

51	0840	002	A01	Wisc., Eau Claire
51	1540	001	A01	Kenosha
51	1860	001	A01	Madison
51	2200	001	A01*	Milwaukee
51	2880	001	A01	Racine
51	3480	001	A01	Superior
15	2800	001	A03	Ind., Monroe Co.
15	3260	001	A03	Parke Co.

Region VIII (7 urban, 4 non-urban) (3 SO_2/NO_2)

06 0580 001 A01*	Colo. Denver
35 0100 001 A01	N. D., Bismark
43 1480 001 A01	S. D., Sioux Falls
46 0680 001 A01	Utah, Ogden
46 0920 001 A01*	Salt Lake City
52 0120 001 A01*	Wyo., Casper
52 0140 001 A01	Cheyenne
06 1530 002 A03	Colo., Mesa Verde National Park
27 0570 001 A03	Mont., Glacier National Park
43 0110 001 A03	S. D., Black Hills National Forest
52 0860 001 A03	Wyo., Yellowstone National Park

Region VII (11 urban, 2 non-urban) (5 SO_2/NO_2)

16	0640	001	A01	Iowa, Cedar Rapids
16	1060	001	A01	Davenport
16	1180	001	A01*	Des Moines
17	1800	002	A01	Kan., Kansas City
17	3560	001	A01	Topeka
17	3740	001	A01*	Wichita
26	2380	002	A01	Mo., Kansas City
26	4280	001	A01*	St. Louis
26	4280	002	A01*	St. Louis
28	1560	002	A01	Neb., Lincoln
28	1880	001	A01*	Omaha
26	4480	002	A03	Mo., Shannon Co.
28	2480	001	A03	Neb., Thomas Co.

Region X (6 urban, 3 non-urban)(1 SO_2/NO_2)

02 0040 003 A01	Alas., Anchorage
13 0220 001 A01	Ida., Boise
38 1460 001 A01	Ore., Portland
49 1840 001 A01*	Wash., Seattle
49 2040 001 A01	Spokane
49 2140 001 A01	Tacoma
13 0340 001 A03	Ida., Butte Co.
38 0440 001 A03	Ore., Curry Co.
49 0980 002 A03	Wash., King Co.

Region IX (21 urban, 5 non-urban) (14 SO_2/NO_2)

03 0440 001 A01	Ariz., Maricopa Co.
03 0600 002 A01*	Phoenix
03 0860 001 A01*	Tucson
05 0230 001 A01*	Cal., Anaheim
05 0740 001 A01*	Berkley
05 0900 002 A01	Burbank
05 2940 001 A01*	Glendale
05 4100 001 A01*	Long Beach
05 4180 001 A01*	Los Angeles
05 5300 001 A01*	Oakland
05 5380 001 A01	Ontario
05 5760 001 A01*	Pasadena
05 6400 001 A01	Riverside
05 6580 001 A01	Sacramento
05 6680 001 A01*	San Bernardino
05 6800 001 A01*	San Diego
05 6980 003 A01*	San Jose
05 7180 001 A01*	Santa Ana
05 8260 001 A01	Torrance
12 0120 001 A01	Haw., Honolulu
03 0370 001 A03	Ariz., Grand Canyon National Park
05 3300 001 A03	Cal., Humboldt Co.
29 0560 001 A03	Nev., White Pine Co.
12 0080 001 A03	Haw., Hawaii Co. (Top)
12 0080 001 A03	Hawaii Co. (Bottom)

ENVIRONMENTAL PROTECTION AGENCY Kent

Reply to Attn of: OAQPS, CPDD, SIB *Date:* July 30, 1973

Subject: Requirement for Public Comment on Application for Construction or Modification of New Sources

To: Director, Division of Air and Water Programs, Regions I - X
Principal Air Contacts, Regions I - X

The purpose of this memo is to emphasize the necessity for changes to the States' new source review procedures mandated by the changes to 40 CFR 51.18 promulgated on June 18, 1973. In particular, the public comment provisions (paragraph h) and the discussion of the basis for determining which facilities should be subject to review (paragraph f) apply to stationary sources as well as indirect sources. Thus, even if a State cannot submit a plan for indirect source review due to inadequate legal authority, the State should at least modify the requirements for stationary source review to be consistent with the revised requirements of § 51.18.

The provisions for a public comment period must be in regulatory form. As with any plan revision, these procedures must be the subject of a public hearing. While the minimum requirements for public comment are stipulated by § 51.18(h), the opportunity must be provided for interested parties to express their desire for more comprehensive public comment requirements, or for additional time for comment.

Care should be exercised to insure that any time periods presently specified in a State regulation for review of new construction or modification applications are consistent with the required 30 day public comment period (or the public comment period established by the State--see § 51.18(h)(3)).

We have received several inquiries as to whether the States can utilize the diffusion modeling programs contained in the User's Network for Applied Modeling of Air Pollution (UNAMAP) in implementing their indirect source review procedures. The enclosed attachment describes procedures by which States can access the UNAMAP programs.

Kent Berry

D. Kent Berry
Standards Implementation Branch
Control Programs
Development Division

Enclosure

ENVIRONMENTAL PROTECTION AGENCY
National Environmental Research Center
Meteorology Laboratory
Research Triangle Park, North Carolina 27711

May 23, 1973

This is to inform you of the formation of a Users' Network for Applied Modeling of Air Pollution (UNAMAP). The purpose of UNAMAP is to avail current air quality simulation models to both EPA and non-EPA users via a teleprocessing network. The models involved are all in the form of computer programs accessable from remote terminals connected to a central computer facility by telephone lines.

The Meteorology Laboratory with the support of the EPA Research Triangle Computer Center has availed UNAMAP to the EPA Regional Offices via a teleprocessing network connected to an IBM 360/50 mainframe at Research Triangle Park, N. C. The success of this network has prompted the Meteorology Laboratory to extend the UNAMAP to non-EPA users via a commercial teleprocessing network. The Computer Sciences Corporation (CSC) network (INFONET) has been selected as the non-EPA outlet for UNAMAP. CSC has a GSA contract for teleprocessing services. The cost for this service is based upon the resources used (i.e., computer time, storage, connect time, etc.). Users will pay for their service through a direct agreement with CSC. EPA will assume the responsibility for storing the models in a readily accessable mode, updating the models and model inventory, and providing a message service to the users concerning any UNAMAP changes.

Several of the models can be executed "on-line" by a user who interactively enters the control parameters specific to his problem (i.e. wind speed and direction, source strength, stack height, etc.). Other models require more extensive input data which involve developing a data set separate from the program.

Currently, UNAMAP consists of the following models:

1) APRAC - The Stanford Research Institute APRAC-1A model computes the hourly averages of carbon monoxide as a function of extraurban diffusion from automotive sources in upwind cities,

intraurban diffusion from roadway sources, and local diffusion within a street canyon. The model requires an extensive emission or traffic inventory for the city of interest. Requirements and technical details are documented in "User's Manual for the APRAC-1A Urban Diffusion Model Computer Program" which is available from NTIS (accession number PB-213-091).

2) HIWAY is an interactive program which computes the short term (hourly) concentration of non-reactive pollutants downwind of roadways. It is applicable when uniform wind conditions and level terrain exist. It is best suited for at-grade highways, but also can be applied to depressed highways (cut sections).

3) CDM - The Climatological Dispersion Model (CDM) determines long term (seasonal or annual) quasi-stable pollutant concentrations at any ground level receptor using average emission rates from point and area sources and a joint frequency distribution of wind direction, wind speed, and stability for the same period. This model differs from the Air Quality Display Model (AQDM) primarily in the way in which concentrations are determined from area sources, the use of Briggs' plume rise, and the use of an exponential increase in wind speed with height dependent upon stability. CDM uses a separate data set for the area of interest.

4) PTMAX is an interactive program which performs an analysis of the maximum, short-term concentration from a point source as a function of stability and wind speed.

5) PTDIS is an interactive program which computes short-term concentrations downwind from a point source at distances specified by the user.

6) PTMTP is an interactive program which computes, at multiple receptors, short term concentrations resulting from multiple point sources.

All the interactive models are documented as the programs are executed. The CDM model requires a source listing for a user to understand the data set formats. Manuals for the above models are in preparation and should be available by August 1973. (APRAC is now available as previously mentioned).

The models listed in the previous paragraph are installed on INFONET and ready for access. Other models will be added as they are validated. This inventory will eventually include models in the area of photochemistry, estimating concentrations in areas of complex terrain, and estimating concentrations under stagnation conditions.

---

*) NTIS -- National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22151

If you are interested in accessing UNAMAP via INFONET, contact Mr. Peter Loux of CSC (703-527-6080). For other information relative to the models themselves contact Mr. D. Bruce Turner or the writer at the letterhead address.

Sincerely yours,

Ronald E. Ruff, EPA
Chief
Computer Techniques Group

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

SUBJECT: Report on Potential Problems in Priority II and III Regions with Respect to NAAQS

DATE: 14 AUG 1973

FROM: Robert E. Neligan, Director
Monitoring and Data Analysis Division

TO: Air and Water Division Directors
Environmental Protection Agency, Region I-X

Through intense efforts made by the Regional Offices, there is now sufficient data in the National Aerometric Data Bank to initiate further evaluation of the data received. OAQPS most certainly appreciates the labors that have been and are continuing to be made in the collection and processing of air quality data. Now that the first phase of data collection has been completed, we must now proceed into a continuing program for the evaluation and verification of certain portions of the data received. This report is the first of a continuing series that will be issued periodically.

OAQPS is currently developing an air quality tracking system to flag significant departures from expected air quality based on emission projections and SIP regulations at each of the monitoring sites stored in the NADB. A flow chart for this system, which employs statistical techniques, is given in Figure 1. Unfortunately, this system will not be operational until late this year. Therefore, 1972 air quality data have been screened for values that suggest a higher priority classification for an AQCR than that presently assigned. While this alone may not be sufficient for reclassification, it affords a convenient screening technique. The data are presented in Attachment 1 for CO, TSP, SO_2, and O_x and lists those sites within Priority II and III AQCR's which show 1972 air quality levels to be in excess of the primary standards. All of these data are from the NADB files. More details may be obtained by accessing the data with the usual time-sharing program, if desired. It is requested that the Regional Offices review the data for their particular region selected by this screening in order to verify that these values

accurately reflect ambient air quality levels in these AQCR's. (It should be noted, however, that if a site within an AQCR is high in reference to its priority classification, this may well be altered when state regulations are completely effected in 1975. Thus, a Priority II or III Region, in excess of the primary standards in 1972, could be well under that standard in 1975).

The maximum reported concentration was used in developing the list of sites that exceeded the primary standards. Since the short-term air quality standards are written as concentrations which are to be exceeded no more than once, many of the sites identified by this procedure are not technically violating the air quality standard. However, many of these sites which exceeded the standard only once, were sampling too infrequently to state with assurance that a second or third violation was unlikely. Thus, it was decided to utilize the maximum value for determining if the data from a site should be examined. Pollutants for which an annual standard are applicable (TSP and SO_2) were screened by comparison of annual averages to the annual primary NAAQS, in addition to the screening of the maximum concentrations.

In screening carbon monoxide, it was found that 19 out of 21 Priority III AQCR's, for which we have data in 1972, exceed the primary standard. These high values may necessitate the development of additional transportation control strategies. To better evaluate this CO problem, Attachment 2 (Obtaining Information on CO Monitoring) is enclosed. We feel that the collection of the suggested information is vital to both the Regional Offices and OAQPS in order to better define the CO problem.

In addition to CO, we are suggesting that you evaluate the other pollutants indicated in Attachment 1. To provide assistance in this evaluation process, Attachment 3 (Guidelines for Evaluation of Suspect Air Quality Data) is enclosed with this report. This attachment can be used to determine if these data accurately represent air quality levels in the AQCR or whether appropriate modifications should be made.

In following the guidelines (Attachments 2 and 3), the Regional Offices, being more familiar with the different sites and sampling conditions, may alter or add to the questions and procedures for validating data points. Any additional facts associated with this validation will be appreciated.

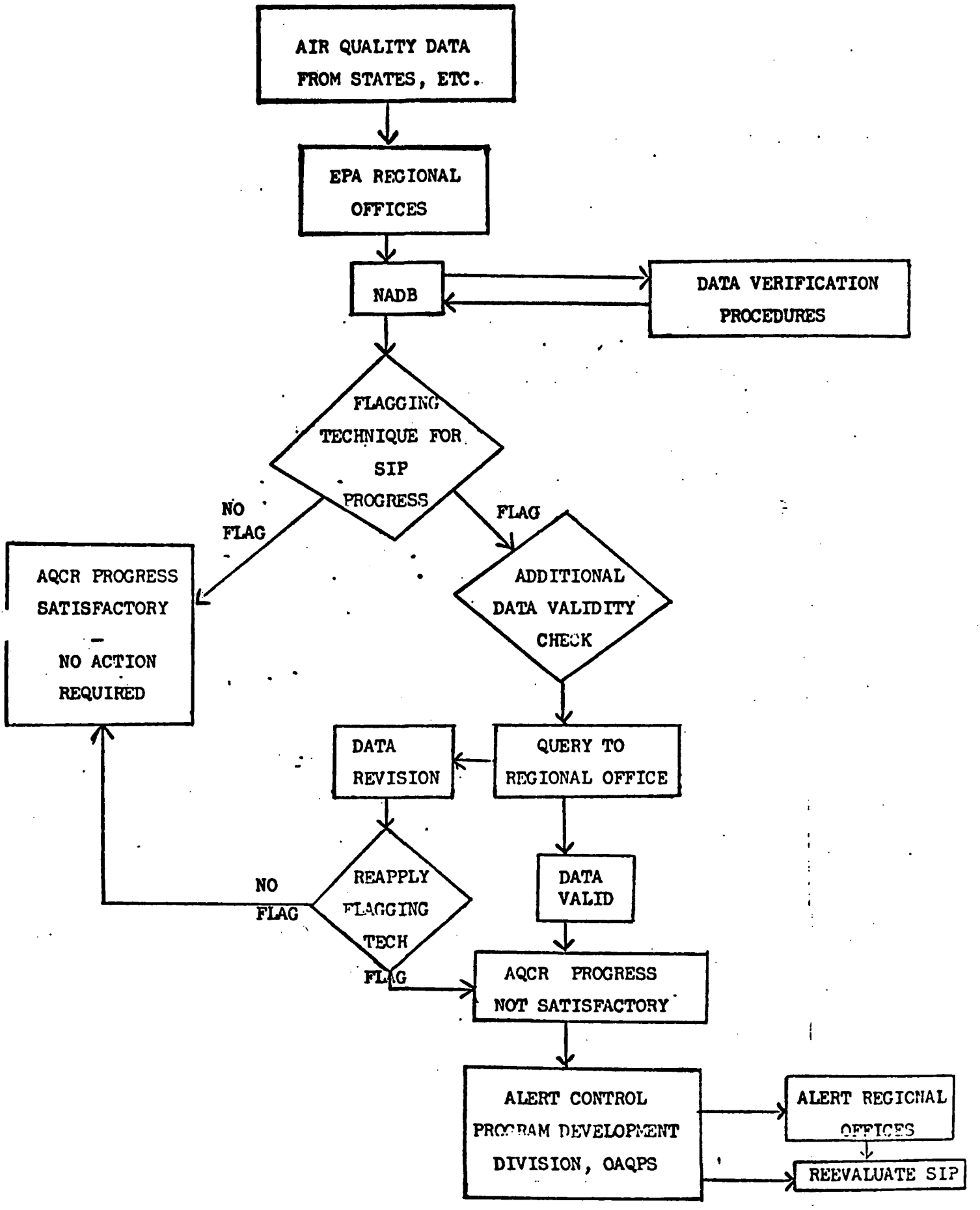
Since this data verification process is an essential component of our overall evaluation of progress towards achieving the National Ambient Air Quality Standards, a response within 30 days of receipt of this report by the Regional Offices will be appreciated.

Any questions concerning the air quality data or evaluation guidelines should be referred to Mr. William F. Hunt at 919/688-8351.

3 Attachments

cc: Surveillance and Analysis Division Directors
R. Sansom
B. Steigerwald
J. Schueneman
J. Padgett
E. Tuerk

FIGURE 1


AIR QUALITY DATA FROM STATES, ETC.
EPA REGIONAL OFFICES
NADB
DATA VERIFICATION PROCEDURES
FLAGGING TECHNIQUE FOR SIP PROGRESS
NO FLAG
FLAG
AQCR PROGRESS SATISFACTORY — NO ACTION REQUIRED
ADDITIONAL DATA VALIDITY CHECK
DATA REVISION
QUERY TO REGIONAL OFFICE
REAPPLY FLAGGING TECH
NO FLAG
FLAG
DATA VALID
AQCR PROGRESS NOT SATISFACTORY
ALERT CONTROL PROGRAM DEVELOPMENT DIVISION, OAQPS
ALERT REGIONAL OFFICES
REEVALUATE SIP

Attachment 1

The following computer printout lists by pollutant and measurement method those sites by Priority II and III AQCRs which are exceeding the primary standards. The printouts are essentially self explanatory. The footnotes at the bottom of the printout indicate the data point in question and the reason why. It should be noted that in some cases the highest value exceeded the short-term primary standard, while the second highest did not. Technically then, the AQCR is not in violation of the standards, but since it is classified as a Priority II or III region, it is in potential violation.

Finally, when examining the printout related to suspended particulate and sulfur dioxide, it can be seen that the annual mean (geometric or arithmetic) is not always calculated. This occurs because one or more quarters are lacking sufficient data with respect to the SAROAD validity criteria.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	% OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
120 METROPOLITAN PROVIDENCE (MASS-R.I.)			** PRIORITY 3 **			REGION 1			
RHODE ISLAND	41 0300307 F01 PROVIDENCE	72	7,055	0	56	11	18	18	14*

*The maximum eight-hour standard has been exceeded.

2

CARBON MONOXIDE 421.111

METHOD NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	95TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
151 NORTHEAST PENNSYLVANIA-UPPER DEL. VAL. (PENN-N.J.)				** PRIORITY 3 **			REGION 2			
NEW JERSEY	31	4243002 FOR PHILLIPSBURG	72	8,590	4	7	19	17		11*

*The maximum eight-hour standard has been exceeded.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.	
160 GENESEE-FINGER LAKES (N.Y.)			** PRIORITY 2 **			REGION 2					
NEW YORK	33 5760001 A01 ROCHESTER **	72	30	1	0	177	138	1.46	1.17	88	*
NEW YORK	33 5760001 F01 ROCHESTER	72	61	2	0	168	159	1.40	1.12	84	*
NEW YORK	33 5760003 F01 ROCHESTER	72	59	8	0	200	178	1.50	1.20	90	*

*Geometric means exceed the primary annual standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

4

CAS[illegible] 4213111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
162 NIAGARA FRONTIER (N.Y.)					** PRIORITY 3 **			REGION 2			
NEW YORK	33	4740036	F01	NIAGARA FALLS	72	6,541	0	18	9	17	16	19*

*The maximum eight-hour standard has been exceeded.

9

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
164 SOUTHERN TIER WEST (N.Y.)			** PRIORITY 2 **			REGION 2				
NEW YORK	33 3320001 F01 JAMESTOWN **	72	59	5	0	242	222	1.38	1.10	83 *

*Geometric mean exceeds the primary annual standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SULFUR DIOXIDE 4240191

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION	YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ARITH. MEAN ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
223 HAMPTON ROADS (VA)			** PRIORITY 2 **		REGION 3				
VIRGINIA 48 2140001 A01 NORFOLK**	72	27	1	1	853*	156			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicates that the air quality levels are presently below standards.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
223 HAMPTON ROADS (VA)				** PRIORITY 3 **			REGION 3			
VIRGINIA	43 2140013	FOI NORFOLK	72	2,787	1	23	11	23	20	16*

*The maximum eight-hour standard has been exceeded.

CARBON MONOXIDE 4210111

METHOD 4 (NON-DISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
234 KANAWHA VALLEY (W. VA.)				** PRIORITY 3 **			REGION 3			
WEST VIRGINIA	54	0280004 FOI CHARLESTON	72	8,399	0	23	7	17	16	16*

*The maximum eight-hour standard has been exceeded.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
236 SOUTHERN WEST VIRGINIA				** PRIORITY 3 **				REGION 3				
WEST VIRGINIA	SO 0460001	FO2	FAYETTE COUNTY **	72	47	7	2	293 *	278	1.33	1.06	80 *
WEST VIRGINIA	SO 1180001	FO2	MONTGOMERY	72	43	28	14	390 *	380	2.83	2.26	170 *

*Each of these geometric means exceeds the primary annual standard and the maximum 24-hour values exceed the primary maximum 24-hour standards.

**The State Implementation Plan indicated this AQCR was below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
006 SOUTHEAST ALABAMA			** PRIORITY 2 **			REGION 4				
ALABAMA	01 1080001 F01 DOTHAN **	72	56	2	1	275*	187	1.21	.97	73

*The 24-hour maximum value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SULFUR DIOXIDE 4240191

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR QUARTER

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
040 JACKSONVILLE-BRUNSWICK (FLA-GA)					** PRIORITY 2 **			REGION 4				
FLORIDA	10	1960032	HOL JACKSONVILLE	**	72	20	5	2	744*	605		
FLORIDA	10	1960039	HOL JACKSONVILLE	**	72	20	6	5	1,378*	935		

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated that this AQCR would achieve the secondary standard by 7/75.

21

CAPTION [illegible] 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
049 JACKSONVILLE-BRUNSWICK (FLA-GA)					** PRIORITY 3 **			REGION 4			
FLORIDA	10	1960037	H01	JACKSONVILLE	72	3,122	0	6	9	17	14	11*
FLORIDA	10	1960043	H01	JACKSONVILLE	72	3,315	2	22	11	51**	51	17*

*The maximum eight-hour standard has been exceeded.
**The maximum one-hour standard has been exceeded.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
056 METROPOLITAN ATLANTA (GSA)			** PRIORITY 3 **			REGION 4			
GEORGIA	11 0231001 GSA: ATLANTA	72	3,987	0	64	12	36	32	22*

*The maximum eight-hour standard has been exceeded.

17

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
072 PADUCAH-CAIRO (ILL-KY)			** PRIORITY 3 **			REGION 4			
KENTUCKY	18 3190019 F01 PADUCAH	72	3,179	0	55	11	19	18	16*

*The maximum eight-hour standard has been exceeded.

SULFUR DIOXIDE 4240101

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
077 EVANSVILLE-OWENSBORO-HENDERSON (IND-KY)			** PRIORITY 2 **			REGION 4				
KENTUCKY	19 1740002 F01 HENDERSON **	72	60	4	3	529.	459	1.14	.85	68

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated that this AQCR would achieve the secondary standard by 4/78.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
077 EVANSVILLE-OWENSBORO-HENDERSON (IND-KY)			** PRIORITY 3 **			REGION 4			
KENTUCKY	18 3140304 F01 OWENSBORO	72	5,929	0	9	7	39	18	12*

*The maximum eight-hour standard has been exceeded.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
079 LOUISVILLE (IND-KY)					** PRIORITY 3 **			REGION 4			
KENTUCKY	18	2380011	G01 LOUISVILLE	72	3,529	0	182	17	32	25	16*
KENTUCKY	18	2380013	G01 LOUISVILLE	72	7,648	1		5	50**	9	9

*The maximum eight-hour standard has been exceeded.

**The maximum one-hour standard has been exceeded.

SULFUR DIOXIDE 424-191

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION					YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEDG 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
166 EASTERN PIEDMONT (N.C.)					** PRIORITY 3 **				REGION 4				
NORTH CAROLINA	34	0720002	F01	CHATHAM COUNTY **	72	31	1	1	446*	187			
NORTH CAROLINA	34	3360001	F12	ROANOKE RAPIDS **	72	31	4	1	578*	342			
NORTH CAROLINA	34	3480001	F02	ROXBORO **	72	33	1	1	778*	252			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated that the air quality levels are presently below standards.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION	YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS AMN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
170 SOUTHERN COASTAL PLAIN (N.C.)		** PRIORITY 2 **			REGION 4				
NORTH CAROLINA 34 2720001 F02 MOREHEAD CITY **	72	50	9	2	281*	266	1.26	1.01	76*

*Annual geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION	YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
198 CAMDEN-SUMPTER (S.C.)		** PRIORITY 2 **			REGION 4				
SOUTH CAROLINA 42 2120302 F01 SUMTER **		72	54	1	1	471*	120	.83	.66	50

*The 24-hour maximum value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION	YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
200 COLUMBIA (S.C.)		** PRIORITY 2 **			REGION 4				
SOUTH CAROLINA 42 0760003 H01 COLUMBIA **	72	57	3	1	279*	219	1.03	.82	62

*The 24-hour maximum value exceeds the 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION	YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
204 GEORGETOWN (S.C.)		** PRIORITY 2 **			REGION 4				
SOUTH CAROLINA 42 1120002 F01 GEORGETOWN **	72	73	12	2	358*	263	1.41	1.13	85*

*Annual geometric mean exceeds the primary annual standard and the 24-hour maximum value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
203 MIDDLE TENNESSEE					** PRIORITY 3 **			REGION 4			
TENNESSEE	44	2540021	G01 NASHVILLE	72	3,233	1	88	14	63*	31	20*

*The maximum one-hour and the maximum eight-hour standard have been exceeded.

SUSPENDED PARTICULATE MATTER 1110111

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
031 NORTHEAST INDIANA			** PRIORITY 2 **	REGION V						
INDIANA	15 [illegible] FT. WAYNE **	72	30	0	0	127	122	1.25	1.00	75*
INDIANA	15 [illegible] STEUBEN COUNTY	72	14	0	0	111	74			

*Annual geometric mean equals the primary annual standard (marginal case).

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
125 SOUTH CENTRAL MICHIGAN			** PRIORITY 2 **			REGION 5				
MICHIGAN	23 2840001 A01 LANSING **	72	28	0	0	143	122	1.30	1.04	78*

*Annual geometric mean exceeds the primary annual standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
128 SOUTHEAST MINNESOTA-LA CROSSE (MINN-WISC)				** PRIORITY 2 **			REGION 5				
MINNESOTA	24 1190701	F01 FARIBAULT **	72	64	8	2	615*	519			
MINNESOTA	24 3120015	G01 ROCHESTER	72	59	4	2	362*	288			

*The 24-hour maximum values exceed the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 111:191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
132 NORTHWEST MINNESOTA					** PRIORITY 2 **			REGION 5				
MINNESOTA	24	1042003	F01	EAST GRAND FORKS**	72	40	7	1	265*	204		
MINNESOTA	24	1220001	F01	FERGUS FALLS	72	10	2	1	264*	196		
MINNESOTA	24	1220010	F01	FERGUS FALLS	72	19	5	1	286*	239		

*The 24-hour maximum values exceed the 24-hour primary standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST / 2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
133 SOUTHWEST MINNESOTA				** PRIORITY 3 **			REGION 5			
MINNESOTA	24 2149001	F01 MARSHALL**		72	32	3	2	503* 337		
MINNESOTA	24 2700001	F01 ORTONVILLE		72	62	1	1	501* 144		

*The 24-hour maximum values exceed the 24-hour primary standard.

**The State Implementation Plan indicated this AQCR was below standards for this pollutant.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
174 GREATER METROPOLITAN CLEVELAND (OHIO)				** PRIORITY 3 **			REGION 5			
OHIO	36	1300080 AQS CLEVELAND	72	2,294	0	33	14	20	19	17*

*The maximum eight-hour standard has been exceeded.

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SUSPENDED PARTICULATE MATTER 1110101

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
175 MANSFIELD-MARION (OHIO)			** PRIORITY 2 **			REGION 5				
OHIO	36 3840001 F01 MANSFIELD**	72	61	21	1	288*	246	1.90	1.52	114*

*The annual geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
016 CENTRAL ARKANSAS			** PRIORITY 2 **			REGION 6				
ARKANSAS	04 2320001 F01 SALINE COUNTY**	72	45	4	0	256	174	1.40	1.12	84*

*The annual geometric mean exceeds the primary annual standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
019 MONROE-EL DORADO (ARK-LA)					** PRIORITY 2 **			REGION 6				
LOUISIANA	19	1620001	FOI LAKE PROVIDENCE**	72	51	3	0	165	160	1.40	1.12	84*
LOUISIANA	19	2980001	FOI VIDALIA	72	53	16	1	329*	255	1.96	1.57	118*

*The annual geometric means exceed the primary annual standard and the maximum 24-hour value at one site exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
220 NORTHEAST ARKANSAS			** PRIORITY 3 **			REGION 6				
ARKANSAS	04 2540301 F01 STUTTGART**	72	32	*****	*****	280*	252	2.00	1.60	120*

*The annual geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

**The State Implementation Plan indicated this AQCR was below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
022 SHREVEPORT-TEXARKANA-TYLER (ARK-LA-OKLA-TEX)				** PRIORITY 2 **				REGION 6				
LOUISIANA	19	2740001	A01 SHREVEPORT**	72	27	7	1	284*	257	1.75	1.40	105 *
LOUISIANA	19	2740001	F01 SHREVEPORT	72	59	13	0	216	212	1.28	1.02	77 *
OKLAHOMA	37	1420455	F01 IDABEL	72	58	5	0	218	160	1.28	1.02	77 *

*The annual geometric means exceed the primary annual standard and the maximum 24-hour value at one site exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet the secondary standard by 7/75.

SUSPENDED PARTICULATE MATTER 1110101

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
106 SOUTHERN LOUISIANA-SOUTHEAST TEXAS (LOUISIANA-TEXA			** PRIORITY 2 **			REGION 6				
LOUISIANA	19 2020002 F01 NEW ORLEANS**	72	54	1	0	239	138	1.33	1.06	83*

*The annual geometric mean exceeds the primary annual standard.

**This AQCR is scheduled to meet secondary standards by 7/75.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
152 ALBUQUERQUE-RIO RIO GRANDE (N. MEX)					** PRIORITY 3 **			REGION 6			
NEW MEXICO	32	0060302	H01 ALBUQUERQUE	72	4,341	0	130	16	31	25	16*

*The maximum eight-hour standard has been exceeded.

CARBON MONOXIDE 4210111

[illegible] NONDISPERSIVE INFRARED [illegible] CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	NO. OF VALUES EXCEEDING STANDARDS 8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	HIGHEST 1-HR VALUES MG/CU.M. 2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
184 CENTRAL OKLAHOMA			** PRIORITY 3 **			REGION 6			
OKLAHOMA	37 2200018 F01 OKLAHOMA CITY	72	4,771	1	83	17	74**	37	24*
OKLAHOMA	37 2200022 F01 OKLAHOMA CITY	72	3,371	0	588	20	29	29	21*

*The maximum eight-hour standard has been exceeded.

**The maximum one-hour standard has been exceeded.

SULFUR DIOXIDE 4240101

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
184 CENTRAL OKLAHOMA				** PRIORITY 3 **			REGION 6				
OKLAHOMA	37	1940306 F01 MIDWEST CITY**		72	51	2	2	454*	433		

* 24-hour maximum value exceeds the 24-hour primary standards

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SULFUR DIOXIDE 4246191

METHOD: WEST-GAEKE (SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	ARITH. MEAN UG/CU.M.
186 NORTHEASTERN OKLAHOMA			** PRIORITY 3 **			REGION 6				
OKLAHOMA	37 3000111 F01 TULSA **	72	89	1	1	464*	163			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
187 NORTHWESTERN OKLAHOMA			** PRIORITY 3 **			REGION 6				
OKLAHOMA	37 3260800 F01 WOODWARD**	72	50	5	1	329*	212	.98	.78	59

*The 24-hour maximum value exceeds the primary annual standard.

**The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
189 SOUTHWESTERN OKLAHOMA			** PRIORITY 3 **			REGION 6				
OKLAHOMA	37 0900661 F01 DUNCAN**	72	44	3	2	363*	281			
OKLAHOMA	37 1300710 F01 HOBART	72	44	2	1	447*	215			
OKLAHOMA	37 1340766 F01 HOLLIS	72	45	5	4	403*	401	1.58	1.26	99*
OKLAHOMA	37 1400647 F01 LAWTON	72	71	5	1	356*	204	1.25	1.00	75*
OKLAHOMA	37 1840740 F01 MANGUM	72	23	3	2	317*	317			
OKLAHOMA	37 2700732 F01 SAYRE	72	20	4	1	274*	206			

*Each of the maximum 24-hour values exceed the primary 24-hour standard and the geometric mean at one site exceeds the primary annual standard.

**The State Implementation Plan indicated this AQCR was below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
211 AMARILLO-LUBBOCK (TEX)			** PRIORITY 2 **			REGION 6				
TEXAS	45 3340001 A01 LUBBOCK**	72	25	6	1	322 *	211			

*The maximum 24-hour value exceeds the primary 24-hour standard.

**This AQCR is scheduled to meet secondary standards by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS AMN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
215 METROPOLITAN DALLAS-FORT WORTH (TEX)			** PRIORITY 2 **			REGION 6				
TEXAS	45 1310002 A01 DALLAS **		72	27	3	2	349*	286	1.43	1.14	86*

* The geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

** This AQCR is scheduled to meet secondary standards by 7/75.

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OZONE 4423111

METHOD: CHEMILUMINESCENCE

AIR QUALITY CONTROL REGION			YEAR	NO. OF VALID 10-- VALUES	NO. OF VALUES EXCEEDING 1-HR STD	HIGHEST 1-HR VALUES UG/CU.M. 1ST	2ND	99TH PERCENTILE VALUE UG/CU.M.
085 METROPOLITAN OMAHA-COUNCIL BLUFFS (IOWA-NEB)				** PRIORITY 3 **		REGION 7		
NEBRASKA	28 1880026	G01 OMAHA	72	3,433	13	200*	200	140

*Highest one-hour value exceeds the one-hour primary standard.

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CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
085 METRO OMAHA-COUNCIL BLUFFS			** PRIORITY 3 **			REGION 7			
NEBRASKA	28 1830024 G01 OMAHA	72	7,019	0	56	12	32	31	15*

*The maximum eight-hour standard has been exceeded.

94

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.	
086 METROPOLITAN SIOUX CITY (IOWA-NEB-S.D.)			** PRIORITY 3 **			REGION 7					
NEBRASKA	28 2400301 F01 SOUTH SIOUX CITY **	72	32	7	0	195	190	1.35	1.08	81	*

* The annual geometric mean exceeds the primary annual standard.

** This AQCR is scheduled to meet secondary standards by 7/75.

SULFUR DIOXIDE 4240101

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR SAMPLER

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
094 METROPOLITAN KANSAS CITY (KAN-MO)			** PRIORITY 3 **			REGION 7				
KANSAS	17 2780101 FS1 OVERLAND PARK **	72	47	1	1	385*	17			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
095 NORTHEAST KANSAS				** PRIORITY 3 **			REGION 7			
KANSAS	17	3560003 FDI TOPEKA	72	4,428	1	14	9	52*	40	30*

*The maximum one-hour and the maximum eight-hour standard has been exceeded.

94

SULFUR DIOXIDE 4240101

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
096 NORTH CENTRAL KANSAS		** PRIORITY 3 **				REGION 7				
KANSAS	17 2180[illegible] F01 MCPHERSON **	72	38	1	1	786*	19			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SULFUR DIOXIDE 4244-191

METHOD: WEST-GAEKE (SULFAMIC ACID), 24-HOUR BUBBLER

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ARITH. MEAN STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
FOR SOUTHEAST KANSAS			** PRIORITY 3 **			REGION 7				
KANSAS	17 1160001 FOI GALENA **	72	22	1	1	411*	13			

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

15

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
099 SOUTH CENTRAL KANSAS				** PRIORITY 3 **			REGION 7			
KANSAS	17 3760003	F01 WICHITA	72	7,176	0	16	8	21	20	14*

*The maximum eight-hour standard has been exceeded.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
137 NORTHERN MISSOURI			** PRIORITY 2 **			REGION 7				
MISSOURI	26 3020004 FOI MEXICO **	72	53	14	1	685*	204	1.58	1.26	95 *

* The annual geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

** This AQCR is scheduled to meet secondary standards by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
138 SOUTHEAST MISSOURI				** PRIORITY 3 **			REGION 7				
MISSOURI	26 3800001	FD1 POPLAR BLUFF **	72	43	15	6	815 *	673	1.91	1.53	115 *

* The annual geometric mean exceeds the primary annual standard and the maximum 24-hour value exceeds the primary 24-hour standard.

** The State Implementation Plans indicate this AQCR is below standards for this pollutant.

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SULFUR DIOXIDE 4240191

METHOD: WEST-GAEKE(SULFAMIC ACID), 24-HOUR SAMPLER

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	ARITH. MEAN UG/CU.M.
145 LINCOLN-BEATRICE-FAIRBURY (NE9)				** PRIORITY 3 **			REGION 7				
NEBRASKA	28 1560.02	AP1 LINCOLN **		72	25	1	1	428*	220	.69	.52	41

* 24-hour maximum value exceeds the 24-hour primary standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
145 LINCOLN-BEATRICE-FAIRBURY (NEB)			** PRIORITY 2 **			REGION 7				
NEBRASKA	28 1560002 A01 LINCOLN **	72	29	1	1	400*	129	1.13	.90	68

* The 24-hour maximum value exceeds the primary annual standard.

** This AQCR is scheduled to meet the secondary standards by 7/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.	
146 NEBRASKA (REMAINDER)					** PRIORITY 3 **			REGION 7					
NEBRASKA	28	0400001	F01 CASS COUNTY **		72	26	5	0	200 *	178	1.65	1.32	99 *
NEBRASKA	28	0700001	F05 DAWSON COUNTY		72	15	2	2	341 *	302			
NEBRASKA	28	2240001	F01 SCOTTS BLUFF		72	25	3	1	288 *	169			

* This annual geometric mean for one site exceeds the primary annual standard. The maximum 24-hour value for two sites exceed the primary 24-hour standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
034 COMANCHE (COLO)				** PRIORITY 3 **			REGION 8				
COLORADO	06 1220001	F01 LA JUNTA **	72	79	3	1	29*	207	.96	.77	58
COLORADO	06 1900001	F01 ROCKY FORD	72	76	2	1	333*	226	1.10	.88	66

* The maximum 24-hour value exceeds the primary 24-hour standard.

** The State Implementation Plans indicated this AQCR was below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
035 GRAND MESA (COLO)				** PRIORITY 3 **			REGION 8				
COLORADO	06 0540001	F01 DELTA **	72	46	18	7	566 *	532			
COLORADO	06 0930001	F01 GARFIELD COUNTY	72	82	10	1	320 *	214	1.36	1.09	82 *
COLORADO	06 0971001	F01 GLENWOOD SPRINGS	72	81	3	1	377 *	254	.96	.77	58
COLORADO	06 0980009	F01 GRAND JUNCTION	72	82	14	1	321 *	192	1.51	1.21	91 *
COLORADO	06 1520001	F01 MESA COUNTY	72	78	2		161	151	1.35	1.08	81 *
COLORADO	06 1620001	F01 MONTROSE	72	69	8	1	343 *	198	1.23	.98	74
COLORADO	06 1780001	F01 PITKIN COUNTY	72	59	3	1	414 *	164	1.01	.81	61

* The geometric means at three sites exceed the primary annual standard. The maximum 24-hour value at six sites exceed the primary maximum 24-hour standard.

** This AQCR is scheduled to meet the secondary standards by 7/75.

59

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
039 SAN LUIS (COLO)					** PRIORITY 3 **			REGION 8				
COLORADO	06	0040001	F01 ALAMOSA **	72	82	3	1	628 *	152	.96	.77	58
COLORADO	06	0380003	F01 COLORADO SPRINGS	72	86	15	1	279 *	226	1.61	1.29	97 *
COLORADO	06	1860101	F01 RIO BLANCO COUNTY	72	76	3	1	265 *	201	.81	.65	49

* The geometric mean at one site exceeds the primary annual standard.
The 24-hour maximum values at each of the sites exceed the primary 24-hour standard.

** This AQCR is scheduled to meet secondary standards by 7/75.

-6

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
040 YAMPA (COLO)			** PRIORITY 3 **			REGION 8				
COLORADO	06 1920002 F01 ROUTT COUNTY **	72	83	22	5	429*	375	1.65	1.32	99 *

* The geometric mean exceeds the primary annual standard and the 24-hour maximum exceeds the primary maximum 24-hour standard.

** The State Implementation Plans indicated this AQCR is below standards for this pollutant.

19

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
172 NORTH DAKOTA (REMAINDER)			** PRIORITY 2 **			REGION 8				
NORTH DAKOTA	35 0100001 A01 BISMARCK **	72	30	4	0	213	202	1.45	1.16	87 *
NORTH DAKOTA	35 0580001 F01 JAMESTOWN	72	6	1	1	377*	149			

* The geometric mean at one site exceeds the primary annual standard and the maximum 24-hour value at one site exceeds the primary maximum 24-hour standard.

** This AQCR is scheduled to meet the secondary standards by 2/75.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
060 HAWAII			** PRIORITY 2 **			REGION 9				
HAWAII	12 0040001 F02 EWA **	72	25	16	7	489 *	432			

* The maximum 24-hour value exceeds the primary maximum 24-hour standard.

** This AQCR has been scheduled to meet the primary standard by 7/75. An 18 months extension has been granted to meet the secondary standard.

OZONE 4420111

METHOD: CHEMILUMINESCENCE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING 1-HR STD	HIGHEST 1-HR VALUES UG/CU.M. 1ST	2ND	99TH PERCENTILE VALUE UG/CU.M.
060 HAWAII			** PRIORITY 3 **		REGION 9		
HAWAII	12 0120301 FOI HONOLULU	72	7,890	1	650*	120	40

*Highest one-hour value exceeds the one-hour primary standard.

49

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
060 HAWAII			** PRIORITY 3 **			REGION 9			
HAWAII	12 0120001 F01 HONOLULU	72	7,757	0	51	12	37	27	13*

*The maximum eight-hour standard has been exceeded.

57

CARBON MONOXIDE 4210111

METHOD: NONDISPERSIVE INFRARED (NDIR) CONTINUOUS, HOURLY VALUES

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF VALUES EXCEEDING STANDARDS 1-HR	8-HR	99TH PCTL OF 1-HR VALUES, MG/CU.M.	HIGHEST 1-HR VALUES MG/CU.M. 1ST	2ND	HIGHEST 8-HR AVGS MG/CU.M. 1ST
148 NORTHWEST NEVADA			** PRIORITY 3 **			REGION 9			
NEVADA	29 0430005 101 RENO	72	2,713	2	163	18	28	25	21*

*The maximum eight-hour standard has been exceeded.

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
246 GUAM			** PRIORITY 3 **			REGION 9				
GUAM	54 0010001 F01 AGANA DIST **	72	15	13	7	700*	656			

* The maximum 24-hour value exceeds the primary 24-hour standard.

** The Implementation Plan indicated this AQCR is below standards for this pollutant.

SUSPENDED PARTICULATE MATTER 1110101

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXCEEDING 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO STDS ANN. SEC.	PRI.	GEOM. MEAN UG/CU.M.
011 SOUTHEASTERN ALASKA				** PRICRITY 3 **			REGION 0				
ALASKA	02 0203901	F05 JUNEAU **	72	7	3	1	306*	191			
ALASKA	02 0203902	F01 JUNEAU	72	23	6	2	642*	346			
ALASKA	02 0600002	F02 WRANGELL-PETERSBURGH	72	17	4	1	297*	206			

* The maximum 24-hour value exceeds the primary maximum 24-hour standard.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

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SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
064 METROPOLITAN BOISE (IDAHO)			** PRIORITY 2 **			REGION 0				
IDAHO	13 0220092 F01 BOISE **	72	74	14	1	307*	237	1.70	1.36	102*
IDAHO	13 0220003 F01 BOISE	72	43	6	1	423*	199			
IDAHO	13 1120301 F31 NAMPA	72	87	28	11	553*	437	1.90	1.52	114*

* The geometric mean at two sites exceed the primary annual standard and each of the maximum 24-hour values exceed the primary 24-hour standards.

** The State Implementation Plan indicated this AQCR was below standards for this pollutant.

69

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION		YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
191 EASTERN OREGON			** PRIORITY 2 **			REGION 0				
OREGON	38 1420001 F01 PENDLETON **	72	32	2	1	307*	209			
OREGON	38 1780001 F03 UMATILLA COUNTY	72	35	1	1	405*	109			

*The 24-hour maximum values exceed the primary maximum 24-hour standards.

** This AQCR is scheduled to meet the secondary standards by 5/75.

204

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION			YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
227 NORTHERN WASHINGTON				** PRIORITY 2 **			REGION 0				
WASHINGTON	49 0520001	F01 DOUGLAS COUNTY **	72	10	2	1	292*	208			
WASHINGTON	49 1380005	F01 OKANOGAN COUNTY	72	86	4	2	409*	277	1.01	.81	61
WASHINGTON	49 1540005	F01 PEND ORIELLE COUNTY	72	88	5	2	425*	314	1.05	.84	63

* The maximum 24-hour values exceed the primary 24-hour standards.

** This AQCR is scheduled to meet the secondary standards by 7/75.

12

SUSPENDED PARTICULATE MATTER 1110191

METHOD: GRAVIMETRIC, 24-HOUR HI-VOLUME FILTER SAMPLE

AIR QUALITY CONTROL REGION				YEAR 19--	NO. OF VALID VALUES	NO. OF DAILY VALUES EXC'D'G 24-HR STDS. SEC.	PRI.	HIGHEST 24-HR VALUES UG/CU.M. 1ST	2ND	ANNUAL RATIOS TO ANN. STDS SEC.	PRI.	GEOM. MEAN UG/CU.M.
228 OLYMPIC-NORTHWEST WASHINGTON					** PRIORITY 2 **			REGION 0				
WASHINGTON	49	1600001	101	PORT ANGELES **	72	71	4	1	290*	198		

* The maximum 24-hour value exceeds the primary maximum 24-hour standards.

** This AQCR is scheduled to meet secondary standards by 7/75.

24

ATTACHMENT 2: OBTAINING INFORMATION ON CO MONITORING

PURPOSE

The purpose of this document is to alert the Regional Offices for the need of obtaining information on the CO monitoring in their Regions and to suggest the kinds of information needed for an effective evaluation.

BACKGROUND

In 1971, information in the NADB indicated that in the eight Priority III regions for which CO data were available, all exceeded national ambient air quality standards. In 1972, 20 out of 21 reporting CO stations in Priority III regions exceeded the national ambient air quality standards. While both the 1-hour and 8-hour standards were exceeded, the majority of the reporting stations exceeded the 8-hour standard. Therefore, the Regional Offices must also determine which standard the station has been designed to monitor.

"Guidelines for Technical Services of a State Air Pollution Control Agency" (APTD 1347) specifies different sampling location guidelines depending on whether 1-hour or 8-hour CO averages are to be found as shown in Table 1. Therefore, the Regional Offices must also determine which standard each station should be monitoring for compliance.

QUESTIONS CONCERNING THE STATION:

(1) What kind of building (room) is used for a sampling site? Is the CO instrument located here for convenience?

(2) Is the instrument located in a city center, shopping center, residential or rural area?

(3) What is the population density of the area in which the instrument is located?

(4) Is the instrument location temporary (mobile station) or permanent?

(5) Is the station air conditioned and heated?

(6) What is the nature of surrounding structures if any, i.e., are they higher than the sampling building, thus forming a canyon, or the same size?

(7) What is the estimate of the traffic count during rush hours, where the instrument is located within 200 feet of reading?

(8) What is the type of roadway; arterial; secondary, freeway, etc?

(9) Make a rough map of the sampling building and its surroundings, noting the distances to traffic lanes, nearest neighboring buildings, cardinal directions, etc.

QUESTIONS CONCERNING THE INSTRUMENT:

(1) What is the make and model number of CO instrument?

(2) What is the age of the instrument?

(3) What is the method of water compensation?

(4) What are the calibration and maintenance schedules?

(5) Is an instrument technician in daily attendance or does a non-technical person inspect daily or less frequently?

(6) Is there anything noteworthy or interesting about the operating history of this instrument?

(7) What is the quality of the span and zero gases? Is air or an inert gas such as N_2 used? Are they CO free?

QUESTIONS CONCERNING THE INTAKE AND MANIFOLD:

(1) What is the height of intake from the ground?

(2) What is the distance of the intake opening from the building will or other structure?

(3) What is the distance of intake from the traffic lane?

(4) If the roof top intake height is above the roof, what is the distance from the parapet and from the nearest incinerator or boiler stack, if any?

(5) What is the probe and manifold composition?

(6) What is the length of the intake and manifold attached to the CO instrument? What is the estimated time delay of the air parcel from the intake to the CO instrument?

Table 1. SAMPLING LOCATION GUIDELINES FOR AREAS OF ESTIMATED MAXIMUM CO POLLUTANT CONCENTRATION

Pollutant category	Pollutant	Station location	Position of air inlet		
			Height from ground, ft	Vertical clearance above supporting structure, ft	Horizontal clearance beyond supporting structure, ft[a]
Primary mobile source pollutant	CO (1-hr averaging time)	Representing area containing dense, slow-moving traffic, obstructions to air flow (tall buildings), and pedestrian population, such as a major downtown traffic intersection (<20 ft from street curb).	<15	>3	>3
	CO (8-hr averaging time)	Representing area of high traffic density in residential area, such as major throughfare in center city or suburban area (<50 ft from street curb).	<15	>3	>3