
Solid Waste



Notification of Regulated Waste Activity

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

This package is designed to help you determine if you are subject to the regulations under RCRA and, if so, to help you notify EPA or your authorized State of your activities and get a U.S. EPA Identification Number. *RCRA* is a Federal law. If you are regulated but do not comply with the *RCRA* notification requirements, you may be subject to civil penalties.

The following materials are contained in the indicated sections of this booklet:

Section

- I) Guidance on how to determine if you handle a hazardous waste that is regulated under *RCRA*;
- II) Guidance on how to determine if your waste activities are regulated under U.S. EPA's "Waste-As-Fuel" provisions;
- III) Guidance on how to file the Notification Form and a list of contacts, alphabetized by State, where you can get information, obtain more forms, and send your completed form;
- IV) Two copies of EPA Form 8700-12: "Notification to EPA of Regulated Waste Activity" and complete line by line instructions for filling out the Notification form;
- V) A list of definitions to help in understanding and completing the Notification Form;
- VI) Guidance on EPA hazardous waste numbers for waste streams commonly generated by small quantity generators, Table 1 "Typical Waste Streams Produced by Small Quantity Generators" and Table 2 "Typical Waste Streams and EPA Hazardous Waste Numbers"; and
- VII) A reprint of Part 261 (July 1, 1989) from Title 40 of the *Code of Federal Regulations (CFR)*. This document contains the regulations that U.S. EPA has developed, identifying and listing hazardous waste.
- VIII) A reprint of the Toxicity Characteristics Rule from the *Federal Register*, Vol. 55, No. 61 (March 29, 1990). This document contains the regulations that U.S. EPA has developed, describing toxicity characteristic waste. A reprint of a correction to the Toxicity Characteristic Rule from the *Federal Register*, Vol. 55, No. 126 (June 29, 1990).

To obtain a copy of 40 CFR Part 266 which discusses the waste-as-fuel administrative standards, contact your EPA Regional Office listed later in this package, or call the *RCRA/Superfund Industry Assistance Hotline* at 1-800-424-9346 (or in Washington, D.C. at (202) 382-3000). After your completed notification is received, you will be sent a written acknowledgment that will include your U.S. EPA Identification Number. You must use this number on all communications with U.S. EPA regarding your activities.

It is important for you to understand that this package only addresses the requirements of the Federal hazardous waste program. Many States may have requirements that are different from the Federal requirements; those States may use this form or a similar form which may require additional information not required on this form. It is up to you, as the waste handler, to learn about all the requirements that affect you.

Finally, we know that understanding these regulations and how they affect your business is not an easy job. In Section III of the instructions, we have listed the addresses and phone numbers of the contacts for each State who can answer your questions and help you understand the Federal and State regulations that apply to you. In addition to those contacts, the following contacts are also available to help with your questions:

- A) *RCRA/Superfund Industry Assistance Hotline* — 1-800-424-9346 (If you are located in Washington, D.C. call (202) 382-3000)
- B) *EPA Small Business Ombudsman Hotline* — 1-800-368-5888
- C) *Your Trade Association*

How to Notify U.S. EPA of Your Waste Activities

I. How to Determine if You Handle a Regulated Hazardous Waste

Persons who generate, transport, treat, store, or dispose of solid wastes are responsible for determining if their solid waste is a hazardous waste regulated under the *Resource Conservation and Recovery Act (RCRA)*. In addition, persons who recycle secondary materials must also determine whether those materials are solid and hazardous wastes under the provisions of RCRA. If you need help making this determination after reading these instructions, contact the addressee listed for your State in Section III. C. of these instructions.

You will need to refer to 40 CFR Part 261 of the *Code of Federal Regulations* (copy enclosed, see Section VII) to help you decide if the waste you handle is regulated under RCRA.*

To determine if you are regulated under RCRA, ask yourself the following questions:

A) Do I Handle A Solid Waste?

Section 261.2 of the *Code of Federal Regulations* (hereafter referred to as CFR) defines "solid waste" as any discarded material that is not excluded under Section 261.4(a) or that is not excluded by variance granted under Sections 260.30 and 260.31. A discarded material is any material which is:

- 1) abandoned, as explained in 261.2(b); or
- 2) recycled, as explained in 261.2(c); or
- 3) considered inherently waste-like as explained in 261.2(c).

B) Has My Solid Waste Been Excluded From The Regulations Under Section 261.4?

The list of general exclusions can be found in Section 261.4 of the CFR. If the solid waste that you handle has been excluded, either by rule or special variance, then you do not need to notify U.S. EPA for that waste.

If your solid waste was not excluded from regulation, you need to determine if it is a hazardous waste that U.S. EPA regulates. The U.S. EPA regulates hazardous waste two ways:

* Many States have requirements that vary from the Federal regulations. These State regulations may be more strict than the Federal requirements by identifying additional wastes as hazardous, or may not yet include all wastes currently regulated under RCRA. It is your responsibility to comply with all regulations that apply to you. For more information on state requirements, you are strongly urged to contact the appropriate addressee listed for your State in Section III of these instructions.

- 1) by specifically listing the waste and assigning it a unique EPA Waste Code Number; or
- 2) by regulating it because it possesses any of four hazardous characteristics and assigning it a generic EPA Waste Code Number.

C) Is My Solid Waste Specifically Listed as a Hazardous Waste?

Sections 261.31 — 261.33 of the CFR identify certain solid wastes that U.S. EPA has specifically listed as hazardous. Persons who handle listed hazardous waste are subject to regulation and must notify U.S. EPA of their activities unless they are exempted as discussed below. Refer to this section of the CFR (enclosed as Section VII) to see if your waste is included as a "listed waste."

D) Does My Solid Waste Possess a Hazardous Characteristic?

Even if your waste is not specifically listed as a hazardous waste, it may still be hazardous because it exhibits certain hazardous characteristics. These characteristics are —

- 1) Ignitability;
- 2) Corrosivity;
- 3) Reactivity; and
- 4) Toxicity Characteristic.

Sections 261.20 through 261.24 of the CFR explain what each of the characteristics is and outlines the testing procedures you should use to determine if your waste meets these characteristics. Persons who handle characteristic waste that is regulated must notify U.S. EPA of their activities unless they are exempted, as discussed below. If you are handling a newly regulated waste (see Toxicity Characteristics Rule in Section VIII) and have already notified EPA prior to that activity and already have an EPA Identification Number, no re-notification is required.

E) Has My Hazardous Waste Been Exempted From The Regulations?

The list of exemptions can be found in 261.5 and 261.6(a)(3) of the CFR. If the hazardous waste that you handle has been exempted, then you do not need to notify U.S. EPA for that waste.

II. How To Determine if You Must Notify U.S. EPA of Your Waste-as-Fuel Activities

Persons who market or burn hazardous waste or used oil (and any material produced from or otherwise containing hazardous waste or used oil) for energy recovery are required to notify U.S. EPA (or their State agency if the State is authorized to operate its own hazardous waste program) and obtain a U.S. EPA Identification Number unless they are exempt as outlined below (see Subparts D and E of 40 CFR Part 266). Hazardous waste and used oil are considered to be burned for energy recovery if they are burned in a boiler or industrial furnace that is not regulated as a hazardous waste incinerator under Subpart O of 40 CFR Parts 264 or 265.

Even if you have previously notified U.S. EPA of hazardous waste activities and have a U.S. EPA Identification Number, you must renotify to identify your waste-as-fuel activities. (You do not have to renotify for those activities you previously notified for, only for any newly regulated activities.) If you have previously notified, be sure to complete Item I "First or Subsequent Notification," by marking an "X" in the box for subsequent notification. Fill in your U.S. EPA Identification Number in the spaces provided. (Your U.S. EPA Identification Number will not change.)

Who is Exempt From Waste-As-Fuel Notification Requirements?

- 1) *Ordinary Generators (and initial transporters):* Generators (and initial transporters who pick up used oil or hazardous waste from generators) are not marketers subject to the notification requirement *if they do not market hazardous waste fuel or used oil fuel directly to a burner.* In

such situations, it is the recipient of that fuel who makes the decision to market the materials as a fuel, (typically after processing or blending), and it is the recipient who must notify.

In addition, used oil generators or initial transporters who send their oil to a person who processes or blends it to produce used oil fuel and who incidentally burns used oil to provide energy for the processing or blending are also exempt from the notification requirement. This is because such persons are generally considered to be primarily fuel processors and marketers, but only incidental burners.

- 2) *Persons who Market or Burn Specification Used Oil Fuel:* Used oil fuel that meets the specification provided under 40 CFR 266.40(e) is essentially exempt from the regulations. *However, the person who first claims that the used oil meets the specification is subject to the notification and certain other requirements.* The burner (or any subsequent marketer) is not required to notify.
- 3) *Used Oil Generators Operating Used-Oil-Fired Space Heaters:* Persons who burn their used oil (and used oil received from individuals who are do-it-yourself oil changers) in used-oil-fired space heaters are exempt from the notification requirement provided that the device is vented to the outdoors.
- 4) *Specific Exemptions Provided by 40 CFR 261.6:* The rules provide conditional exemptions for several specific waste-derived fuels under 261.6(a)(3), including fuels produced by petroleum refineries that recycle refinery hazardous waste, and coke and coal tar derived from coal coking wastes by the iron and steel industry. Marketers and burners of these exempted fuels are not subject to the notification requirement.

III. How to File EPA Form 8700-12, “Notification of Regulated Waste Activity”

If your waste activity is regulated under RCRA, you must notify the U.S. EPA of your activities and obtain a U.S. EPA Identification Number. You can satisfy both of these requirements by completing and signing the enclosed notification form and mailing it to the appropriate address listed in Part C of this section.

Per the Hazardous Waste Import Regulations, 40 CFR 262.60, *foreign generators should not apply for a Federal I.D. number*. These regulations state that when filling out a U.S. manifest, you must include the name and address of the foreign generator, and the name and address and EPA I.D. number of the importer. Please contact the U.S. firms involved with your shipments and determine which firm will serve as importer.

If this is a subsequent notification, you need to complete Items I, II, III, VI, VII, VIII and X and any other sections that are being added to (i.e., newly regulated activities) or altered (i.e., installation contact). All other sections may be left blank.

A) How Many Forms Should I File?

A person who is subject to the hazardous waste regulations and/or the waste-as-fuel regulations under RCRA should submit one notification form per site or location. If you conduct hazardous waste activities at more than one location, you must submit a separate form for each location. (If you previously notified for hazardous waste activities and are now notifying for waste-as-fuel activities at the same location, you must submit a second form, but your U.S. EPA Identification Number will remain the same).

If you only transport hazardous waste and do not generate, market, burn, treat, store, or dispose of these wastes, you may submit one form which covers all transportation activities your company conducts. This form should be sent to the appropriate address (listed in Part C) that serves the State where your company has its headquarters or principal place of business. However, if you are a transporter who also generates, treats, stores, or disposes of hazardous wastes, you must complete and submit separate notification forms to cover each location.

B) Can I Request That This Information Be Kept Confidential?

All information you submit in a notification can be released to the public, according to the Freedom of Information Act, unless it is determined to be confidential by U.S. EPA pursuant to 40 CFR Part 2. Since notification information is very general, the U.S. EPA believes it is unlikely that any information in your notification could qualify to be protected from release. However, you may make a claim of confidentiality by printing the word “CONFIDENTIAL” on both sides of the Notification Form and on any attachments.

EPA will take action on the confidentiality claims in accordance with 40 CFR Part 2.

C) Where Should I Send My Completed Form?

Listed alphabetically, on the following pages, are the addresses and phone numbers of the proper contacts in each State where you can get additional information and more forms, and where you should mail your completed forms. As shown here, the U.S. EPA and many States have arranged for the States to answer your questions and receive completed forms. In a few instances, the workload is shared between U.S. EPA and the State, or handled by U.S. EPA alone. *To avoid delay and confusion, follow the directions for your State very carefully.*

Alphabetized State Listing of Hazardous Waste Contacts

Alabama

Land Division
Alabama Department of Environmental Management
1751 Federal Drive
Montgomery, Alabama 36130
(205) 271-7730

Alaska

U.S. EPA Region X
Waste Management Branch
MS HW-112
1200 Sixth Avenue
Seattle, Washington 98101
(206) 442-0151

American Samoa

Environmental Quality Commission
Government of American Samoa
Pago Pago, American Samoa 96799
Overseas Operator Commercial call (684) Country Code 663-2304

Arizona

Office of Waste and Water Quality Management
Arizona Department of Environmental Quality
2005 N. Central Avenue, Room 304
Phoenix, Arizona 85004
(602) 257-2305

Arkansas

Arkansas Department of Pollution Control and Ecology
P.O. Box 9583
Little Rock, Arkansas 72219
(501) 562-7444

California

California Department of Health Services
Toxic Substances Control Division
Department of Health Services
P.O. Box 942732, 400 P. Street
Sacramento, California 95814
(916) 323-2913

Colorado

Hazardous Materials & Waste Management Division
Colorado Department of Health
4210 E. 11th Avenue
Denver, Colorado 80220
(303) 331-4830

Connecticut

Waste Management Bureau
Department of Environmental Protection
State Office Building
Hartford, Connecticut 06106
(203) 566-8844

Delaware

Delaware Department of Natural Resources
& Environmental Control
Division of Air and Waste Management
Hazardous Waste Management Branch
P.O. Box 1401, 89 Kings Highway
Dover, Delaware 19903
(302) 736-3689

District of Columbia

Department of Consumer and Regulatory Affairs
Environmental Control Division
Pesticides and Hazardous Waste Branch
2100 Martin Luther King Jr. Ave, S.E.
Room 204
Washington, D.C. 20020
(202) 727-7000

Florida

Hazardous Waste Section
Department of Environmental Regulations
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
(904) 488-0300

Georgia

Land Protection Branch
Industrial and Hazardous
Waste Management Program
Floyd Towers East 205 Butler Street, S.E.
Atlanta, Georgia 30334
(404) 656-2833

Guam

Guam Environmental Protection Agency
IT&E
Harmon Plaza Complex, Unit D-107
130 Rojas St.
Harmon, Guam 96911
Overseas Operator (Commercial Call (671) 646-7579)

Hawaii

To Obtain Information or Forms Contact:

Department of Health
Hazardous Waste Program
P.O. Box 3378
Honolulu, Hawaii 96801
(808) 548-2270

Mail Your Completed Forms to:

U.S. EPA Region IX
RCRA Programs Section
Hazardous Waste Management Division
1235 Mission St.
San Francisco, California 94103

Idaho

Idaho Department of Health & Welfare
Tower Building, Third Floor
450 West State Street
Boise, Idaho 83720
(208) 334-5879

Illinois*To Obtain Information or Forms Contact:*

U.S. EPA Region V
RCRA Activities
Waste Management Division
77 Jackson Street
Chicago, IL 60604
(312) 886-4001

Mail completed forms to:

Illinois Environmental Protection Agency
Division of Land Pollution Control
2200 Churchill Road
Springfield, Illinois 62706
(217) 782-6760

Indiana*To Obtain Information or Forms Contact:*

Indiana Department of Environmental Management
105 S. Meridian Street
P.O. Box 6015
Indianapolis, Indiana 46225
(317) 232-3210

Mail completed forms to:

U.S. EPA Region V
RCRA Activities
Waste Management Division
77 Jackson Street
Chicago, IL 60604

Iowa

U.S. EPA Region VII
RCRA Branch
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 236-2852 or 1 (800) 223-0425

Kansas

Bureau of Air and Waste Management
Department of Health and Environment
Forbes Field, Building 740
Topeka, Kansas 66620
(913) 296-1600

Kentucky

Division of Waste Management
Department of Environmental Protection
Cabinet for Natural Resources
& Environmental Protection
Fort Boone Plaza, Bldg. #2
Frankfort, Kentucky 40601
(502) 564-6716

Louisiana*

Louisiana Department of Environmental Quality
Department of Solid and Hazardous Waste
P.O. Box 44307
Baton Rouge, Louisiana 70804
(504) 342-1354

Maine

Bureau of Oil and Hazardous Materials Control
Department of Environmental Protection
Ray Bldg. Station #17
Augusta, Maine 04333
(207) 289-2651

Maryland

Maryland Department of the Environment
Waste Management Administration
2500 Broening Highway
Baltimore, Maryland 21224
(301) 631-3304

Massachusetts

Division of Hazardous Waste
Department of Environmental Protection
One Winter Street, 5th Floor
Boston, Massachusetts 02108
(617) 292-5851

Michigan*To Obtain Information or Forms Contact:*

Waste Management Division
Environmental Protection Bureau
Department of Natural Resources
Box 30038
Lansing, Michigan 48909
(517) 373-2730

Mail completed forms to:

U.S. EPA Region V
RCRA Activities
Waste Management Division
77 Jackson Street
Chicago, IL 60604

Minnesota*To Obtain Information or Forms Contact:*

Solid and Hazardous Waste Division
Minnesota Pollution Control Agency
520 Lafayette Road, North
St. Paul, Minnesota 55155
(612) 296-7282

Mail completed forms to:

U.S. EPA Region V
RCRA Activities
Waste Management Division
P.O. Box A3587
Chicago, IL 60690

Mississippi

Hazardous Waste Division
Bureau of Pollution Control
Department of Environmental Quality
P.O. Box 10385
Jackson, Mississippi 39289-0385
(601) 961-5062

Missouri

Waste Management Program
Department of Natural Resource
Jefferson Building
205 Jefferson Street (13/14 floor)
P.O. Box 176
Jefferson City, Missouri 65102
(314) 751-3176

Montana

Solid and Hazardous Waste Bureau
Department of Health and Environmental Sciences
Cogswell Bldg.
Helena, Montana 59620
(406) 444-1430

In Louisiana you must have an EPA ID number.

Nebraska

Hazardous Waste Management Section
Department of Environmental Control
State House Station
P.O. Box 98922
Lincoln, Nebraska 68509-8922
(402) 471-4217

Nevada

Waste Management Bureau
Division of Environmental Protection
Department of Conservation & Natural Resources
Capitol Complex
123 West Nye Lane
Carson City, Nevada 89710
(702) 687-5872

New Hampshire

Department of Environmental Services
Waste Management Division
6 Hazen Drive
Concord, New Hampshire 03301
(603) 271-2900

New Jersey

To Obtain Information:

New Jersey Department of Environmental Protection
Division of Waste Management
Bureau of Hazardous Waste Classification and Manifests
401 East State Street, CN-028
Trenton, New Jersey 08625
(609) 292-8341

Obtain Forms from and Mail Completed Forms to:

U.S. EPA - Region II
Permits Administration Branch
26 Federal Plaza, Room 505
New York, NY 10278

New Mexico

New Mexico Health & Environment Dept.
Hazardous Waste Bureau
1190 St. Francis Drive
Santa Fe, New Mexico 87503
(505) 827-2929

New York

To Obtain Information:

New York Department of Environmental Conservation
Division of Hazardous Waste Substances Regulation
P.O. Box 12820
Albany, New York 12212
(518) 457-0530

Obtain Forms from and Mail Completed Forms to:

U.S. EPA - Region II
Permits Administration Branch
26 Federal Plaza, Room 505
New York, NY 10278

North Carolina

Hazardous Waste Section
Division of Solid Waste Management
Department of Environment, Health and Natural Resources
P.O. Box 27687
Raleigh, North Carolina 27611-7687
(919) 733-2178

North Dakota

Division of Waste Management
Department of Health and Consolidated Laboratories
1200 Missouri Avenue
P.O. Box 5520
Bismarck, North Dakota 58502-5520
(701) 224-2366

Northern Mariana Islands

To Obtain Information or Forms Contact:

Department of Public Health and Environmental Services
Division of Environmental Quality
Dr. Torres Hospital
P.O. Box 1304
Saipan, Mariana Islands 96950
Overseas Operator: (676) 234-6984
Cable Address: Gov. NMI Saipan

Mail Your Completed Forms to:

U.S. EPA Region IX
RCRA Programs Section (H-2-3)
Hazardous Waste Management Division
1235 Mission Street
San Francisco, California 94103

Ohio

U.S. EPA Region V
RCRA Activities
Waste Management Division
77 Jackson Street
Chicago, IL 60604
(312) 886-4001

Oklahoma

Oklahoma State Department of Health
Industrial Waste Division
1000 Northeast 10th Street
Oklahoma City, Oklahoma 73152
(405) 271-5338

Oregon

Oregon Department of Environmental Quality
Hazardous Waste Operations
811 Southwest 6th Avenue
Portland, Oregon 97204
(503) 229-5913

Pennsylvania

To Obtain Information or Forms Contact:

Pennsylvania Department of Environmental Resources
Bureau of Waste Management
P.O. Box 2063
Harrisburg, Pennsylvania 17120
(717) 787-9870

Mail completed forms to:

U.S. EPA Region III
RCRA Programs Branch
Pennsylvania Section (3 HW51)
841 Chestnut Building
Philadelphia, PA 19107

Puerto Rico*To Obtain Information or Forms Contact:*

Puerto Rico Environmental Quality Board
Land Pollution Control Area
Inspection, Monitoring and Surveillance
P.O. Box 11488
Santurce, Puerto Rico 00910-1488
(809) 722-0439

Obtain Forms from and Mail Your Completed Forms to:

U.S. EPA Region II
Permits Administration Branch
26 Federal Plaza, Room 505
New York, New York 10278

Rhode Island

Division of Air and Hazardous Materials
Department of Environmental Management
291 Promenade Street
Providence, Rhode Island 02908-5767
(401) 277-2808

South Carolina

Bureau of Solid Waste Management
Hazardous Waste Management
Department of Health and Environmental Control
2600 Bull Street
Columbia, South Carolina
(803) 734-2500

South Dakota

Office of Waste Management
Department of Water and Natural Resources
Joe Foss Building, 523 East Capitol Street
Pierre, South Dakota 57501-3181
(605) 773-3153

Tennessee

Division of Solid Waste Management
Tennessee Department of Health and Environment
701 Broadway
Customs House, 4th Floor
Nashville, Tennessee 37247-3530
(615) 741-3424

Texas

Texas Water Commission
Compliance Assistance Unit
Hazardous and Solid Waste Division
P.O. Box 13087, Capitol Station
Austin, Texas 78711-3087
(512) 463-8175

Utah

Bureau of Solid and Hazardous Waste Management
Department of Health
P.O. Box 16690
288 North 1460 West
Salt Lake City, Utah 84116-0690
(801) 538-6170

Vermont

Hazardous Materials Management Division
Department of Environmental Conservation
103 South Main Street
Waterbury, Vermont 05676
(802) 244-8702

Virgin Islands*To Obtain Information or Forms Contact:*

Virgin Islands Department of Planning & Natural Resources
Division of Environmental Protection
179 Altona and Welgunst
St. Thomas, Virgin Islands 00801
(809) 774-3320

Obtain Forms from and Mail Completed Forms to:

U.S. EPA Region II
Permits Administration Branch
26 Federal Plaza, Room 505
New York, New York 10278

Virginia

Virginia Department of Waste Management
Monroe Building, 11th Floor
101 North 14th Street
Richmond, Virginia 23219
(804) 225-2667

Washington

Solid and Hazardous Waste Management Division
Department of Ecology Mail Stop PV-11
Olympia, Washington 98504
(206) 459-6369

West Virginia

West Virginia Division of Natural Resources
Waste Management Section
1356 Hansford Street
Charleston, West Virginia 25301
(304) 348-5393

Wisconsin*To Obtain Information or Forms Contact:*

Bureau of Solid Waste
Department of Natural Resources
P.O. Box 7921
Madison, Wisconsin 53707
(608) 266-1327

Mail completed forms to:

U.S. EPA Region V
RCRA Activities
Waste Management Division
77 Jackson Street
Chicago, IL 60604

Wyoming

U.S. EPA Region VIII
Hazardous Waste Management Division (8HWM-ON)
999 18th Street, Suite 500
Denver, Colorado 80202-2405
(303) 293-1795

U.S. EPA Regional Offices

Region	Geographic Area Covered	EPA Regional Offices
I	Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont	U.S. EPA Region I Waste Management Division JFK Federal Building Boston, MA 02203-2211
II	New Jersey, New York, Puerto Rico, Virgin Islands	U.S. EPA Region II Permits Administration Branch 26 Federal Plaza, Room 505 New York, NY 10278
III	Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia	U.S. EPA Region III RCRA Programs Branch (3 HW 53) 841 Chestnut Street Philadelphia, PA 19107
IV	Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee	U.S. EPA Region IV Hazardous Waste Management Division 345 Courtland Street, NE Atlanta, GA 30365
V	Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin	U.S. EPA Region V RCRA Activities Waste Management Division 77 Jackson Street Chicago, IL 60604
VI	Arkansas, Louisiana, New Mexico, Oklahoma, Texas	U.S. EPA Region VI Hazardous Waste Management Division First Interstate Bank Tower 1445 Ross Avenue, Suite 1200 Dallas, TX 75202-2733
VII	Iowa, Kansas, Nebraska, Missouri	U.S. EPA Region VII RCRA Branch 726 Minnesota Avenue Kansas City, KS 66620
VIII	Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming	U.S. EPA Region VIII Hazardous Waste Management Division (8HWM-ON) 999 18th Street, Suite 500 Denver, CO 80202-2405
IX	Arizona, California, Hawaii, Nevada, American Samoa, Guam, Northern Mariana Islands	U.S. EPA Region IX Hazardous Waste Management Division 1235 Mission Street San Francisco, CA 94103
X	Alaska, Idaho, Oregon, Washington	U.S. EPA Region X Waste Management Branch (HW-112) 1200 Sixth Avenue Seattle, WA 98101

Estimated burden: Public reporting burden for this collection of information is estimated to be 3.5 hours, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Paperwork Reduction Project (2050-0028), Office of Management and Budget, Washington, D.C. 20503.

IV. Line-by-Line Instructions for Completing EPA Form 8700-12

Type or print in black ink all items except Item X, "Signature," leaving a blank box between words. The boxes are spaced at 1/4" intervals which accommodate elite type (12 characters per inch). When typing, hit the space bar twice between characters. If you print, place each character in a box. Abbreviate if necessary to stay within the number of boxes allowed for each Item. If you must use additional sheets, indicate clearly the number of the Item on the form to which the information on the separate sheet applies.

Note: When submitting a **subsequent notification** form, notifiers must complete in their entirety Items I, II, III, VI, VII, VIII and X. Other sections that are being added to (i.e., newly regulated activities) or altered (i.e., installation contact) must also be completed. All other sections may be left blank.

Item I — Installation's EPA ID Number:

Place an "X" in the appropriate box to indicate whether this is your first or a subsequent notification *for this site*. If you have filed a previous notification, enter the EPA Identification Number assigned to this site in the boxes provided. Leave EPA ID Number blank if this is your first notification *for this site*.

Note: When the owner of a facility changes, the new owner must notify U.S. EPA of the change, even if the previous owner already received a U.S. EPA Identification Number. Because the U.S. EPA ID Number is "site-specific," the new owner will keep the existing ID number. If the facility moves to another location, the owner/operator must notify EPA of this change. In this instance a new U.S. EPA Identification Number will be assigned, since the facility has changed locations.

Items II and III — Name and Location of Installation:

Complete Items II and III. Please note that the address you give for Item III, "Location of Installation," must be a physical address, *not a post office box or route number*.

County Code and Name: Give the county code, if known. If you do not know the county code, enter the county name, from which EPA can automatically generate the county code. If the county name is unknown contact the local Post Office. To obtain a list of county codes, contact the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia, 22161 or at (703) 487-4650. The list of codes is contained in the Federal Information Processing Standards Publication (FIPS PUB) number 6-3.

Item IV — Installation Mailing Address:

Please enter the Installation Mailing Address. If the Mailing Address and the Location of Installation (Item III) are the same, you can print "Same" in box for Item IV.

Item V — Installation Contact:

Enter the name, title, and business telephone number of the person who should be contacted regarding information submitted on this form.

Item VI — Installation Contact Address:

A) Code: If the contact address is the same as the location of installation address listed in Item III or the installation mailing address listed in Item IV, place an "X" in the appropriate box to indicate where the contact may be reached. If the location of installation address, the installation mailing address, and the installation contact address are all the same, mark the "Location" box. If an "X" is entered in either the location or mailing box, Item VI. B. should be left blank.

B) Address: Enter the contact address only if the contact address is different from either the

location of installation address (Item III) or the installation mailing address (Item IV), and Item VI. A. was left blank.

Item VII — Ownership:

A) Name: Enter the name of the legal owner(s) of the installation, including the property owner. Also enter the address and phone number where this individual can be reached. Use the comment section in XI or additional sheets if necessary to list more than one owner.

B) Land Type: Using the codes listed below, indicate in VII. B. the code which best describes the current legal status of the land on which the facility is located:

- F = Federal
- S = State
- I = Indian
- P = Private
- C = County
- M = Municipal*
- D = District
- O = Other

**Note: If the Land Type is best described as Indian, County or District, please use those codes. Otherwise, use Municipal.*

C) Owner Type: Using the codes listed below, indicate in VII. C. the code which best describes the legal status of the current owner of the facility:

- F = Federal
- S = State
- I = Indian
- P = Private
- C = County
- M = Municipal*
- D = District
- O = Other

**Note: If the Owner Type is best described as Indian, County or District, please use those codes. Otherwise, use Municipal.*

D) Change of Owner Indicator: (If this is your installation's first notification, leave Item VII. D. blank and skip to Item VIII. If this is a subsequent notification, complete Item VII. D. as directed below.)

If the owner of this facility has changed since the facility's original notification, place an "X" in the box marked "Yes" and enter the date the owner changed.

If the owner of this facility has not changed since the facility's original notification, place an "X" in the box marked "No" and skip to Item VIII.

If an additional owner(s) has been added or replaced since the facility's original notification, place an "X" in the box marked "Yes". Use the comment section in XI to list any additional owners, the dates they became owners, and which owner(s) (if any) they replaced. If necessary attach a separate sheet of paper.

Item VIII — Type of Regulated Waste Activity:

A) Hazardous Waste Activity: Mark an "X" in the appropriate box(es) to show which hazardous waste activities are going on at this installation.

1) Generator: If you generate a hazardous waste that is identified by characteristic or listed in 40 CFR Part 261, mark an "X" in the appropriate box for the quantity of non-acutely hazardous waste that is generated per calendar month. If you generate acutely hazardous waste please refer to 40 CFR Part 262 for further information.

2) Transporter: If you transport hazardous waste, indicate if it is your own waste, for commercial purposes, or mark both boxes if both classifications apply. Mark an "X" in each appropriate box to indicate the method(s) of transportation you use. Transporters do not have to complete Item IX of this form, but must sign the certification in Item X. The Federal regulations for hazardous waste transporters are found in 40 CFR Part 263.

3) Treater/Storer/Disposer: If you treat, store or dispose of regulated hazardous waste, then mark an "X" in this box. You are reminded to contact the appropriate addressee listed for your State in Section III. C. of this package to request Part A of the RCRA Permit Application. The Federal regulations for hazardous waste facility owners/ operators are found in 40 CFR Parts 264 and 265.

4) Hazardous Waste Fuel: If you market hazardous waste fuel, place an "X" in the appropriate box(es). If you burn hazardous waste fuel on-site, place an "X" in the appropriate box and indicate the type(s) of combustion devices in which hazardous waste fuel is burned. (Refer to definition section for complete description of each device).

Note: Generators are required to notify for waste-as-fuel activities only if they market directly to the burner.

"Other Marketer" is defined as any person, other than a generator marketing hazardous waste, who markets hazardous waste fuel.

- 5) **Underground Injection Control:** If you generate and/or treat, store or dispose of hazardous waste, place an "X" in the box if an injection well is located at your installation. "Underground Injection" means the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

B) Used Oil Fuel Activities

Mark an "X" in the appropriate box(es) to indicate which used oil fuel activities are taking place at this installation.

- 1) **Off-Specification Used Oil Fuel:** If you market off-specification used oil, place an "X" in the appropriate box(es). If you burn used oil fuel place an "X" in the box(es) below to indicate type(s) of combustion devices in which off-specification used oil fuel is burned. (Refer to definition section for complete description of each device).

Note: Used oil generators are required to notify only if marketing directly to the burner.

"Other Marketer" is defined as any person, other than a generator marketing his or her used oil, who markets used oil fuel.

- 2) **Specification Used Oil Fuel:** If you are the first to claim that the used oil meets the specification established in 40 CFR 266.40(e) and is exempt from further regulation, you must mark an "X" in this box.

Item IX — Description of Regulated Wastes:

Note: Only persons involved in hazardous waste activity (Item VIII A.) need to complete this item. Transporters requesting a U.S. EPA Identification Number do not need to complete this item, but must sign the "Certification" in Item X.

You will need to refer to 40 CFR Part 261 (enclosed as Section VII) in order to complete this section. Part

261 identifies those wastes that EPA defines as hazardous. If you need help completing this section, please contact the appropriate addressee for your State as listed in Section III. C. of this package.

A) Characteristics of Nonlisted Hazardous Wastes: If you handle hazardous wastes which are not listed in 40 CFR Part 261, Subpart D but do exhibit a characteristic of hazardous waste as defined in 40 CFR Part 261, Subpart C, you should describe these wastes by the EPA hazardous waste number for the characteristic. Place an "X" in the box next to the characteristic of the wastes that you handle. If you mark "4. Toxicity Characteristic," please list the specific EPA hazardous waste number for the specific contaminant(s) in the box(es) provided. Refer to Section VIII to determine the appropriate hazardous waste number.

B) Listed Hazardous Wastes: If you handle hazardous wastes that are listed in 40 CFR Part 261, Subpart D, enter the appropriate 4-digit numbers in the boxes provided.

Note: If you handle more than 12 listed hazardous wastes, please continue listing the waste codes on the extra sheet provided at the end of this booklet. If it is used, attach the additional page to the rest of the form before mailing it to the appropriate EPA Regional or State Office.

C) Other Wastes: If you handle other wastes or State regulated wastes that have a waste code, enter the appropriate code number in the boxes provided.

Item X — Certification:

This certification must be signed by the owner, operator, or an authorized representative of your installation. An "authorized representative" is a person responsible for the overall operation of the facility (i.e., a plant manager or superintendent, or a person of equal responsibility). *All notifications must include this certification to be complete.*

Item XI — Comments:

Use this space for any additional comments.

V. Definitions

The following definitions are included to help you to understand and complete the Notification Form:

ACT or RCRA means the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6901 *et seq.*

Authorized Representative means the person responsible for the overall operation of the facility or an operational unit (i.e., part of a facility), e.g., superintendent or plant manager, or person of equivalent responsibility.

Boiler means an enclosed device using controlled flame combustion and having the following characteristics:

- (1) the unit has physical provisions for recovering and exporting energy in the form of steam, heated fluids, or heated gases;
- (2) the unit's combustion chamber and primary energy recovery section(s) are of integral design (i.e., they are physically formed into one manufactured or assembled unit);
- (3) the unit continuously maintains an energy recovery efficiency of at least 60 percent, calculated in terms of the recovered energy compared with the thermal value of the fuel;
- (4) the unit exports and utilizes at least 75 percent of the recovered energy, calculated on an annual basis (excluding recovered heat used internally in the same unit, for example, to preheat fuel or combustion air or drive fans or feedwater pumps); and
- (5) the unit is one which the Regional Administrator has determined on a case-by-case basis, to be a boiler after considering the standards in 40 *CFR* 260.32.

Burner means the owner or operator of any boiler or industrial furnace that burns hazardous waste fuel for energy recovery and that is not regulated as a RCRA hazardous waste incinerator.

Disposal means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be

emitted into the air or discharged into any waters, including ground waters.

Disposal Facility means a facility or part of a facility at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure.

EPA Identification (I.D.) Number means the number assigned by EPA to each generator, transporter, and treatment, storage, or disposal facility.

Facility means all contiguous land, structures, other appurtenances, and improvements on the land, used for treating, storing, or disposing of hazardous waste. A facility may consist of several treatment, storage, or disposal operational units (e.g., one or more landfills, surface impoundments, or combinations of them).

Generator means any person, by site, whose act or process produces hazardous waste identified or listed in 40 *CFR* Part 261.

Hazardous Waste means a hazardous waste as defined in 40 *CFR* 261.3.

Hazardous Waste Fuel means hazardous waste and any fuel that contains hazardous waste that is burned for energy recovery in a boiler or industrial furnace that is not subject to regulation as a RCRA hazardous waste incinerator. However, the following hazardous waste fuels are subject to regulation as used oil fuels:

- (1) Used oil fuel burned for energy recovery that is also a hazardous waste solely because it exhibits a characteristic of hazardous waste identified in Subpart C of 40 *CFR* Part 261; and
- (2) Used oil fuel mixed with hazardous wastes generated by a small quantity generator subject to 40 *CFR* 261.5.

Industrial Boiler means a boiler located on the site of a facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes.

Industrial Furnace means any of the following enclosed devices that are integral components of manufacturing processes and that use controlled flame combustion to accomplish recovery of materials or energy: cement kilns, lime kilns, aggregate kilns (including asphalt kilns), phosphate kilns, coke ovens, blast furnaces, smelting furnaces, refining furnaces, titanium dioxide chloride process oxidation reactors, methane reforming furnaces, pulping liquor recovery

furnaces, combustion devices used in the recovery of sulfur values from spent sulfuric acid, and other devices as the Administrator may add to this list.

Marketer means a person who markets hazardous waste fuel or used oil fuel. However, the following marketers are not subject to waste-as-fuel requirements (including notification) under Subparts D and E of 40 *CFR* Part 266:

- (1) Generators and initial transporters (i.e., transporters who receive hazardous waste or used oil directly from generators including initial transporters who operate transfer stations) who do not market directly to persons who burn the fuels; and
- (2) Persons who market used oil fuel that meets the specification provided under 40 *CFR* 266.40(e) and who are not the first to claim the oil meets the specification.

Municipality means a city, village, town, borough, county, parish, district, association, Indian tribe or authorized Indian tribal organization, designated and approved management agency under Section 208 of the Clean Water Act, or any other public body created by or under State law and having jurisdiction over disposal of sewage, industrial wastes, or other wastes.

Off-Specification Used Oil Fuel means used oil fuel that does not meet the specification provided under 40 *CFR* 266.40(e).

Operator means the person responsible for the overall operation of a facility.

Owner means a person who owns a facility or part of a facility, including landowner.

Small Quantity Exemption means small quantities of hazardous waste that are exempt from the requirements of 40 *CFR* 266.108.

Smelter Deferral means that the mandate in section 3000(g) to regulate facilities burning hazardous waste for energy recovery as may be necessary to protect human health and the environment does not apply to devices burning for the purpose of material recovery.

Specification Used Oil Fuel means used oil fuel that meets the specification provided under 40 *CFR* 266.40(e).

Storage means the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere.

Transportation means the movement of hazardous waste by air, rail, highway, or water.

Transporter means a person engaged in the off-site transportation of hazardous waste by air, rail, highway, or water.

Treatment means any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or so as to recover energy or material resources from the waste, or so as to render such waste nonhazardous, or less hazardous; safer to transport, store or dispose of; or amenable for recovery, amenable for storage, or reduced in volume. Such term includes any activity or processing designed to change the physical form or composition of hazardous waste so as to render it nonhazardous.

Underground Injection Control means the subsurface emplacement of fluids through a bored, drilled or driven well; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

Used Oil means any oil that has been refined from crude oil, used, and as a result of such use, is contaminated by physical or chemical impurities. Wastes that contain oils that have not been used (e.g., fuel oil storage tank bottom clean-out wastes) are not used oil unless they are mixed with used oil.

Used Oil Fuel means any used oil burned (or destined to be burned) for energy recovery including any fuel produced from used oil by processing, blending or other treatment, and that does not contain hazardous waste (other than that generated by a small quantity generator and exempt from regulation as hazardous waste under provisions of 40 *CFR* 261.5). Used oil fuel may itself exhibit a characteristic of hazardous waste and remain subject to regulation as used oil fuel provided it is not mixed with hazardous waste.

Utility Boiler means a boiler that is used to produce electricity, steam or heated or cooled air or other gases or fluids for sale.

Waste Fuel means hazardous waste fuel or off-specification used oil fuel.

VI. EPA Hazardous Waste Numbers for Waste Streams Commonly Generated by Small Quantity Generators

The Environmental Protection Agency recognizes that generators of small quantities of hazardous waste, many of which are small businesses, may not be familiar with the manner in which hazardous waste materials are identified in the Code of Federal Regulations. This insert has been assembled in order to aid small quantity generators in determining for their wastes the EPA Hazardous Waste Numbers that are needed to complete the "Notification of Regulated Waste Activity," Form 8700-12.

This insert is composed of two tables. Table 1 lists eighteen general industry categories that contain small quantity generators. For each of these categories, commonly generated hazardous waste streams are identified. Table 2 lists EPA Hazardous Waste Numbers for each waste stream identified in Table 1.

To use this insert:

1. Locate your industry in Table 1 to identify the waste streams common to your activities.
2. Find each of your waste streams in Table 2, and review the more detailed descriptions of

typical wastes to determine which waste streams actually result from your activities.

3. If you determine that a waste stream does apply to you, report the 4-digit EPA Hazardous Waste Number in Item IX. B. of Form 8700-12, "Notification of Regulated Waste Activity."

The industries and waste streams described here do not provide a comprehensive list but rather serve as a guide to potential small quantity generators in determining which of their wastes, if any, are hazardous. Except for the pesticide category, this insert does not include EPA Hazardous Waste Numbers for commercial chemical products that are hazardous when discarded unused. These chemicals and their EPA Hazardous Waste Number are listed in 40 CFR 261.33.

If the specific Hazardous Waste Number that should be applied to your waste stream is unclear, please refer to 40 CFR Part 261, reprinted in Section VII of this notification package. In those cases where more than one Hazardous Waste Number is applicable, all should be used. If you have any questions, or if you are unable to determine the proper EPA Hazardous Waste Numbers for your wastes, contact your state hazardous waste management agency as listed in Section III of this notification package, or the RCRA/Superfund Hotline at 1-800-424-9346.

Table 1**Typical Waste Streams Produced by Small Quantity Generators**

Industry	Waste Streams
Laboratories	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents
Printing and Allied Industries	Acids/Bases Heavy Metals/Inorganics Ink Sludges Spent Plating Wastes Solvents
Pesticide End Users and Application	Heavy Metals/Inorganics Services Pesticides Solvents
Construction	Acids/Bases Ignitable Wastes Solvents
Equipment Repair	Acids/Bases Ignitable Wastes Lead Acid Batteries Solvents
Furniture/Wood Manufacturing and Refinishing	Ignitable Wastes Solvents
Other Manufacturing: 1) Textiles 2) Plastics 3) Leather	Heavy Metals/Inorganics Solvents
Laundries and Dry Cleaners	Dry Cleaning Filtration Residues Solvents
Educational and Vocational Shops	Acids/Bases Ignitable Wastes Pesticides Reactives Solvents
Building Cleaning and Maintenance	Acid/Bases Solvents
Vehicle Maintenance	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Lead Acid Batteries Solvents

Table 1 (continued)**Typical Waste Streams Produced by Small Quantity Generators**

Industry	Waste Streams
Wood Preserving	Preserving Agents
Motor Freight Terminals and Railroad	Acids/Bases Transportation Heavy Metals/Inorganics Ignitable Wastes Lead Acid Batteries Solvents
Funeral Services	Solvents (formaldehyde)
Metal Manufacturing	Acids/Bases Cyanide Wastes Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents Spent Plating Wastes
Chemical Manufacturers	Acids/Bases Cyanide Wastes Heavy Metals/Inorganics Ignitable Wastes Reactives Solvents
Cleaning Agents and Cosmetics	Acids/Bases Heavy Metals/Inorganics Ignitable Wastes Pesticides Solvents
Formulators	Acids/Bases Cyanide Wastes Heavy Meals/Inorganics Ignitable Wastes Pesticides Reactives Solvents

Table 2**Typical Waste Streams and EPA Hazardous Waste Numbers****ACIDS/BASES:**

Acids, bases or mixtures having a pH less than or equal to 2 or greater than or equal to 12.5, or liquids that corrode steel at a rate greater than 0.25 inches per year, are considered to be corrosive (for a complete description of corrosive wastes, see 40 CFR 261.22, Characteristic of Corrosivity). All corrosive materials and solutions have the EPA Hazardous Waste Number of D002. The following are some examples of the more commonly used corrosives:

Examples of Corrosive Waste Streams

Acetic Acid	Oleum
Ammonium Hydroxide	Perchloric Acid
Chromic Acid	Phosphoric Acid
Hydrobromic Acid	Potassium Hydroxide
Hydrochloric Acid	Sodium Hydroxide
Hydrofluoric Acid	Sulfuric Acid
Nitric Acid	

DRY CLEANING FILTRATION RESIDUES:

Cooked powder residue (perchloroethylene plants only), still residues and spent cartridge filters containing perchloroethylene or valclene are hazardous and have an EPA Hazardous Waste Number of F002.

Still residues containing petroleum solvents with a flash point less than 140°F are also considered hazardous, and have an EPA Hazardous Waste Number of D001.

HEAVY METALS/INORGANICS:

Heavy Metals and other inorganic waste materials exhibit the characteristic of TCLP Toxicity and are considered hazardous if the extract from a representative sample of the waste has any of the specific constituent concentrations as shown in 40 CFR 261.24, Table 1. This may include dusts, solutions, wastewater treatment sludges, paint wastes, waste inks and other such materials which contain heavy metals/inorganics (note that wastewater treatment sludges from electroplating operations containing nickel and cyanide, are identified as F006). The following are TCLP Toxic:

Waste Stream	EPA Hazardous Waste Number
Arsenic	D004
Barium	D005
Cadmium	D006
Chromium	D007
Lead	D008
Mercury	D009
Selenium	D010
Silver	D011

IGNITABLE WASTES:

Ignitable wastes include any flammable liquids, nonliquids, and contained gases that have a flashpoint less than 140°F (for a complete description of ignitable wastes, see 40 CFR 261.21, Characteristic of ignitability). Examples are spent solvents (see also solvents), solvent still bottoms, ignitable paint wastes (paint removers, brush cleaners

Table 2 (continued)

and stripping agents), epoxy resins and adhesives (epoxies, rubber cements and marine glues), and waste inks containing flammable solvents. Unless otherwise specified, all ignitable wastes have an EPA Hazardous Waste Number of D001.

Some commonly used ignitable compounds are:

Waste Stream	EPA Hazardous Waste Number
Acetone	F003
Benzene	D001
n-Butyl Alcohol	F003
Chlorobenzene	F002
Cyclohexanone	F003
Ethyl Acetate	F003
Ethylbenzene	F003
Ethyl Ether	F003
Ethylene Dichloride	D001
Methanol	F003
Methyl Isobutyl Ketone	F003
Petroleum Distillates	D001
Xylene	F003

INK SLUDGES CONTAINING CHROMIUM AND LEAD:

This includes solvent washes and sludges, caustic washes and sludges, or waster washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead. All ink sludges have an EPA Hazardous Waste Number of K086.

LEAD ACID BATTERIES:

Used lead acid batteries should be reported on the notification form only if they are not recycled. Used lead acid batteries that are recycled do not need to be counted in determining the quantity of waste that you generate per month, nor do they require a hazardous waste manifest when shipped off your premises. (Note: Special requirements do apply if you recycle your batteries on your own premises — see 40 CFR Part 266.)

Waste Stream	EPA Hazardous Waste Number
Lead Dross	D008
Spent Acids	D002
Lead Acid Batteries	D008, D002

ORGANIC WASTES:

See Section VIII, Table 1—Maximum Concentration of Contaminants for the Toxicity Characteristic for a list of constituents and regulatory levels.

PESTICIDES:

Pesticides, pesticide residues, washing and rinsing solutions and dips which contain constituent concentrations at or above Toxicity Characteristic regulatory levels (see Section VIII) are hazardous waste. Pesticides that have an oral LD50 toxicity (rat) < 50 mg/kg, inhalation LC50 toxicity (rat) < 2 mg/L or a dermal LD 50 toxicity (rabbit)

< 200 mg/kg, are hazardous materials. The following pesticides would be hazardous waste if they are technical grade, unused and disposed. For a more complete listing, see 40 CFR 261.32–33 for specific listed pesticides, discarded commercial chemical products, and other wastes, wastewaters, sludges, and by-products from pesticide production. (Note that while many of these pesticides are not longer in common use, they are included here for those cases where they may be found in storage.)

Table 2 (continued)

Waste Stream	EPA Hazardous Waste Number
Aldicarb	P070
Aldrin	P004
Amitrole	U011
Arsenic Pentoxide	P011
Arsenic Trioxide	P012
Cacodylic Acid	U136
Carbamic Acid, Methylnitroso-	
Ethyl Ester	U178
Chlordane	U036
Copper Cyanides	P029
1,2-Dibromo-3-Chloropropane	U066
1,2-Dichloropropane	U083
1,3-Dichloropropane	U084
2,4-Dichlorophenoxy Acetic Acid	U240
DDT	U061
Dieldrin	P037
Dimethoate	P044
Dimethylcarbamoyl Chloride	U097
Dinitroresol	P047
Dinoseb	P020
Disodium Monomomethane arsonate	D004
Disulfoton	P039
Endosulfan	P050
Endrin	P051
Ethylmercuric Chloride	D009
Famphur	P097
Nepthachlor	P059
Hexachlorobenzene	U127
Kepone	U142
Lindane	U129
2-Methoxy Mercuric Chloride	D009
Methoxychlor	D014
Methyl Parahtion	P071
Monosodium Methanearsonate	D004
Nicotine	P075
Parathion	P089
Pentachloronitrobenzene	U185
Pentachlorophenol	U242
Phenylmercuric Acetate	D009
Phorate	P094

Table 2 (continued)

Strychnine	P108
2,4,5-Trichlorophenoxy Acetic Acid	U232
2-(2,4,5-Trichlorophenoxy)-Propionic Acid	U233
Thallium Sulfate	P115
Thiram	U244
Toxaphene	P123
Warfarin	U248

SOLVENTS:

Spent solvents, solvent still bottoms or mixtures containing solvents are often hazardous. This includes solvents used in degreasing and paint brush cleaning, and distillation residues from reclamation. The following are some commonly used hazardous solvents (see also ignitable wastes for other hazardous solvents, and 40 CFR 261.31 for most listed hazardous waste solvents):

Waste Stream	EPA Hazardous Waste Number
Benzene	D001
Carbon Disulfide	F005
Carbon Tetrachloride	F001
Chlorobenzene	F002
Cresols	F004
Cresylic Acid	F004
O-Dichlorobenzene	F002
Ethanol	D001
Ethylene Dichloride	D001
Isobutanol	F005
Isopropanol	D001
Kerosene	D001
Methyl Ethyl Ketone	F005
Methylene Chloride	F001 (Sludges)
	F002 (Still Bottoms)
Naphtha	D001
Nitrobenzene	F004
Petroleum Solvents (Flash-point less than 140F)	D001
Pyridine	F005
1,1,1-Trichloroethane	F001 (Sludges)
	F002 (Still Bottoms)
Tetrachloroethylene	F001 (Sludges)
	F002 (Still Bottoms)
Toluene	F005
Trichloroethylene	F001 (Sludges)
	F002 (Still Bottoms)
Trichlorofluoromethane	F002
Trichlorotrifluoroethane	F002
White Spirits	D001

Table 2 (continued)

REACTIVES:

Reactive wastes include reactive materials or mixtures which are unstable, react violently with or form explosive mixtures with water, generate toxic gases or vapors when mixed with water (or when exposed to pH conditions between 2 and 12.5 in the case of cyanide or sulfide bearing wastes), or are capable of detonation or explosive reaction when irritated or heated (for a complete description of reactive wastes, see 40 CFR 261.23, Characteristic of reactivity). Unless otherwise specified, all reactive wastes have an EPA Hazardous Waste Number of D003. The following materials are commonly considered to be reactive:

Waste Stream	EPA Hazardous Waste Number
Acetyl Chloride	D003
Chromic Acid	D003
Cyanides	D003
Organic Peroxides	D003
Perchlorates	D003
Permanganates	D003
Hypochlorites	D003
Sulfides	D003

SPENT PLATING AND CYANIDE WASTES:

Spent plating wastes contain cleaning solutions and plating solutions with caustics, solvents, heavy metals and cyanides. Cyanide wastes may also be generated from heat treatment operations, pigment production and manufacturing of anti-caking agents. Plating wastes are generally Hazardous Waste Numbers F006–F009. Heat treatment wastes are generally Hazardous Waste Numbers F010–F012. See 40 CFR 261.31 for a more complete description of plating wastes.

WOOD PRESERVING AGENTS:

Compounds or mixtures used in wood preserving, including the wastewater treatment sludge from wastewater treatment operations, are considered hazardous. Bottom sediment sludges from the treatment of wastewater processes that use creosote or pentachlorophenol are hazardous, and have an EPA Hazardous Waste Number of K001. Unless otherwise indicated, specific wood preserving components are:

Waste Stream	EPA Hazardous Waste Number
Chromated Copper Arsenate	D004
Creosote	K001
Pentachlorophenol	K001

Code of federal regulations

Protection of Environment

40

PARTS 260 to 299

Revised as of July 1, 1991

CONTAINING
A CODIFICATION OF DOCUMENTS
OF GENERAL APPLICABILITY
AND FUTURE EFFECT

AS OF JULY 1, 1991

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PART 261—IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

Subpart A—General

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- 261.2 Definition of solid waste.
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- APPENDIX III—CHEMICAL ANALYSIS TEST METHODS**
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Sec.

APPENDIX VII—BASIS FOR LISTING HAZARDOUS WASTE

APPENDIX VIII—HAZARDOUS CONSTITUENTS

APPENDIX IX—WASTES EXCLUDED UNDER §§ 260.20 AND 260.22

APPENDIX X—METHOD OF ANALYSIS FOR CHLORINATED DIBENZO-P-DIOXINS AND -DIBENZOFURANS

AUTHORITY: 42 U.S.C. 6905, 6912(a), 6921, 6922, and 6938.

SOURCE: 45 FR 33119, May 19, 1980, unless otherwise noted.

Subpart A—General

§ 261.1 Purpose and scope.

(a) This part identifies those solid wastes which are subject to regulation as hazardous wastes under parts 262 through 265, 268, and parts 270, 271, and 124 of this chapter and which are subject to the notification requirements of section 3010 of RCRA. In this part:

(1) Subpart A defines the terms "solid waste" and "hazardous waste", identifies those wastes which are excluded from regulation under parts 262 through 266, 268 and 270 and establishes special management requirements for hazardous waste produced by conditionally exempt small quantity generators and hazardous waste which is recycled.

(2) Subpart B sets forth the criteria used by EPA to identify characteristics of hazardous waste and to list particular hazardous wastes.

(3) Subpart C identifies characteristics of hazardous waste.

(4) Subpart D lists particular hazardous wastes.

(b)(1) The definition of solid waste contained in this part applies only to wastes that also are hazardous for purposes of the regulations implementing Subtitle C of RCRA. For example, it does not apply to materials (such as non-hazardous scrap, paper, textiles, or rubber) that are not otherwise hazardous wastes and that are recycled.

(2) This part identifies only some of the materials which are solid wastes and hazardous wastes under sections 3007, 3013, and 7003 of RCRA. A material which is not defined as a solid waste in this part, or is not a hazardous waste identified or listed in this

part, is still a solid waste and a hazardous waste for purposes of these sections if:

(i) In the case of sections 3007 and 3013, EPA has reason to believe that the material may be a solid waste within the meaning of section 1004(27) of RCRA and a hazardous waste within the meaning of section 1004(5) of RCRA; or

(ii) In the case of section 7003, the statutory elements are established.

(c) For the purposes of §§ 261.2 and 261.6:

(1) A "spent material" is any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing;

(2) "Sludge" has the same meaning used in § 260.10 of this chapter;

(3) A "by-product" is a material that is not one of the primary products of a production process and is not solely or separately produced by the production process. Examples are process residues such as slags or distillation column bottoms. The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process.

(4) A material is "reclaimed" if it is processed to recover a usable product, or if it is regenerated. Examples are recovery of lead values from spent batteries and regeneration of spent solvents.

(5) A material is "used or reused" if it is either:

(i) Employed as an ingredient (including use as an intermediate) in an industrial process to make a product (for example, distillation bottoms from one process used as feedstock in another process). However, a material will not satisfy this condition if distinct components of the material are recovered as separate end products (as when metals are recovered from metal-containing secondary materials); or

(ii) Employed in a particular function or application as an effective substitute for a commercial product (for example, spent pickle liquor used as phosphorous precipitant and sludge conditioner in wastewater treatment).

(6) "Scrap metal" is bits and pieces of metal parts (e.g., bars, turnings, rods, sheets, wire) or metal pieces that may be combined together with bolts or soldering (e.g., radiators, scrap automobiles, railroad box cars), which when worn or superfluous can be recycled.

(7) A material is "recycled" if it is used, reused, or reclaimed.

(8) A material is "accumulated speculatively" if it is accumulated before being recycled. A material is not accumulated speculatively, however, if the person accumulating it can show that the material is potentially recyclable and has a feasible means of being recycled; and that—during the calendar year (commencing on January 1)—the amount of material that is recycled, or transferred to a different site for recycling, equals at least 75 percent by weight or volume of the amount of that material accumulated at the beginning of the period. In calculating the percentage of turnover, the 75 percent requirement is to be applied to each material of the same type (e.g., slags from a single smelting process) that is recycled in the same way (i.e., from which the same material is recovered or that is used in the same way). Materials accumulating in units that would be exempt from regulation under § 261.4(c) are not to be included in making the calculation. (Materials that are already defined as solid wastes also are not to be included in making the calculation.) Materials are no longer in this category once they are removed from accumulation for recycling, however.

[45 FR 33119, May 19, 1980, as amended at 48 FR 14293, Apr. 1, 1983; 50 FR 663, Jan. 4, 1985; 51 FR 10174, Mar. 24, 1986; 51 FR 40636, Nov. 7, 1986]

§ 261.2 Definition of solid waste.

(a)(1) A *solid waste* is any discarded material that is not excluded by § 261.4(a) or that is not excluded by variance granted under §§ 260.30 and 260.31.

(2) A *discarded material* is any material which is:

(i) *Abandoned*, as explained in paragraph (b) of this section; or

(ii) *Recycled*, as explained in paragraph (c) of this section; or

(iii) Considered *inherently waste-like*, as explained in paragraph (d) of this section.

(b) Materials are solid waste if they are *abandoned* by being:

(1) Disposed of; or

(2) Burned or incinerated; or

(3) Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated.

(c) Materials are solid wastes if they are *recycled*—or accumulated, stored, or treated before recycling—as specified in paragraphs (c)(1) through (4) of this section.

(1) *Used in a manner constituting disposal*. (i) Materials noted with a “*” in Column 1 of Table 1 are solid wastes when they are:

(A) Applied to or placed on the land in a manner that constitutes disposal; or

(B) Used to produce products that are applied to or placed on the land or

are otherwise contained in products that are applied to or placed on the land (in which cases the product itself remains a solid waste).

(ii) However, commercial chemical products listed in § 261.33 are not solid wastes if they are applied to the land and that is their ordinary manner of use.

(2) *Burning for energy recovery*. (i) Materials noted with a “*” in column 2 of Table 1 are solid wastes when they are:

(A) Burned to recover energy;

(B) Used to produce a fuel or are otherwise contained in fuels (in which cases the fuel itself remains a solid waste).

(ii) However, commercial chemical products listed in § 261.33 are not solid wastes if they are themselves fuels.

(3) *Reclaimed*. Materials noted with a “*” in column 3 of Table 1 are solid wastes when reclaimed.

(4) *Accumulated speculatively*. Materials noted with a “*” in column 4 of Table 1 are solid wastes when accumulated speculatively.

TABLE 1

	Use constituting disposal (§ 261.2(c)(1))	Energy recovery/fuel (§ 261.2(c)(2))	Reclamation (§ 261.2(c)(3))	Speculative accumulation (§ 261.2(c)(4))
	(1)	(2)	(3)	(4)
Spent Materials.....	(*)	(*)	(*)	(*)
Sludges (listed in 40 CFR part 261.31 or 261.32).....	(*)	(*)	(*)	(*)
Sludges exhibiting a characteristic of hazardous waste.....	(*)	(*)		(*)
By-products (listed in 40 CFR part 261.31 or 261.32).....	(*)	(*)	(*)	(*)
By-products exhibiting a characteristic of hazardous waste.....	(*)	(*)		(*)
Commercial chemical products listed in 40 CFR 261.33.....	(*)	(*)		
Scrap metal.....	(*)	(*)	(*)	(*)

Note: The terms “spent materials”, “sludges”, “by-products,” and “scrap metal” are defined in § 261.1.

(d) *Inherently waste-like materials*. The following materials are solid wastes when they are recycled in any manner:

(1) Hazardous Waste Nos. F020, F021 (unless used as an ingredient to make a product at the site of generation), F022, F023, F026, and F028.

(2) Secondary materials fed to a halogen acid furnace that exhibit a characteristic of a hazardous waste or are listed as a hazardous waste as defined in subparts C or D of this part.

(3) The Administrator will use the following criteria to add wastes to that list:

(i)(A) The materials are ordinarily disposed of, burned, or incinerated; or

(B) The materials contain toxic constituents listed in appendix VIII of part 261 and these constituents are not ordinarily found in raw materials or products for which the materials substitute (or are found in raw materials or products in smaller concentrations) and are not used or reused during the recycling process; and

(ii) The material may pose a substantial hazard to human health and the environment when recycled.

(e) *Materials that are not solid waste when recycled.* (1) Materials are not solid wastes when they can be shown to be recycled by being:

(i) Used or reused as ingredients in an industrial process to make a product, provided the materials are not being reclaimed; or

(ii) Used or reused as effective substitutes for commercial products; or

(iii) Returned to the original process from which they are generated, without first being reclaimed. The material must be returned as a substitute for raw material feedstock, and the process must use raw materials as principal feedstocks.

(2) The following materials are solid wastes, even if the recycling involves use, reuse, or return to the original process (described in paragraphs (e)(1) (i) through (iii) of this section):

(i) Materials used in a manner constituting disposal, or used to produce products that are applied to the land; or

(ii) Materials burned for energy recovery, used to produce a fuel, or contained in fuels; or

(iii) Materials accumulated speculatively; or

(iv) Materials listed in paragraph (d)(1) of this section.

(f) *Documentation of claims that materials are not solid wastes or are conditionally exempt from regulation.* Respondents in actions to enforce regulations implementing Subtitle C of RCRA who raise a claim that a certain material is not a solid waste, or is conditionally exempt from regulation, must demonstrate that there is a known market or disposition for the material, and that they meet the terms of the exclusion or exemption. In doing so, they must provide appropriate documentation (such as contracts showing that a second person uses the material as an ingredient in a production process) to demonstrate that the material is not a waste, or is exempt from regulation. In addition, owners or operators of facilities claiming that they actually are recycling materials must show that they have the necessary equipment to do so.

[50 FR 664, Jan. 4, 1985, as amended at 50 FR 33542, Aug. 20, 1985; 56 FR 7206, Feb. 21, 1991]

EFFECTIVE DATE NOTE: At 56 FR 7206, February 21, 1991, § 261.2 was amended by redesignating paragraph (d)(2) as (d)(3) and adding a new paragraph (d)(2), effective August 21, 1991.

§ 261.3 Definition of hazardous waste.

(a) A solid waste, as defined in § 261.2, is a hazardous waste if:

(1) It is not excluded from regulation as a hazardous waste under § 261.4(b); and

(2) It meets any of the following criteria:

(i) It exhibits any of the characteristics of hazardous waste identified in subpart C except that any mixture of a waste from the extraction, beneficiation, and processing of ores and minerals excluded under § 261.4(b)(7) and any other solid waste exhibiting a characteristic of hazardous waste under subpart C of this part only if it exhibits a characteristic that would not have been exhibited by the excluded waste alone if such mixture had not occurred or if it continues to exhibit any of the characteristics exhibited by the non-excluded wastes prior to mixture. Further, for the purposes of applying the Extraction Procedure Toxicity characteristic to such mixtures, the mixture is also a hazardous waste if it exceeds the maximum concentration for any contaminant listed in table I to § 261.24 that would not have been exceeded by the excluded waste alone if the mixture had not occurred or if it continues to exceed the maximum concentration for any contaminant exceeded by the nonexempt waste prior to mixture.

(ii) It is listed in subpart D and has not been excluded from the lists in subpart D under §§ 260.20 and 260.22 of this chapter.

(iii) It is a mixture of a solid waste and a hazardous waste that is listed in subpart D of this part solely because it exhibits one or more of the characteristics of hazardous waste identified in subpart C, unless the resultant mixture no longer exhibits any characteristic of hazardous waste identified in subpart C of this part or unless the solid waste is excluded from regulation

under § 261.4(b)(7) and the resultant mixture no longer exhibits any characteristic of hazardous waste identified in subpart C of this part for which the hazardous waste listed in subpart D of this part was listed.

(iv) It is a mixture of solid waste and one or more hazardous wastes listed in subpart D and has not been excluded from this paragraph under §§ 260.20 and 260.22 of this chapter; however, the following mixtures of solid wastes and hazardous wastes listed in subpart D are not hazardous wastes (except by application of paragraph (a)(2) (i) or (ii) of this section) if the generator can demonstrate that the mixture consists of wastewater the discharge of which is subject to regulation under either section 402 or section 307(b) of the Clean Water Act (including wastewater at facilities which have eliminated the discharge of wastewater) and:

(A) One or more of the following spent solvents listed in § 261.31—carbon tetrachloride, tetrachloroethylene, trichloroethylene—*Provided*, That the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 1 part per million; or

(B) One or more of the following spent solvents listed in § 261.31—methylene chloride, 1,1,1-trichloroethane, chlorobenzene, o-dichlorobenzene, cresols, cresylic acid, nitrobenzene, toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, spent chlorofluorocarbon solvents—provided that the maximum total weekly usage of these solvents (other than the amounts that can be demonstrated not to be discharged to wastewater) divided by the average weekly flow of wastewater into the headworks of the facility's wastewater treatment or pretreatment system does not exceed 25 parts per million; or

(C) One of the following wastes listed in § 261.32—heat exchanger bundle cleaning sludge from the petroleum refining industry (EPA Hazardous Waste No. K050); or

(D) A discarded commercial chemical product, or chemical intermediate listed in § 261.33, arising from *de minimis* losses of these materials from manufacturing operations in which these materials are used as raw materials or are produced in the manufacturing process. For purposes of this subparagraph, "*de minimis*" losses include those from normal material handling operations (e.g. spills from the unloading or transfer of materials from bins or other containers, leaks from pipes, valves or other devices used to transfer materials); minor leaks of process equipment, storage tanks or containers; leaks from well-maintained pump packings and seals; sample purgings; relief device discharges; discharges from safety showers and rinsing and cleaning of personal safety equipment; and rinsate from empty containers or from containers that are rendered empty by that rinsing; or

(E) Wastewater resulting from laboratory operations containing toxic (T) wastes listed in subpart D, *Provided*, That the annualized average flow of laboratory wastewater does not exceed one percent of total wastewater flow into the headworks of the facility's wastewater treatment or pretreatment system, or provided the wastes, combined annualized average concentration does not exceed one part per million in the headworks of the facility's wastewater treatment or pretreatment facility. Toxic (T) wastes used in laboratories that are demonstrated not to be discharged to wastewater are not to be included in this calculation.

(b) A solid waste which is not excluded from regulation under paragraph (a)(1) of this section becomes a hazardous waste when any of the following events occur:

(1) In the case of a waste listed in subpart D, when the waste first meets the listing description set forth in subpart D.

(2) In the case of a mixture of solid waste and one or more listed hazardous wastes, when a hazardous waste listed in subpart D is first added to the solid waste.

(3) In the case of any other waste (including a waste mixture), when the

waste exhibits any of the characteristics identified in subpart C.

(c) Unless and until it meets the criteria of paragraph (d):

(1) A hazardous waste will remain a hazardous waste.

(2)(i) Except as otherwise provided in paragraph (c)(2)(ii) of this section, any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust, or leachate (but not including precipitation run-off) is a hazardous waste. (However, materials that are reclaimed from solid wastes and that are used beneficially are not solid wastes and hence are not hazardous wastes under this provision unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal.)

(ii) The following solid wastes are not hazardous even though they are generated from the treatment, storage, or disposal of a hazardous waste, unless they exhibit one or more of the characteristics of hazardous waste:

(A) Waste pickle liquor sludge generated by lime stabilization of spent pickle liquor from the iron and steel industry (SIC Codes 331 and 332).

(B) Waste from burning any of the materials exempted from regulation by § 261.6(a)(3) (v) through (viii).

(d) Any solid waste described in paragraph (c) of this section is not a hazardous waste if it meets the following criteria:

(1) In the case of any solid waste, it does not exhibit any of the characteristics of hazardous waste identified in subpart C. (However, wastes that exhibit a characteristic at the point of generation may still be subject to the requirements of part 268, even if they no longer exhibit a characteristic at the point of land disposal.)

(2) In the case of a waste which is a listed waste under subpart D, contains a waste listed under subpart D or is derived from a waste listed in subpart D, it also has been excluded from paragraph (c) under §§ 260.20 and 260.22 of this chapter.

[45 FR 33119, May 19, 1980, as amended at 46 FR 56588, Nov. 17, 1981; 50 FR 14219, Apr. 11, 1985; 50 FR 49202, Nov. 29, 1985; 52 FR 11821, Apr. 13, 1987; 54 FR 36641, Sept.

1, 1989; 56 FR 3876, Jan. 31, 1991; 56 FR 32692, July 17, 1991]

EFFECTIVE DATE NOTE: At 56 FR 32692, July 17, 1991, in § 261.3, paragraph (c)(2)(ii)(B) was amended by replacing "by § 261.6(a)(3)(v) through (ix)" with "by § 261.6(a)(3)(v) through (viii)", effective August 21, 1991.

§ 261.4 Exclusions.

(a) *Materials which are not solid wastes.* The following materials are not solid wastes for the purpose of this part:

(1)(i) Domestic sewage; and

(ii) Any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. "Domestic sewage" means untreated sanitary wastes that pass through a sewer system.

(2) Industrial wastewater discharges that are point source discharges subject to regulation under section 402 of the Clean Water Act, as amended.

[*Comment:* This exclusion applies only to the actual point source discharge. It does not exclude industrial wastewaters while they are being collected, stored or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.]

(3) Irrigation return flows.

(4) Source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*

(5) Materials subjected to in-situ mining techniques which are not removed from the ground as part of the extraction process.

(6) Pulping liquors (*i.e.*, black liquor) that are reclaimed in a pulping liquor recovery furnace and then reused in the pulping process, unless it is accumulated speculatively as defined in § 261.1(c) of this chapter.

(7) Spent sulfuric acid used to produce virgin sulfuric acid, unless it is accumulated speculatively as defined in § 261.1(c) of this chapter.

(8) Secondary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process provided:

(i) Only tank storage is involved, and the entire process through completion

of reclamation is closed by being entirely connected with pipes or other comparable enclosed means of conveyance;

(ii) Reclamation does not involve controlled flame combustion (such as occurs in boilers, industrial furnaces, or incinerators);

(iii) The secondary materials are never accumulated in such tanks for over twelve months without being reclaimed; and

(iv) The reclaimed material is not used to produce a fuel, or used to produce products that are used in a manner constituting disposal.

(9)(i) Spent wood preserving solutions that have been reclaimed and are reused for their original intended purpose; and

(ii) Wastewaters from the wood preserving process that have been reclaimed and are reused to treat wood.

(10) When used as a fuel, coke and coal tar from the iron and steel industry that contains or is produced from decanter tank tar sludge, EPA Hazardous Waste K087. The process of producing coke and coal tar from such decanter tank tar sludge in a coke oven is likewise excluded from regulation.

(b) *Solid wastes which are not hazardous wastes.* The following solid wastes are not hazardous wastes:

(1) Household waste, including household waste that has been collected, transported, stored, treated, disposed, recovered (e.g., refuse-derived fuel) or reused. "Household waste" means any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and day-use recreation areas). A resource recovery facility managing municipal solid waste shall not be deemed to be treating, storing, disposing of, or otherwise managing hazardous wastes for the purposes of regulation under this subtitle, if such facility:

(i) Receives and burns only

(A) Household waste (from single and multiple dwellings, hotels, motels, and other residential sources) and

(B) Solid waste from commercial or industrial sources that does not contain hazardous waste; and

(ii) Such facility does not accept hazardous wastes and the owner or operator of such facility has established contractual requirements or other appropriate notification or inspection procedures to assure that hazardous wastes are not received at or burned in such facility.

(2) Solid wastes generated by any of the following and which are returned to the soils as fertilizers:

(i) The growing and harvesting of agricultural crops.

(ii) The raising of animals, including animal manures.

(3) Mining overburden returned to the mine site.

(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, generated primarily from the combustion of coal or other fossil fuels, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

(5) Drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas or geothermal energy.

(6)(i) Wastes which fail the test for the Toxicity Characteristic because chromium is present or are listed in subpart D due to the presence of chromium, which do not fail the test for the Toxicity Characteristic for any other constituent or are not listed due to the presence of any other constituent, and which do not fail the test for any other characteristic, if it is shown by a waste generator or by waste generators that:

(A) The chromium in the waste is exclusively (or nearly exclusively) trivalent chromium; and

(B) The waste is generated from an industrial process which uses trivalent chromium exclusively (or nearly exclusively) and the process does not generate hexavalent chromium; and

(C) The waste is typically and frequently managed in non-oxidizing environments.

(ii) Specific wastes which meet the standard in paragraphs (b)(6)(i)(A), (B) and (C) (so long as they do not fail the test for the characteristic of EP

toxicity, and do not fail the test for any other characteristic) are:

(A) Chrome (blue) trimmings generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(B) Chrome (blue) shavings generated by the following subcategories of the leather tanning and finishing industry: Hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(C) Buffing dust generated by the following subcategories of the leather tanning and finishing industry: hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue.

(D) Sewer screenings generated by the following subcategories of the leather tanning and finishing industry: Hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(E) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: Hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; retan/wet finish; no beamhouse; through-the-blue; and shearling.

(F) Wastewater treatment sludges generated by the following subcategories of the leather tanning and finishing industry: Hair pulp/chrome tan/retan/wet finish; hair save/chrome tan/retan/wet finish; and through-the-blue.

(G) Waste scrap leather from the leather tanning industry, the shoe manufacturing industry, and other leather product manufacturing industries.

(H) Wastewater treatment sludges from the production of TiO_2 pigment using chromium-bearing ores by the chloride process.

(7) Solid waste from the extraction, beneficiation, and processing of ores

and minerals (including coal, phosphate rock and overburden from the mining of uranium ore), except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste. For purposes of § 261.4(b)(7), beneficiation of ores and minerals is restricted to the following activities: Crushing; grinding; washing; dissolution; crystallization; filtration; sorting; sizing; drying; sintering; pelletizing; briquetting; calcining to remove water and/or carbon dioxide; roasting, autoclaving, and/or chlorination in preparation for leaching (except where the roasting (and/or autoclaving and/or chlorination)/leaching sequence produces a final or intermediate product that does not undergo further beneficiation or processing); gravity concentration; magnetic separation; electrostatic separation; flotation; ion exchange; solvent extraction; electrowinning; precipitation; amalgamation; and heap, dump, vat, tank, and *in situ* leaching. For the purpose of § 261.4(b)(7), solid waste from the processing of ores and minerals includes only the following wastes:

(i) Slag from primary copper processing;

(ii) Slag from primary lead processing;

(iii) Red and brown muds from bauxite refining;

(iv) Phosphogypsum from phosphoric acid production;

(v) Slag from elemental phosphorus production;

(vi) Gasifier ash from coal gasification;

(vii) Process wastewater from coal gasification;

(viii) Calcium sulfate wastewater treatment plant sludge from primary copper processing;

(ix) Slag tailings from primary copper processing;

(x) Fluorogypsum from hydrofluoric acid production;

(xi) Process wastewater from hydrofluoric acid production;

(xii) Air pollution control dust/sludge from iron blast furnaces;

(xiii) Iron blast furnace slag;

(xiv) Treated residue from roasting/leaching of chrome ore;

(xv) Process wastewater from primary magnesium processing by the anhydrous process;

(xvi) Process wastewater from phosphoric acid production;

(xvii) Basic oxygen furnace and open hearth furnace air pollution control dust/sludge from carbon steel production;

(xviii) Basic oxygen furnace and open hearth furnace slag from carbon steel production;

(xix) Chloride process waste solids from titanium tetrachloride production;

(xx) Slag from primary zinc processing.

(8) Cement kiln dust waste, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

(9) Solid waste which consists of discarded wood or wood products which fails the test for the Toxicity Characteristic solely for arsenic and which is not a hazardous waste for any other reason or reasons, if the waste is generated by persons who utilize the arsenical-treated wood and wood products for these materials' intended end use.

(10) Petroleum-contaminated media and debris that fail the test for the Toxicity Characteristic of § 261.24 (Hazardous Waste Codes D018 through D043 only) and are subject to the corrective action regulations under part 280 of this chapter.

(11) Injected groundwater that is hazardous only because it exhibits the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) in § 261.24 of this part that is reinjected through an underground injection well pursuant to free phase hydrocarbon recovery operations undertaken at petroleum refineries, petroleum marketing terminals, petroleum bulk plants, petroleum pipelines, and petroleum transportation spill sites until January 25, 1993. This extension applies to recovery operations in existence, or for which contracts have been issued, on or before March 25, 1991. For groundwater returned through infiltration galleries from such operations at petroleum refineries, marketing terminals, and bulk plants, until [insert date six months after publica-

tion]. New operations involving injection wells (beginning after March 25, 1991) will qualify for this compliance date extension (until January 25, 1993) only if:

(i) Operations are performed pursuant to a written state agreement that includes a provision to assess the groundwater and the need for further remediation once the free phase recovery is completed; and

(ii) A copy of the written agreement has been submitted to: Characteristics Section (OS-333), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460.

(12) Used chlorofluorocarbon refrigerants from totally enclosed heat transfer equipment, including mobile air conditioning systems, mobile refrigeration, and commercial and industrial air conditioning and refrigeration systems that use chlorofluorocarbons as the heat transfer fluid in a refrigeration cycle, provided the refrigerant is reclaimed for further use.

(c) Hazardous wastes which are exempted from certain regulations. A hazardous waste which is generated in a product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit, is not subject to regulation under parts 262 through 265, 268, 270, 271 and 124 of this chapter or to the notification requirements of section 3010 of RCRA until it exits the unit in which it was generated, unless the unit is a surface impoundment, or unless the hazardous waste remains in the unit more than 90 days after the unit ceases to be operated for manufacturing, or for storage or transportation of product or raw materials.

(d) *Samples.* (1) Except as provided in paragraph (d)(2) of this section, a sample of solid waste or a sample of water, soil, or air, which is collected for the sole purpose of testing to determine its characteristics or composition, is not subject to any requirements of this part or parts 262 through 268 or part 270 or part 124 of this chapter or to the notification requirements of section 3010 of RCRA, when:

(i) The sample is being transported to a laboratory for the purpose of testing; or

(ii) The sample is being transported back to the sample collector after testing; or

(iii) The sample is being stored by the sample collector before transport to a laboratory for testing; or

(iv) The sample is being stored in a laboratory before testing; or

(v) The sample is being stored in a laboratory after testing but before it is returned to the sample collector; or

(vi) The sample is being stored temporarily in the laboratory after testing for a specific purpose (for example, until conclusion of a court case or enforcement action where further testing of the sample may be necessary).

(2) In order to qualify for the exemption in paragraphs (d)(1) (i) and (ii) of this section, a sample collector shipping samples to a laboratory and a laboratory returning samples to a sample collector must:

(i) Comply with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

(ii) Comply with the following requirements if the sample collector determines that DOT, USPS, or other shipping requirements do not apply to the shipment of the sample:

(A) Assure that the following information accompanies the sample:

(1) The sample collector's name, mailing address, and telephone number;

(2) The laboratory's name, mailing address, and telephone number;

(3) The quantity of the sample;

(4) The date of shipment; and

(5) A description of the sample.

(B) Package the sample so that it does not leak, spill, or vaporize from its packaging.

(3) This exemption does not apply if the laboratory determines that the waste is hazardous but the laboratory is no longer meeting any of the conditions stated in paragraph (d)(1) of this section.

(e) *Treatability Study Samples.* (1) Except as provided in paragraph (e)(2) of this section, persons who generate or collect samples for the purpose of conducting treatability studies as de-

fined in section 260.10, are not subject to any requirement of parts 261 through 263 of this chapter or to the notification requirements of Section 3010 of RCRA, nor are such samples included in the quantity determinations of § 261.5 and § 262.34(d) when:

(i) The sample is being collected and prepared for transportation by the generator or sample collector; or

(ii) The sample is being accumulated or stored by the generator or sample collector prior to transportation to a laboratory or testing facility; or

(iii) The sample is being transported to the laboratory or testing facility for the purpose of conducting a treatability study.

(2) The exemption in paragraph (e)(1) of this section is applicable to samples of hazardous waste being collected and shipped for the purpose of conducting treatability studies provided that:

(i) The generator or sample collector uses (in "treatability studies") no more than 1000 kg of any non-acute hazardous waste, 1 kg of acute hazardous waste, or 250 kg of soils, water, or debris contaminated with acute hazardous waste for each process being evaluated for each generated waste stream; and

(ii) The mass of each sample shipment does not exceed 1000 kg of non-acute hazardous waste, 1 kg of acute hazardous waste, or 250 kg of soils, water, or debris contaminated with acute hazardous waste; and

(iii) The sample must be packaged so that it will not leak, spill, or vaporize from its packaging during shipment and the requirements of paragraph A or B of this subparagraph are met.

(A) The transportation of each sample shipment complies with U.S. Department of Transportation (DOT), U.S. Postal Service (USPS), or any other applicable shipping requirements; or

(B) If the DOT, USPS, or other shipping requirements do not apply to the shipment of the sample, the following information must accompany the sample:

(1) The name, mailing address, and telephone number of the originator of the sample;

(2) The name, address, and telephone number of the facility that will perform the treatability study;

(3) The quantity of the sample;

(4) The date of shipment; and

(5) A description of the sample, including its EPA Hazardous Waste Number.

(iv) The sample is shipped to a laboratory or testing facility which is exempt under § 261.4(f) or has an appropriate RCRA permit or interim status.

(v) The generator or sample collector maintains the following records for a period ending 3 years after completion of the treatability study:

(A) Copies of the shipping documents;

(B) A copy of the contract with the facility conducting the treatability study;

(C) Documentation showing:

(1) The amount of waste shipped under this exemption;

(2) The name, address, and EPA identification number of the laboratory or testing facility that received the waste;

(3) The date the shipment was made; and

(4) Whether or not unused samples and residues were returned to the generator.

(vi) The generator reports the information required under paragraph (e)(v)(C) of this section in its biennial report.

(3) The Regional Administrator, or State Director (if located in an authorized State), may grant requests, on a case-by-case basis, for quantity limits in excess of those specified in paragraph (e)(2)(i) of this section, for up to an additional 500 kg of non-acute hazardous waste, 1 kg of acute hazardous waste, and 250 kg of soils, water, or debris contaminated with acute hazardous waste, to conduct further treatability study evaluation when: There has been an equipment or mechanical failure during the conduct of a treatability study; there is a need to verify the results of a previously conducted treatability study; there is a need to study and analyze alternative techniques within a previously evaluated treatment process; or there is a need to do further evaluation of an ongoing

treatability study to determine final specifications for treatment. The additional quantities allowed are subject to all the provisions in paragraphs (e)(1) and (e)(2)(ii)(vi) of this section. The generator or sample collector must apply to the Regional Administrator in the Region where the sample is collected and provide in writing the following information:

(i) The reason why the generator or sample collector requires additional quantity of sample for the treatability study evaluation and the additional quantity needed;

(ii) Documentation accounting for all samples of hazardous waste from the waste stream which have been sent for or undergone treatability studies including the data each previous sample from the waste stream was shipped, the quantity of each previous shipment, the laboratory or testing facility to which it was shipped, what treatability study processes were conducted on each sample shipped, and the available results of each treatability study;

(iii) A description of the technical modifications or change in specifications which will be evaluated and the expected results;

(iv) If such further study is being required due to equipment or mechanical failure, the applicant must include information regarding the reason for the failure or breakdown and also include what procedures or equipment improvements have been made to protect against further breakdowns; and

(v) Such other information that the Regional Administrator considers necessary.

(f) *Samples Undergoing Treatability Studies at Laboratories and Testing Facilities.* Samples undergoing treatability studies and the laboratory or testing facility conducting such treatability studies (to the extent such facilities are not otherwise subject to RCRA requirements) are not subject to any requirement of this part, part 124, parts 262-266, 268, and 270, or to the notification requirements of Section 3010 of RCRA provided that the conditions of paragraphs (f) (1) through (11) of this section are met. A mobile treatment unit (MTU) may qualify as a testing facility subject to

paragraphs (f) (1) through (11) of this section. Where a group of MTUs are located at the same site, the limitations specified in (f) (1) through (11) of this section apply to the entire group of MTUs collectively as if the group were one MTU.

(1) No less than 45 days before conducting treatability studies, the facility notifies the Regional Administrator, or State Director (if located in an authorized State), in writing that it intends to conduct treatability studies under this paragraph.

(2) The laboratory or testing facility conducting the treatability study has an EPA identification number.

(3) No more than a total of 250 kg of "as received" hazardous waste is subjected to initiation of treatment in all treatability studies in any single day. "As received" waste refers to the waste as received in the shipment from the generator or sample collector.

(4) The quantity of "as received" hazardous waste stored at the facility for the purpose of evaluation in treatability studies does not exceed 1000 kg, the total of which can include 500 kg of soils, water, or debris contaminated with acute hazardous waste or 1 kg of acute hazardous waste. This quantity limitation does not include:

(i) Treatability study residues; and

(ii) Treatment materials (including nonhazardous solid waste) added to "as received" hazardous waste.

(5) No more than 90 days have elapsed since the treatability study for the sample was completed, or no more than one year has elapsed since the generator or sample collector shipped the sample to the laboratory or testing facility, whichever date first occurs.

(6) The treatability study does not involve the placement of hazardous waste on the land or open burning of hazardous waste.

(7) The facility maintains records for 3 years following completion of each study that show compliance with the treatment rate limits and the storage time and quantity limits. The following specific information must be included for each treatability study conducted:

(i) The name, address, and EPA identification number of the generator

or sample collector of each waste sample;

(ii) The date the shipment was received;

(iii) The quantity of waste accepted;

(iv) The quantity of "as received" waste in storage each day;

(v) The date the treatment study was initiated and the amount of "as received" waste introduced to treatment each day;

(vi) The date the treatability study was concluded;

(vii) The date any unused sample or residues generated from the treatability study were returned to the generator or sample collector or, if sent to a designated facility, the name of the facility and the EPA identification number.

(8) The facility keeps, on-site, a copy of the treatability study contract and all shipping papers associated with the transport of treatability study samples to and from the facility for a period ending 3 years from the completion date of each treatability study.

(9) The facility prepares and submits a report to the Regional Administrator, or State Director (if located in an authorized State), by March 15 of each year that estimates the number of studies and the amount of waste expected to be used in treatability studies during the current year, and includes the following information for the previous calendar year:

(i) The name, address, and EPA identification number of the facility conducting the treatability studies;

(ii) The types (by process) of treatability studies conducted;

(iii) The names and addresses of persons for whom studies have been conducted (including their EPA identification numbers);

(iv) The total quantity of waste in storage each day;

(v) The quantity and types of waste subjected to treatability studies;

(vi) When each treatability study was conducted;

(vii) The final disposition of residues and unused sample from each treatability study.

(10) The facility determines whether any unused sample or residues generated by the treatability study are hazardous waste under § 261.3 and, if so,

are subject to parts 261 through 268, and part 270 of this chapter, unless the residues and unused samples are returned to the sample originator under the § 261.4(e) exemption.

(11) The facility notifies the Regional Administrator, or State Director (if located in an authorized State), by letter when the facility is no longer planning to conduct any treatability studies at the site.

(Approved by the Office of Management and Budget under control number 2050-0088)

[45 FR 33119, May 19, 1980]

EDITORIAL NOTE: FOR FEDERAL REGISTER citations affecting § 261.4, see the List of CFR Sections Affected in the Finding Aids section of this volume.

EFFECTIVE DATE NOTES: 1. At 56 FR 7206, Feb. 21, 1991, § 261.4 was amended by adding paragraph (a)(10) and revising paragraph (b)(4), the first sentence of paragraph (b)(7), and paragraph (b)(8), effective August 21, 1991. For the convenience of the user, the superseded text appears as follows:

§ 261.4 Exclusions.

* * * * *

(b) * * *

(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

* * * * *

(7) Solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal), including phosphate rock and overburden from the mining of uranium ore. * * *

(8) Cement kiln dust waste.

* * * * *

2. At 56 FR 27318, June 13, 1991, § 261.4 was amended by revising the last sentence of the introductory text of paragraph (b)(7), effective July 15, 1991. For the convenience of the user, the superseded text is set forth below:

§ 261.4 Exclusions.

(b) * * *

(7) * * * For the purposes of § 261.4(b)(7), solid waste from the processing of ores and minerals will include only the following wastes, until EPA completes a report to

Congress and a regulatory determination on their ultimate regulatory status:

* * * * *

§ 261.5 Special requirements for hazardous waste generated by conditionally exempt small quantity generators.

(a) A generator is a conditionally exempt small quantity generator in a calendar month if he generates no more than 100 kilograms of hazardous waste in that month.

(b) Except for those wastes identified in paragraphs (e), (f), (g), and (j) of this section, a conditionally exempt small quantity generator's hazardous wastes are not subject to regulation under parts 262 through 266, 268, and parts 270 and 124 of this chapter, and the notification requirements of section 3010 of RCRA, provided the generator complies with the requirements of paragraphs (f), (g), and (j) of this section.

(c) Hazardous waste that is not subject to regulation or that is subject only to § 262.11, § 262.12, § 262.40(c), and § 262.41 is not included in the quantity determinations of this part and parts 262 through 266, 268, and 270 and is not subject to any of the requirements of those parts. Hazardous waste that is subject to the requirements of § 261.6 (b) and (c) and subparts C, D, and F of part 266 is included in the quantity determination of this part and is subject to the requirements of parts 262 through 266 and 270.

(d) In determining the quantity of hazardous waste generated, a generator need not include:

(1) Hazardous waste when it is removed from on-site storage; or

(2) Hazardous waste produced by on-site treatment (including reclamation) of his hazardous waste, so long as the hazardous waste that is treated was counted once; or

(3) Spent materials that are generated, reclaimed, and subsequently reused on-site, so long as such spent materials have been counted once.

(e) If a generator generates acute hazardous waste in a calendar month in quantities greater than set forth below, all quantities of that acute haz-

ardous waste are subject to full regulation under parts 262 through 266, 268, and parts 270 and 124 of this chapter, and the notification requirements of section 3010 of RCRA:

(1) A total of one kilogram of acute hazardous wastes listed in §§ 261.31, 261.32, or 261.33(e).

(2) A total of 100 kilograms of any residue or contaminated soil, waste, or other debris resulting from the clean-up of a spill, into or on any land or water, of any acute hazardous wastes listed in §§ 261.31, 261.32, or 261.33(e).

[Comment: "Full regulation" means those regulations applicable to generators of greater than 1,000 kg of non-acutely hazardous waste in a calendar month.]

(f) In order for acute hazardous wastes generated by a generator of acute hazardous wastes in quantities equal to or less than those set forth in paragraph (e)(1) or (2) of this section to be excluded from full regulation under this section, the generator must comply with the following requirements:

(1) Section 262.11 of this chapter;

(2) The generator may accumulate acute hazardous waste on-site. If he accumulates at any time acute hazardous wastes in quantities greater than those set forth in paragraph (e)(1) or (e)(2) of this section, all of those accumulated wastes are subject to regulation under parts 262 through 266, 268, and parts 270 and 124 of this chapter, and the applicable notification requirements of section 3010 of RCRA. The time period of § 262.34(a) of this chapter, for accumulation of wastes on-site, begins when the accumulated wastes exceed the applicable exclusion limit;

(3) A conditionally exempt small quantity generator may either treat or dispose of his acute hazardous waste in an on-site facility or ensure delivery to an off-site treatment, storage or disposal facility, either of which, if located in the U.S., is:

(i) Permitted under part 270 of this chapter;

(ii) In interim status under parts 270 and 265 of this chapter;

(iii) Authorized to manage hazardous waste by a State with a hazardous waste management program approved under part 271 of this chapter;

(iv) Permitted, licensed, or registered by a State to manage municipal or industrial solid waste; or

(v) A facility which:

(A) Beneficially uses or reuses, or legitimately recycles or reclaims its waste; or

(B) Treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.

(g) In order for hazardous waste generated by a conditionally exempt small quantity generator in quantities of less than 100 kilograms of hazardous waste during a calendar month to be excluded from full regulation under this section, the generator must comply with the following requirements:

(1) Section 262.11 of this chapter;

(2) The conditionally exempt small quantity generator may accumulate hazardous waste on-site. If he accumulates at any time more than a total of 1000 kilograms of his hazardous wastes, all of those accumulated wastes are subject to regulation under the special provisions of part 262 applicable to generators of between 100 kg and 1000 kg of hazardous waste in a calendar month as well as the requirements of parts 263 through 266, 268, and parts 270 and 124 of this chapter, and the applicable notification requirements of section 3010 of RCRA. The time period of § 262.34(d) for accumulation of wastes on-site begins for a conditionally exempt small quantity generator when the accumulated wastes exceed 1000 kilograms;

(3) A conditionally exempt small quantity generator may either treat or dispose of his hazardous waste in an on-site facility or ensure delivery to an off-site treatment, storage or disposal facility, either of which, if located in the U.S., is:

(i) Permitted under part 270 of this chapter;

(ii) In interim status under parts 270 and 265 of this chapter;

(iii) Authorized to manage hazardous waste by a State with a hazardous waste management program approved under part 271 of this chapter;

(iv) Permitted, licensed, or registered by a State to manage municipal or industrial solid waste; or

(v) A facility which:

(A) Beneficially uses or reuses, or legitimately recycles or reclaims its waste; or

(B) Treats its waste prior to beneficial use or reuse, or legitimate recycling or reclamation.

(h) Hazardous waste subject to the reduced requirements of this section may be mixed with non-hazardous waste and remain subject to these reduced requirements even though the resultant mixture exceeds the quantity limitations identified in this section, unless the mixture meets any of the characteristics of hazardous waste identified in subpart C.

(i) If any person mixes a solid waste with a hazardous waste that exceeds a quantity exclusion level of this section, the mixture is subject to full regulation.

(j) If a conditionally exempt small quantity generator's wastes are mixed with used oil, the mixture is subject to subpart E of part 266 of this chapter if it is destined to be burned for energy recovery. Any material produced from such a mixture by processing, blending, or other treatment is also so regulated if it is destined to be burned for energy recovery.

[51 FR 10174, Mar. 24, 1986, as amended at 51 FR 28682, Aug. 8, 1986; 51 FR 40637, Nov. 7, 1986; 53 FR 27163, July 19, 1988]

§ 261.6 Requirements for recyclable materials.

(a)(1) Hazardous wastes that are recycled are subject to the requirements for generators, transporters, and storage facilities of paragraphs (b) and (c) of this section, except for the materials listed in paragraphs (a)(2) and (a)(3) of this section. Hazardous wastes that are recycled will be known as "recyclable materials."

(2) The following recyclable materials are not subject to the requirements of this section but are regulated under subparts C through H of part 266 of this chapter and all applicable provisions in parts 270 and 124 of this chapter:

(i) Recyclable materials used in a manner constituting disposal (subpart C);

(ii) Hazardous wastes burned for energy recovery in boilers and industrial furnaces that are not regulated

under subpart O of part 264 or 265 of this chapter (subpart H);

(iii) Used oil that exhibits one or more of the characteristics of hazardous waste and is burned for energy recovery in boilers and industrial furnaces that are not regulated under subpart O of part 264 or 265 of this chapter (subpart E);

(iv) Recyclable materials from which precious metals are reclaimed (subpart F);

(v) Spent lead-acid batteries that are being reclaimed (subpart G).

(3) The following recyclable materials are not subject to regulation under parts 262 through parts 266 or parts 268, 270 or 124 of this chapter, and are not subject to the notification requirements of section 3010 of RCRA:

(i) Industrial ethyl alcohol that is reclaimed except that, unless provided otherwise in an international agreement as specified in § 262.58:

(A) A person initiating a shipment for reclamation in a foreign country, and any intermediary arranging for the shipment, must comply with the requirements applicable to a primary exporter in §§ 262.53, 262.56 (a)(1)-(4), (6), and (b), and 262.57, export such materials only upon consent of the receiving country and in conformance with the EPA Acknowledgment of Consent as defined in subpart E of part 262, and provide a copy of the EPA Acknowledgment of Consent to the shipment to the transporter transporting the shipment for export;

(B) Transporters transporting a shipment for export may not accept a shipment if he knows the shipment does not conform to the EPA Acknowledgment of Consent, must ensure that a copy of the EPA Acknowledgment of Consent accompanies the shipment and must ensure that it is delivered to the facility designated by the person initiating the shipment.

(ii) Used batteries (or used battery cells) returned to a battery manufacturer for regeneration;

(iii) Used oil that exhibits one or more of the characteristics of hazardous waste but is recycled in some other manner than being burned for energy recovery;

(iv) Scrap metal;

(v) Fuels produced from the refining of oil-bearing hazardous wastes along with normal process streams at a petroleum refining facility if such wastes result from normal petroleum refining, production, and transportation practices;

(vi) Oil reclaimed from hazardous waste resulting from normal petroleum refining, production, and transportation practices, which oil is to be refined along with normal process streams at a petroleum refining facility;

(vii)(A) Hazardous waste fuel produced from oil-bearing hazardous wastes from petroleum refining, production, or transportation practices, or produced from oil reclaimed from such hazardous wastes, where such hazardous wastes are reintroduced into a process that does not use distillation or does not produce products from crude oil so long as the resulting fuel meets the used oil specification under § 266.40(e) of this chapter and so long as no other hazardous wastes are used to produce the hazardous waste fuel;

(B) Hazardous waste fuel produced from oil-bearing hazardous waste from petroleum refining production, and transportation practices, where such hazardous wastes are reintroduced into a refining process after a point at which contaminants are removed, so long as the fuel meets the used oil fuel specification under § 266.40(e) of this chapter; and

(C) Oil reclaimed from oil-bearing hazardous wastes from petroleum refining, production, and transportation practices, which reclaimed oil is burned as a fuel without reintroduction to a refining process, so long as the reclaimed oil meets the used oil fuel specification under § 266.40(e) of this chapter; and

(viii) Petroleum coke produced from petroleum refinery hazardous wastes containing oil at the same facility at which such wastes were generated, unless the resulting coke product exceeds one or more of the characteristics of hazardous waste in part 261, subpart C.

(b) Generators and transporters of recyclable materials are subject to the applicable requirements of parts 262 and 263 of this chapter and the notification

requirements under section 3010 of RCRA, except as provided in paragraph (a) of this section.

(c)(1) Owners or operators of facilities that store recyclable materials before they are recycled are regulated under all applicable provisions of subparts A through L, AA, and BB of parts 264 and 265, and under parts 124, 266, 268, and 270 of this chapter and the notification requirements under section 3010 of RCRA, except as provided in paragraph (a) of this section. (The recycling process itself is exempt from regulation except as provided in § 261.6(d).)

(2) Owners or operators of facilities that recycle recyclable materials without storing them before they are recycled are subject to the following requirements, except as provided in paragraph (a) of this section:

(i) Notification requirements under section 3010 of RCRA;

(ii) Sections 265.71 and 265.72 (dealing with the use of the manifest and manifest discrepancies) of this chapter.

(iii) Section 261.6(d) of this chapter.

(d) Owners or operators of facilities subject to RCRA permitting requirements with hazardous waste management units that recycle hazardous wastes are subject to the requirements of subparts AA and BB of part 264 or 265 of this chapter.

[50 FR 49203, Nov. 29, 1985, as amended at 51 FR 28682, Aug. 8, 1986; 51 FR 40637, Nov. 7, 1986; 52 FR 11821, Apr. 13, 1987; 55 FR 25493, June 21, 1990; 56 FR 7207, Feb. 21, 1991; 56 FR 32692, July 17, 1991]

EFFECTIVE DATE NOTE: At 56 FR 7207, Feb. 21, 1991, § 261.6 was amended by removing paragraph (a)(3)(vii) and redesignating paragraphs (a)(3)(viii) and (ix) as paragraphs (a)(3)(vii) and (viii) respectively, effective August 21, 1991. For the convenience of the user, the superseded text appears as follows:

§ 261.6 Requirements for recyclable materials.

- (a) . . .
- (3) . . .

(vii) Coke and coal tar from the iron and steel industry that contains EPA Hazardous Waste No. K087 (Decanter tank tar sludge from coking operations) from the iron and steel production process;

* * * * *

EFFECTIVE DATE NOTE: At 56 FR 32692, July 17, 1991, in § 261.6, paragraph (a)(2) introductory text was amended by replacing "G" with "H", and paragraph (a)(2)(iii) was amended by replacing "subpart D" with "subpart H", effective July 21, 1991.

§ 261.7 Residues of hazardous waste in empty containers.

(a)(1) Any hazardous waste remaining in either (i) an empty container or (ii) an inner liner removed from an empty container, as defined in paragraph (b) of this section, is not subject to regulation under parts 261 through 265, or part 268, 270 or 124 of this chapter or to the notification requirements of section 3010 of RCRA.

(2) Any hazardous waste in either (i) a container that is not empty or (ii) an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to regulation under parts 261 through 265, and parts 268, 270 and 124 of this chapter and to the notification requirements of section 3010 of RCRA.

(b)(1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in §§ 261.31, 261.32, or 261.33(e) of this chapter is empty if:

(i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, *e.g.*, pouring, pumping, and aspirating, *and*

(ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, *or*

(iii)(A) No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, *or*

(B) No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

(2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.

(3) A container or an inner liner removed from a container that has held

an acute hazardous waste listed in §§ 261.31, 261.32, or 261.33(e) is empty if:

(i) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;

(ii) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; *or*

(iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

[45 FR 78529, Nov. 25, 1980, as amended at 47 FR 36097, Aug. 18, 1982; 48 FR 14294, Apr. 1, 1983; 50 FR 1999, Jan. 14, 1985; 51 FR 40637, Nov. 7, 1986]

§ 261.8 PCB wastes regulated under Toxic Substance Control Act.

The disposal of PCB-containing dielectric fluid and electric equipment containing such fluid authorized for use and regulated under part 761 of this chapter and that are hazardous only because they fail the test for the Toxicity Characteristic (Hazardous Waste Codes D018 through D043 only) are exempt from regulation under parts 261 through 265, and parts 268, 270, and 124 of this chapter, and the notification requirements of section 3010 of RCRA.

[55 FR 11862, Mar. 29, 1990]

Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste

§ 261.10 Criteria for identifying the characteristics of hazardous waste.

(a) The Administrator shall identify and define a characteristic of hazardous waste in subpart C only upon determining that:

(1) A solid waste that exhibits the characteristic may:

(i) Cause, or significantly contribute to, an increase in mortality or an in-

crease in serious irreversible, or incapacitating reversible, illness; or

(ii) Pose a substantial present or potential hazard to human health or the environment when it is improperly treated, stored, transported, disposed of or otherwise managed; and

(2) The characteristic can be:

(i) Measured by an available standardized test method which is reasonably within the capability of generators of solid waste or private sector laboratories that are available to serve generators of solid waste; or

(ii) Reasonably detected by generators of solid waste through their knowledge of their waste.

§ 261.11 Criteria for listing hazardous waste.

(a) The Administrator shall list a solid waste as a hazardous waste only upon determining that the solid waste meets one of the following criteria:

(1) It exhibits any of the characteristics of hazardous waste identified in subpart C.

(2) It has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2 milligrams per liter, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible, illness. (Waste listed in accordance with these criteria will be designated Acute Hazardous Waste.)

(3) It contains any of the toxic constituents listed in appendix VIII and, after considering the following factors, the Administrator concludes that the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed:

(i) The nature of the toxicity presented by the constituent.

(ii) The concentration of the constituent in the waste.

(iii) The potential of the constituent or any toxic degradation product of

the constituent to migrate from the waste into the environment under the types of improper management considered in paragraph (a)(3)(vii) of this section.

(iv) The persistence of the constituent or any toxic degradation product of the constituent.

(v) The potential for the constituent or any toxic degradation product of the constituent to degrade into non-harmful constituents and the rate of degradation.

(vi) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(vii) The plausible types of improper management to which the waste could be subjected.

(viii) The quantities of the waste generated at individual generation sites or on a regional or national basis.

(ix) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

(x) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(xi) Such other factors as may be appropriate.

Substances will be listed on appendix VIII only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(Wastes listed in accordance with these criteria will be designated Toxic wastes.)

(b) The Administrator may list classes or types of solid waste as hazardous waste if he has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in section 1004(5) of the Act.

(c) The Administrator will use the criteria for listing specified in this section to establish the exclusion limits referred to in § 261.5(c).

[45 FR 33119, May 19, 1980, as amended at 55 FR 18726, May 4, 1990]

Subpart C—Characteristics of Hazardous Waste**§ 261.20 General.**

(a) A solid waste, as defined in § 261.2, which is not excluded from regulation as a hazardous waste under § 261.4(b), is a hazardous waste if it exhibits any of the characteristics identified in this subpart.

[*Comment:* § 262.11 of this chapter sets forth the generator's responsibility to determine whether his waste exhibits one or more of the characteristics identified in this subpart]

(b) A hazardous waste which is identified by a characteristic in this subpart is assigned every EPA Hazardous Waste Number that is applicable as set forth in this subpart. This number must be used in complying with the notification requirements of section 3010 of the Act and all applicable recordkeeping and reporting requirements under parts 262 through 265, 268, and 270 of this chapter.

(c) For purposes of this subpart, the Administrator will consider a sample obtained using any of the applicable sampling methods specified in appendix I to be a representative sample within the meaning of part 260 of this chapter.

[*Comment:* Since the appendix I sampling methods are not being formally adopted by the Administrator, a person who desires to employ an alternative sampling method is not required to demonstrate the equivalency of his method under the procedures set forth in §§ 260.20 and 260.21.]

[45 FR 33119, May 19, 1980, as amended at 51 FR 40636, Nov. 7, 1986; 55 FR 22684, June 1, 1990; 56 FR 3876, Jan. 31, 1991]

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see § 260.11), or a Setaflash

Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see § 260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in §§ 260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability has the EPA Hazardous Waste Number of D001.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981; 55 FR 22684, June 1, 1990]

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11).

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by

reference, see § 260.11) or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity has the EPA Hazardous Waste Number of D002.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981; 55 FR 22684, June 1, 1990]

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has *any* of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity has the EPA Hazardous Waste Number of D003.

[45 FR 33119, May 19, 1980, as amended at 55 FR 22684, June 1, 1990]

§ 261.24 Toxicity characteristic.

(a) A solid waste exhibits the characteristic of toxicity if, using the test methods described in appendix II or equivalent methods approved by the Administrator under the procedures

set forth in §§ 260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in table 1 at the concentration equal to or greater than the respective value given in that table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering using the methodology outlined in appendix II, is considered to be the extract for the purpose of this section.

(b) A solid waste that exhibits the characteristic of toxicity has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No. ¹	Contaminant	CAS No. ²	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	7440-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0.
D023	o-Cresol	95-48-7	* 200.0
D024	m-Cresol	108-39-4	* 200.0
D025	p-Cresol	106-44-5	* 200.0
D026	Cresol		* 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	* 0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	* 0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentachlorophenol	87-86-5	100.0
D038	Pyridine	110-86-1	* 5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC—Continued

EPA HW No. ¹	Contaminant	CAS No. ²	Regulatory Level (mg/L)
D043	Vinyl chloride.....	75-01-4	0.2

¹ Hazardous waste number.² Chemical abstracts service number.³ Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.⁴ If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

[55 FR 11862, Mar. 29, 1990, as amended at 55 FR 22684, June 1, 1990; 55 FR 26987, June 29, 1990]

Subpart D—Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this subpart by employing one or more of the following Hazard Codes:

Ignitable Waste..... (I)
Corrosive Waste..... (C)
Reactive Waste (R)
Toxicity Characteristic Waste (E)
Acute Hazardous Waste (H)
Toxic Waste..... (T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as a Toxicity Characteristic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain record-keeping and reporting requirements under parts 262 through 265, 268, and part 270 of this chapter.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 261.5: EPA Hazardous Wastes Nos. F020, F021, F022, F023, F026, and F027.

[45 FR 33119, May 19, 1980, as amended at 48 FR 14294, Apr. 1, 1983; 50 FR 2000, Jan. 14, 1985; 51 FR 40636, Nov. 7, 1986; 55 FR 11863, Mar. 29, 1990]

§ 261.31 Hazardous wastes from non-specific sources.

(a) The following solid wastes are listed hazardous wastes from non-specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in appendix IX.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001.....	The following spent halogenated solvents used in degreasing: Tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures/blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F002.....	The following spent halogenated solvents: Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, trichlorofluoromethane, and 1,1,2-trichloroethane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
F003.....	The following spent non-halogenated solvents: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures/blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures/blends containing, before use, one or more of the above non-halogenated solvents, and, a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I)*
F004.....	The following spent non-halogenated solvents: Cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, and F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(T)
F005.....	The following spent non-halogenated solvents: Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, and 2-nitropropane; all spent solvent mixtures/blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002, or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.	(I, T)
F006.....	Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F007.....	Spent cyanide plating bath solutions from electroplating operations.....	(R, T)
F008.....	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.	(R, T)
F009.....	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.	(R, T)
F010.....	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.	(R, T)
F011.....	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.	(R, T)
F012.....	Quenching waste water treatment sludges from metal heat treating operations where cyanides are used in the process.	(T)
F019.....	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive conversion coating process.	(T)
F020.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- or tetrachlorophenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)	(H)
F021.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.	(H)
F022.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.	(H)
F023.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of Hexachlorophene from highly purified 2,4,5-trichlorophenol.)	(H)
F024.....	Process wastes, including but not limited to, distillation residues, heavy ends, tars, and reactor clean-out wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysts, and wastes listed in § 261.31 or § 261.32.)	(T)
F025.....	Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
F026.....	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzene under alkaline conditions.	(H)
F027.....	Discarded unused formulations containing tri-, tetra-, or pentachlorophenol or discarded unused formulations containing compounds derived from these chlorophenols. (This listing does not include formulations containing Hexachlorophene synthesized from prepurified 2,4,5-trichlorophenol as the sole component.)	(H)
F028.....	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Waste Nos. F020, F021, F022, F023, F026, and F027.	(T)
F032 ¹	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving processes generated at plants that currently use or have previously used chlorophenolic formulations (except potentially cross-contaminated wastes that have had the F032 waste code deleted in accordance with § 261.35 of this chapter and where the generator does not resume or initiate use of chlorophenolic formulations). This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The listing for plants that have previously used chlorophenolic formulations is administratively stayed whenever these wastes are covered by the F034 or F035 listings. These stays will remain in effect until further administrative action is taken.)	(T)
F034 ¹	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use creosote formulations. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.)	(T)
F035 ¹	Wastewaters, process residuals, preservative drippage, and spent formulations from wood preserving process generated at plants that use inorganic preservatives containing arsenic or chromium. This listing does not include K001 bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol. (NOTE: The listing of wastewaters that have not come into contact with process contaminants is stayed administratively. The stay will remain in effect until further administrative action is taken.)	(T)
F037.....	Petroleum refinery primary oil/water/solids separation sludge—Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oily cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludge generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.	(T)
F038.....	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge—Any sludge and/or float generated from the physical and/or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated from non-contact once-through cooling waters segregated for treatment from other process or oily cooling waters, sludges and floats generated in aggressive biological treatment units as defined in § 261.31(b)(2) (including sludges and floats generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and F037, K048, and K051 wastes are not included in this listing.	(T)
F039.....	Leachate (liquids that have percolated through land disposed wastes) resulting from the disposal of more than one restricted waste classified as hazardous under subpart D of this part. (Leachate resulting from the disposal of one or more of the following EPA Hazardous Wastes and no other Hazardous Wastes retains its EPA Hazardous Waste Number(s): F020, F021, F022, F026, F027, and/or F028.)	(T)

¹ The F032, F034, and F035 listings are administratively stayed with respect to the process area receiving drippage of these wastes provided persons desiring to continue operating notify EPA by August 6, 1991 of their intent to upgrade or install drip pads, and by November 6, 1991 provide evidence to EPA that they have adequate financing to pay for drip pad upgrades or installation, as provided in the administrative stay. The stay of the listings will remain in effect until February 6, 1992 for existing drip pads and until May 6, 1992 for new drip pads.

*(I,T) should be used to specify mixtures containing ignitable and toxic constituents.

(b) Listing Specific Definitions: (1) For the purposes of the F037 and F038 listings, oil/water/solids is defined as oil and/or water and/or solids.

(2) (i) For the purposes of the F037 and F038 listings, aggressive biological treatment units are defined as units which employ one of the following four treatment methods: activated sludge; trickling filter; rotating biological contactor for the continuous accelerated biological oxidation of wastewaters; or high-rate aeration. High-rate aeration is a system of surface impoundments or tanks, in which intense mechanical aeration is used to completely mix the wastes, enhance biological activity, and (A) the unit employs a minimum of 6 hp per million gallons of treatment volume; and either (B) the hydraulic retention time of the unit is no longer than 5 days; or (C) the hydraulic retention time is no longer than 30 days and the unit does not generate a sludge that is a hazardous waste by the Toxicity Characteristic.

(ii) Generators and treatment, storage and disposal facilities have the burden of proving that their sludges are exempt from listing as F037 and F038 wastes under this definition. Generators and treatment, storage and disposal facilities must maintain, in their operating or other onsite records, documents and data sufficient to prove that: (A) the unit is an aggressive biological treatment unit as defined in this subsection; and (B) the sludges sought to be exempted from the definitions of F037 and/or F038 were actually generated in the aggressive biological treatment unit.

(3) (i) For the purposes of the F037 listing, sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement.

(ii) For the purposes of the F038 listing,

(A) sludges are considered to be generated at the moment of deposition in the unit, where deposition is defined as at least a temporary cessation of lateral particle movement and

(B) floats are considered to be generated at the moment they are formed in the top of the unit.

[46 FR 4617, Jan. 16, 1981]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 261.31, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 261.32 Hazardous wastes from specific sources.

The following solid wastes are listed hazardous wastes from specific sources unless they are excluded under §§ 260.20 and 260.22 and listed in appendix IX.

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Wood preservation: K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
Inorganic pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R, T)
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile	(T)
K015	Still bottoms from the distillation of benzyl chloride	(T)
K016	Heavy ends or distillation residues from the production of carbon tetrachloride	(T)
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
K018	Heavy ends from the fractionation column in ethyl chloride production.....	(T)
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.	(T)
K020	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production.	(T)
K021	Aqueous spent antimony catalyst waste from fluoromethanes production	(T)
K022	Distillation bottom tars from the production of phenol/acetone from cumene	(T)
K023	Distillation light ends from the production of phthalic anhydride from naphthalene	(T)
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene	(T)
K025	Distillation bottoms from the production of nitrobenzene by the nitration of benzene	(T)
K026	Stripping still tails from the production of methy ethyl pyridines	(T)
K027	Centrifuge and distillation residues from toluene diisocyanate production	(R, T)
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.	(T)
K029	Waste from the product steam stripper in the production of 1,1,1-trichloroethane	(T)
K030	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.	(T)
K083	Distillation bottoms from aniline production	(T)
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes	(T)
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene	(T)
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene	(T)
K095	Distillation bottoms from the production of 1,1,1-trichloroethane	(T)
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.	(T)
K103	Process residues from aniline extraction from the production of aniline	(T)
K104	Combined wastewater streams generated from nitrobenzene/aniline production	(T)
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.	(T)
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines.	(C,T)
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(I,T)
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazides.	(T)
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene	(C,T)
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K113	Condensed liquid light ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.	(T)
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.	(T)
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.	(T)
K118	Spent adsorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.	(T)
Inorganic chemicals:		
K071	Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.	(T)
K073	Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.	(T)
K106	Wastewater treatment sludge from the mercury cell process in chlorine production	(T)
Pesticides:		
K031	By-product salts generated in the production of MSMA and cacodylic acid	(T)
K032	Wastewater treatment sludge from the production of chlordane	(T)
K033	Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane.	(T)
K034	Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane.	(T)
K035	Wastewater treatment sludges generated in the production of creosote	(T)
K036	Still bottoms from toluene reclamation distillation in the production of disulfoton	(T)
K037	Wastewater treatment sludges from the production of disulfoton	(T)
K038	Wastewater from the washing and stripping of phorate production	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
K039	Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate.	(T)
K040	Wastewater treatment sludge from the production of phorate	(T)
K041	Wastewater treatment sludge from the production of toxaphene	(T)
K042	Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2,4,5-T.	(T)
K043	2,6-Dichlorophenol waste from the production of 2,4-D	(T)
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.	(T)
K098	Untreated process wastewater from the production of toxaphene	(T)
K099	Untreated wastewater from the production of 2,4-D	(T)
K123	Process wastewater (including supernates, filtrates, and washwaters) from the production of ethylenebisdithiocarbamic acid and its salt.	(T)
K124	Reactor vent scrubber water from the production of ethylenebisdithiocarbamic acid and its salts.	(C, T)
K125	Filtration, evaporation, and centrifugation solids from the production of ethylenebisdithiocarbamic acid and its salts.	(T)
K126	Baghouse dust and floor sweepings in milling and packaging operations from the production or formulation of ethylenebisdithiocarbamic acid and its salts.	(T)
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide.	(C, T)
K132	Spent absorbent and wastewater separator solids from the production of methyl bromide.	(T)
Explosives:		
K044	Wastewater treatment sludges from the manufacturing and processing of explosives ..	(R)
K045	Spent carbon from the treatment of wastewater containing explosives	(R)
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds.	(T)
K047	Pink/red water from TNT operations	(R)
Petroleum refining:		
K048	Dissolved air flotation (DAF) float from the petroleum refining industry	(T)
K049	Slop oil emulsion solids from the petroleum refining industry	(T)
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry	(T)
K051	API separator sludge from the petroleum refining industry	(T)
K052	Tank bottoms (lead) from the petroleum refining industry	(T)
Iron and steel:		
K061	Emission control dust/sludge from the primary production of steel in electric furnaces.	(T)
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).	(C, T)
Primary copper:		
K064	Acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production.	(T)
Primary lead:		
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.	(T)
Primary zinc:		
K066	Sludge from treatment of process wastewater and/or acid plant blowdown from primary zinc production.	(T)
Primary aluminum:		
K088	Spent potliners from primary aluminum reduction	(T)
Ferroalloys:		
K090	Emission control dust or sludge from ferrochromiumsilicon production	(T)
K091	Emission control dust or sludge from ferrochromium production	(T)
Secondary lead:		
K069	Emission control dust/sludge from secondary lead smelting. (NOTE: This listing is stayed administratively for sludge generated from secondary acid scrubber systems. The stay will remain in effect until further administrative action is taken. If EPA takes further action effecting this stay, EPA will publish a notice of the action in the Federal Register .)	(T)
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.	(T)
Veterinary pharmaceuticals:		
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.	(T)

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Ink formulation: K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.	(T)
Coking: K060	Ammonia still lime sludge from coking operations.....	(T)
K087	Decanter tank tar sludge from coking operations.....	(T)

[46 FR 4618, Jan. 16, 1981]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 261.32, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 261.33 Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof.

The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in § 261.2(a)(2)(i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.

(a) Any commercial chemical product, or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section.

(b) Any off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section.

(c) Any residue remaining in a container or in an inner liner removed from a container that has held any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraphs (e) or (f) of this section, unless the container is empty as defined in § 261.7(b) of this chapter.

[Comment: Unless the residue is being beneficially used or reused, or legitimately recycled or reclaimed; or being accumulated,

stored, transported or treated prior to such use, re-use, recycling or reclamation, EPA considers the residue to be intended for discard, and thus, a hazardous waste. An example of a legitimate re-use of the residue would be where the residue remains in the container and the container is used to hold the same commercial chemical product or manufacturing chemical intermediate it previously held. An example of the discard of the residue would be where the drum is sent to a drum reconditioner who reconditions the drum but discards the residue.]

(d) Any residue or contaminated soil, water or other debris resulting from the cleanup of a spill into or on any land or water of any commercial chemical product or manufacturing chemical intermediate having the generic name listed in paragraph (e) or (f) of this section, or any residue or contaminated soil, water or other debris resulting from the cleanup of a spill, into or on any land or water, of any off-specification chemical product and manufacturing chemical intermediate which, if it met specifications, would have the generic name listed in paragraph (e) or (f) of this section.

[Comment: The phrase "commercial chemical product or manufacturing chemical intermediate having the generic name listed in . . ." refers to a chemical substance which is manufactured or formulated for commercial or manufacturing use which consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraph (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraph (e) or (f), such waste will be listed in either § 261.31 or

§ 261.32 or will be identified as a hazardous waste by the characteristics set forth in subpart C of this part.]

(e) The commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products or manufacturing chemical intermediates referred to in paragraphs (a) through (d) of this section, are identified as acute hazardous wastes (H) and are subject to be the small quantity exclusion defined in § 261.5(e).

[*Comment:* For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.]

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous waste No.	Chemical abstracts No.	Substance
P023	107-20-0	Acetaldehyde, chloro-
P002	591-08-2	Acetamide, N-(aminothioxomethyl)-
P057	640-19-7	Acetamide, 2-fluoro-
P058	62-74-8	Acetic acid, fluoro-, sodium salt
P002	591-08-2	1-Acetyl-2-thiourea
P003	107-02-8	Acrolein
P070	116-06-3	Aldicarb
P004	309-00-2	Aldrin
P005	107-18-6	Allyl alcohol
P006	20859-73-8	Aluminum phosphide (R,T)
P007	2763-96-4	5-(Aminomethyl)-3-isoxazolol
P008	504-24-5	4-Aminopyridine
P009	131-74-8	Ammonium picrate (R)
P119	7803-55-6	Ammonium vanadate
P099	506-61-6	Argentate(1-), bis(cyano-C)-, potassium
P010	7778-39-4	Arsenic acid H ₃ AsO ₄
P012	1327-53-3	Arsenic oxide As ₂ O ₃
P011	1303-28-2	Arsenic oxide As ₂ O ₅
P011	1303-28-2	Arsenic pentoxide
P012	1327-53-3	Arsenic trioxide
P038	692-42-2	Arsine, diethyl-
P036	696-28-6	Arsonous dichloride, phenyl-
P054	151-56-4	Aziridine
P067	75-55-8	Aziridine, 2-methyl-
P013	542-62-1	Barium cyanide
P024	106-47-8	Benzenamine, 4-chloro-
P077	100-01-6	Benzenamine, 4-nitro-
P028	100-44-7	Benzene, (chloromethyl)-
P042	51-43-4	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-
P046	122-09-8	Benzeneethanamine, alpha,alpha-dimethyl-
P014	108-98-5	Benzenethiol
P001	1 81-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, & salts, when present at concentrations greater than 0.3%
P028	100-44-7	Benzyl chloride
P015	7440-41-7	Beryllium
P017	598-31-2	Bromoacetone
P018	357-57-3	Brucine
P045	39196-18-4	2-Butanone, 3,3-dimethyl-1-(methylthio)-, O-[(methylamino)carbonyl] oxime
P021	592-01-8	Calcium cyanide
P021	592-01-8	Calcium cyanide Ca(CN) ₂
P022	75-15-0	Carbon disulfide
P095	75-44-5	Carbonic dichloride
P023	107-20-0	Chloroacetaldehyde
P024	106-47-8	p-Chloroaniline
P026	5344-82-1	1-(o-Chlorophenyl)thiourea
P027	542-76-7	3-Chloropropionitrile
P029	544-92-3	Copper cyanide
P029	544-92-3	Copper cyanide Cu(CN)
P030	.....	Cyanides (soluble cyanide salts), not otherwise specified
P031	460-19-5	Cyanogen
P033	506-77-4	Cyanogen chloride

Haz- ardous waste No.	Chemical abstracts No.	Substance
P033	506-77-4	Cyanogen chloride (CN)Cl
P034	131-89-5	2-Cyclohexyl-4,6-dinitrophenol
P016	542-88-1	Dichloromethyl ether
P036	696-28-6	Dichlorophenylarsine
P037	60-57-1	Dieldrin
P038	692-42-2	Diethylarsine
P041	311-45-5	Diethyl-p-nitrophenyl phosphate
P040	297-97-2	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	55-91-4	Diisopropylfluorophosphate (DFP)
P004	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa- chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5alpha,8alpha,8abeta)-
P060	465-73-6	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexa- chloro-1,4,4a,5,8,8a,-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-
P037	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta, 7aalpha)-
P051	172-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2abeta,3alpha,6alpha,6abeta,7beta, 7aalpha)-, & metabolites
P044	60-51-5	Dimethoate
P046	122-09-8	alpha,alpha-Dimethylphenethylamine
P047	534-52-1	4,6-Dinitro-o-cresol, & salts
P048	51-28-5	2,4-Dinitrophenol
P020	88-85-7	Dinoseb
P085	152-16-9	Diphosphoramidate, octamethyl-
P111	107-49-3	Diphosphoric acid, tetraethyl ester
P039	298-04-4	Disulfoton
P049	541-53-7	Dithiobiuret
P050	115-29-7	Endosulfan
P088	145-73-3	Endothall
P051	72-20-8	Endrin
P051	72-20-8	Endrin, & metabolites
P042	51-43-4	Epinephrine
P031	460-19-5	Ethanedinitrile
P066	16752-77-5	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester
P101	107-12-0	Ethyl cyanide
P054	151-56-4	Ethyleneimine
P097	52-85-7	Famphur
P056	7782-41-4	Fluorine
P057	640-18-7	Fluoroacetamide
P058	62-74-8	Fluoroacetic acid, sodium salt
P065	628-86-4	Fulminic acid, mercury(2+) salt (R,T)
P059	76-44-8	Heptachlor
P062	757-58-4	Hexaethyl tetraphosphate
P116	79-19-6	Hydrazinecarbothioamide
P068	60-34-4	Hydrazine, methyl-
P063	74-90-8	Hydrocyanic acid
P063	74-90-8	Hydrogen cyanide
P096	7803-51-2	Hydrogen phosphide
P060	465-73-6	Isodrin
P007	2763-96-4	3(2H)-isoxazalone, 5-(aminomethyl)-
P092	62-38-4	Mercury, (acetato-O)phenyl-
P065	628-86-4	Mercury fulminate (R,T)
P082	62-75-9	Methanamine, N-methyl-N-nitroso-
P064	624-83-9	Methane, isocyanato-
P016	542-88-1	Methane, oxybis(chloro-
P112	509-14-8	Methane, tetranitro- (R)
P118	75-70-7	Methanethiol, trichloro-
P050	115-29-7	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10- hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide
P059	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro- 3a,4,7,7a-tetrahydro-
P066	16752-77-5	Methomyl
P068	60-34-4	Methyl hydrazine
P064	624-83-9	Methyl isocyanate
P069	75-86-5	2-Methylactonitrile
P071	298-00-0	Methyl parathion
P072	86-88-4	alpha-Naphthylthiourea
P073	13463-39-3	Nickel carbonyl
P073	13463-39-3	Nickel carbonyl Ni(CO) ₄ , (T-4)-

Hazardous waste No.	Chemical abstracts No.	Substance
P074	557-19-7	Nickel cyanide
P074	557-19-7	Nickel cyanide $\text{Ni}(\text{CN})_2$
P075	¹ 54-11-5	Nicotine, & salts
P076	10102-43-9	Nitric oxide
P077	100-01-6	p-Nitroaniline
P078	10102-44-0	Nitrogen dioxide
P076	10102-43-9	Nitrogen oxide NO
P078	10102-44-0	Nitrogen oxide NO_2
P081	55-63-0	Nitroglycerine (R)
P082	62-75-9	N-Nitrosodimethylamine
P084	4549-40-0	N-Nitrosomethylvinylamine
P085	152-16-9	Octamethylpyrophosphoramide
P087	20816-12-0	Osmium oxide OsO_4 , (T-4)-
P087	20816-12-0	Osmium tetroxide
P088	145-73-3	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid
P089	56-38-2	Parathion
P034	131-89-5	Phenol, 2-cyclohexyl-4,6-dinitro-
P048	51-28-5	Phenol, 2,4-dinitro-
P047	¹ 534-52-1	Phenol, 2-methyl-4,6-dinitro-, & salts
P020	88-85-7	Phenol, 2-(1-methylpropyl)-4,6-dinitro-
P009	131-74-8	Phenol, 2,4,6-trinitro-, ammonium salt (R)
P092	62-38-4	Phenylmercury acetate
P093	103-85-5	Phenylthiourea
P094	298-02-2	Phorate
P095	75-44-5	Phosgene
P096	7803-51-2	Phosphine
P041	311-45-5	Phosphoric acid, diethyl 4-nitrophenyl ester
P039	298-04-4	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester
P094	298-02-2	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester
P044	60-51-5	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester
P043	55-91-4	Phosphorofluoridic acid, bis(1-methylethyl) ester
P089	56-38-2	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester
P040	297-97-2	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester
P097	52-85-7	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester
P071	298-00-0	Phosphorothioic acid, O,O,-dimethyl O-(4-nitrophenyl) ester
P110	78-00-2	Plumbane, tetraethyl-
P098	151-50-8	Potassium cyanide
P098	151-50-8	Potassium cyanide $\text{K}(\text{CN})$
P099	506-61-6	Potassium silver cyanide
P070	116-06-3	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime
P101	107-12-0	Propanenitrile
P027	542-76-7	Propanenitrile, 3-chloro-
P069	75-86-5	Propanenitrile, 2-hydroxy-2-methyl-
P081	55-63-0	1,2,3-Propanetriol, trinitrate (R)
P017	598-31-2	2-Propanone, 1-bromo-
P102	107-19-7	Propargyl alcohol
P003	107-02-8	2-Propenal
P005	107-18-6	2-Propen-1-ol
P067	75-55-8	1,2-Propylenimine
P102	107-19-7	2-Propyn-1-ol
P008	504-24-5	4-Pyridinamine
P075	¹ 54-11-5	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-, & salts
P114	12039-52-0	Selenious acid, dithallium(1+) salt
P103	630-10-4	Selenourea
P104	506-64-9	Silver cyanide
P104	506-64-9	Silver cyanide $\text{Ag}(\text{CN})$
P105	26628-22-8	Sodium azide
P106	143-33-9	Sodium cyanide
P106	143-33-9	Sodium cyanide $\text{Na}(\text{CN})$
P108	¹ 57-24-9	Strychnidin-10-one, & salts
P018	357-57-3	Strychnidin-10-one, 2,3-dimethoxy-
P108	¹ 57-24-9	Strychnine, & salts
P115	7446-18-6	Sulfuric acid, dithallium(1+) salt
P109	3689-24-5	Tetraethyldithiopyrophosphate
P110	78-00-2	Tetraethyl lead
P111	107-49-3	Tetraethyl pyrophosphate

Hazardous waste No.	Chemical abstracts No.	Substance
P112	509-14-8	Tetranitromethane (R)
P062	757-58-4	Tetraphosphoric acid, hexaethyl ester
P113	1314-32-5	Thallic oxide
P113	1314-32-5	Thallium oxide Tl_2O_3
P114	12039-52-0	Thallium(I) selenite
P115	7446-18-8	Thallium(I) sulfate
P109	3689-24-5	Thiodiphosphoric acid, tetraethyl ester
P045	39196-18-4	Thiofanox
P049	541-53-7	Thioimidodicarbonic diamide $[(H_2N)C(S)]_2NH$
P014	108-98-5	Thiophenol
P116	79-19-6	Thiosemicarbazide
P026	5344-82-1	Thiourea, (2-chlorophenyl)-
P072	86-88-4	Thiourea, 1-naphthalenyl-
P093	103-85-5	Thiourea, phenyl-
P123	8001-35-2	Toxaphene
P118	75-70-7	Trichloromethanethiol
P119	7803-55-6	Vanadic acid, ammonium salt
P120	1314-62-1	Vanadium oxide V_2O_5
P120	1314-62-1	Vanadium pentoxide
P084	4549-40-0	Vinylamine, N-methyl-N-nitroso-
P001	¹ 81-81-2	Warfarin, & salts, when present at concentrations greater than 0.3%
P121	557-21-1	Zinc cyanide
P121	557-21-1	Zinc cyanide $Zn(CN)_2$
P122	1314-84-7	Zinc phosphide Zn_3P_2 , when present at concentrations greater than 10% (R,T)

¹ CAS Number given for parent compound only.

(f) The commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products referred to in paragraphs (a) through (d) of this section, are identified as toxic wastes (T), unless otherwise designated and are subject to the small quantity generator exclusion defined in § 261.5 (a) and (g).

[Comment: For the convenience of the regulated community, the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), R (Reactivity), I (Ignitability) and C (Corrosivity). Absence of a letter indicates that the compound is only listed for toxicity.]

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous waste No.	Chemical abstracts No.	Substance
U001	75-07-0	Acetaldehyde (I)
U034	75-87-6	Acetaldehyde, trichloro-
U187	62-44-2	Acetamide, N-(4-ethoxyphenyl)-
U005	53-96-3	Acetamide, N-9H-fluoren-2-yl-
U240	¹ 94-75-7	Acetic acid, (2,4-dichlorophenoxy)-, salts & esters
U112	141-78-6	Acetic acid ethyl ester (I)
U144	301-04-2	Acetic acid, lead(2+) salt
U214	563-68-8	Acetic acid, thallium(1+) salt
see F027	93-76-5	Acetic acid, (2,4,5-trichlorophenoxy)-
U002	67-64-1	Acetone (I)
U003	75-05-8	Acetonitrile (I,T)
U004	98-86-2	Acetophenone
U005	53-96-3	2-Acetylaminofluorene
U006	75-36-5	Acetyl chloride (C,R,T)
U007	79-06-1	Acrylamide
U008	79-10-7	Acrylic acid (I)
U009	107-13-1	Acrylonitrile
U011	61-82-5	Amitrole
U012	62-53-3	Aniline (I,T)
U136	75-60-5	Arsinic acid, dimethyl-
U014	492-80-8	Auramine

Hazardous waste No.	Chemical abstracts No.	Substance
U015	115-02-6	Azaserine
U010	50-07-7	Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[[[aminocarbonyloxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1aalpha, 8beta,8aalpha,8balpha)]]-
U157	56-49-5	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	225-51-4	Benz[c]acridine
U017	98-87-3	Benzal chloride
U192	23950-58-5	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-
U018	56-55-3	Benz[a]anthracene
U094	57-97-6	Benz[a]anthracene, 7,12-dimethyl-
U012	62-53-3	Benzenamine (I,T)
U014	492-80-8	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-
U049	3165-93-3	Benzenamine, 4-chloro-2-methyl-, hydrochloride
U093	60-11-7	Benzenamine, N,N-dimethyl-4-(phenylazo)-
U328	95-53-4	Benzenamine, 2-methyl-
U353	106-49-0	Benzenamine, 4-methyl-
U158	101-14-4	Benzenamine, 4,4'-methylenebis[2-chloro-
U222	636-21-5	Benzenamine, 2-methyl-, hydrochloride
U181	99-55-8	Benzenamine, 2-methyl-5-nitro-
U019	71-43-2	Benzene (I,T)
U038	510-15-6	Benzenecetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester
U030	101-55-3	Benzene, 1-bromo-4-phenoxy-
U035	305-03-3	Benzenebutanoic acid, 4-[bis(2-chloroethyl)amino]-
U037	108-90-7	Benzene, chloro-
U221	25376-45-8	Benzenediamine, ar-methyl-
U028	117-81-7	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester
U069	84-74-2	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	84-66-2	1,2-Benzenedicarboxylic acid, diethyl ester
U102	131-11-3	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	117-84-0	1,2-Benzenedicarboxylic acid, dioctyl ester
U070	95-50-1	Benzene, 1,2-dichloro-
U071	541-73-1	Benzene, 1,3-dichloro-
U072	106-46-7	Benzene, 1,4-dichloro-
U060	72-54-8	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-
U017	98-87-3	Benzene, (dichloromethyl)-
U223	26471-62-5	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	1330-20-7	Benzene, dimethyl- (I,T)
U201	108-46-3	1,3-Benzenediol
U127	118-74-1	Benzene, hexachloro-
U056	110-82-7	Benzene, hexahydro- (I)
U220	108-88-3	Benzene, methyl-
U105	121-14-2	Benzene, 1-methyl-2,4-dinitro-
U106	606-20-2	Benzene, 2-methyl-1,3-dinitro-
U055	98-82-8	Benzene, (1-methylethyl)- (I)
U169	98-95-3	Benzene, nitro-
U183	608-93-5	Benzene, pentachloro-
U185	82-68-8	Benzene, pentachloronitro-
U020	98-09-9	Benzenesulfonic acid chloride (C,R)
U020	98-09-9	Benzenesulfonyl chloride (C,R)
U207	95-94-3	Benzene, 1,2,4,5-tetrachloro-
U061	50-29-3	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-
U247	72-43-5	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-
U023	98-07-7	Benzene, (trichloromethyl)-
U234	99-35-4	Benzene, 1,3,5-trinitro-
U021	92-87-5	Benidine
U202	181-07-2	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide, & salts
U203	94-59-7	1,3-Benzodioxole, 5-(2-propenyl)-
U141	120-58-1	1,3-Benzodioxole, 5-(1-propenyl)-
U090	94-58-6	1,3-Benzodioxole, 5-propyl-
U064	189-55-9	Benzo[rst]pentaphene
U248	181-81-2	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenyl-butyl)-, & salts, when present at concentrations of 0.3% or less
U022	50-32-8	Benzo[a]pyrene
U197	106-51-4	p-Benzoquinone
U023	98-07-7	Benzotrichloride (C,R,T)
U085	1464-53-5	2,2'-Bioxirane
U021	92-87-5	[1,1'-Biphenyl]-4,4'-diamine
U073	91-94-1	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-
U091	119-90-4	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-
U095	119-93-7	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-
U225	75-25-2	Bromoform

Haz- ardous waste No.	Chemical abstracts No.	Substance
U030	101-55-3	4-Bromophenyl phenyl ether
U128	87-68-3	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	924-16-3	1-Butanamine, N-butyl-N-nitroso-
U031	71-36-3	1-Butanol (l)
U159	78-93-3	2-Butanone (l,T)
U160	1338-23-4	2-Butanone, peroxide (R,T)
U053	4170-30-3	2-Butenal
U074	764-41-0	2-Butene, 1,4-dichloro- (l,T)
U143	303-34-4	2-Butenoic acid, 2-methyl-, 7-[[2,3-dihydroxy- 2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]- 2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-
U031	71-36-3	n-Butyl alcohol (l)
U136	75-60-5	Cacodylic acid
U032	13765-19-0	Calcium chromate
U238	51-79-6	Carbamic acid, ethyl ester
U178	615-53-2	Carbamic acid, methylnitroso-, ethyl ester
U097	79-44-7	Carbamic chloride, dimethyl-
U114	¹ 111-54-6	Carbamodithioic acid, 1,2-ethanediybis-, salts & esters
U062	2303-16-4	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester
U215	6533-73-9	Carbonic acid, dithallium(1+) salt
U033	353-50-4	Carbonic difluoride
U156	79-22-1	Carbonochloridic acid, methyl ester (l,T)
U033	353-50-4	Carbon oxyfluoride (R,T)
U211	56-23-5	Carbon tetrachloride
U034	75-87-6	Chloral
U035	305-03-3	Chlorambucil
U036	57-74-9	Chlordane, alpha & gamma isomers
U026	494-03-1	Chlornaphazin
U037	108-90-7	Chlorobenzene
U038	510-15-6	Chlorobenzilate
U039	59-50-7	p-Chloro-m-cresol
U042	110-75-8	2-Chloroethyl vinyl ether
U044	67-66-3	Chloroform
U046	107-30-2	Chloromethyl methyl ether
U047	91-58-7	beta-Chloronaphthalene
U048	95-57-8	o-Chlorophenol
U049	3165-93-3	4-Chloro-o-toluidine, hydrochloride
U032	13765-19-0	Chromic acid H ₂ CrO ₄ , calcium salt
U050	218-01-9	Chrysene
U051	.....	Creosote
U052	1319-77-3	Cresol (Cresylic acid)
U053	4170-30-3	Crotonaldehyde
U055	98-82-8	Cumene (l)
U246	506-68-3	Cyanogen bromide (CN)Br
U197	106-51-4	2,5-Cyclohexadiene-1,4-dione
U056	110-82-7	Cyclohexane (l)
U129	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-
U057	108-94-1	Cyclohexanone (l)
U130	77-47-4	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
U058	50-18-0	Cyclophosphamide
U240	¹ 94-75-7	2,4-D. salts & esters
U059	20830-81-3	Daunomycin
U060	72-54-8	DDD
U061	50-29-3	DDT
U062	2303-16-4	Diallate
U063	53-70-3	Dibenz[a,h]anthracene
U064	189-55-9	Dibenzo[a,i]pyrene
U066	96-12-8	1,2-Dibromo-3-chloropropane
U069	84-74-2	Dibutyl phthalate
U070	95-50-1	o-Dichlorobenzene
U071	541-73-1	m-Dichlorobenzene
U072	106-46-7	p-Dichlorobenzene
U073	91-94-1	3,3'-Dichlorobenzidine
U074	764-41-0	1,4-Dichloro-2-butene (l,T)
U075	75-71-8	Dichlorodifluoromethane
U078	75-35-4	1,1-Dichloroethylene
U079	156-60-5	1,2-Dichloroethylene

Haz- ardous waste No.	Chemical abstracts No.	Substance
U025	111-44-4	Dichloroethyl ether
U027	108-60-1	Dichloroisopropyl ether
U024	111-91-1	Dichloromethoxy ethane
U081	120-83-2	2,4-Dichlorophenol
U082	87-65-0	2,6-Dichlorophenol
U084	542-75-6	1,3-Dichloropropene
U085	1464-53-5	1,2:3,4-Diepoxybutane (I,T)
U108	123-91-1	1,4-Diethyleneoxide
U028	117-81-7	Diethylhexyl phthalate
U086	1615-80-1	N,N'-Diethylhydrazine
U087	3288-58-2	O,O-Diethyl S-methyl dithiophosphate
U088	84-66-2	Diethyl phthalate
U089	56-53-1	Diethylstilbesterol
U090	94-58-6	Dihydrosafrole
U091	119-90-4	3,3'-Dimethoxybenzidine
U092	124-40-3	Dimethylamine (I)
U093	60-11-7	p-Dimethylaminoazobenzene
U094	57-97-6	7,12-Dimethylbenz[a]anthracene
U095	119-93-7	3,3'-Dimethylbenzidine
U096	80-15-9	alpha, alpha-Dimethylbenzylhydroperoxide (R)
U097	79-44-7	Dimethylcarbonyl chloride
U098	57-14-7	1,1-Dimethylhydrazine
U099	540-73-8	1,2-Dimethylhydrazine
U101	105-67-9	2,4-Dimethylphenol
U102	131-11-3	Dimethyl phthalate
U103	77-78-1	Dimethyl sulfate
U105	121-14-2	2,4-Dinitrotoluene
U106	606-20-2	2,6-Dinitrotoluene
U107	117-84-0	Di-n-octyl phthalate
U108	123-91-1	1,4-Dioxane
U109	122-66-7	1,2-Diphenylhydrazine
U110	142-84-7	Dipropylamine (I)
U111	621-64-7	Di-n-propylnitrosamine
U041	106-89-8	Epichlorohydrin
U001	75-07-0	Ethanal (I)
U174	55-18-5	Ethanamine, N-ethyl-N-nitroso-
U155	91-80-5	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-
U067	106-93-4	Ethane, 1,2-dibromo-
U076	75-34-3	Ethane, 1,1-dichloro-
U077	107-06-2	Ethane, 1,2-dichloro-
U131	67-72-1	Ethane, hexachloro-
U024	111-91-1	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-
U117	60-29-7	Ethane, 1,1'-oxybis-(I)
U025	111-44-4	Ethane, 1,1'-oxybis[2-chloro-
U184	76-01-7	Ethane, pentachloro-
U208	630-20-6	Ethane, 1,1,1,2-tetrachloro-
U209	79-34-5	Ethane, 1,1,2,2-tetrachloro-
U218	62-55-5	Ethanethioamide
U226	71-55-6	Ethane, 1,1,1-trichloro-
U227	79-00-5	Ethane, 1,1,2-trichloro-
U359	110-80-5	Ethanol, 2-ethoxy-
U173	1116-54-7	Ethanol, 2,2'-(nitrosoimino)bis-
U004	98-86-2	Ethanone, 1-phenyl-
U043	75-01-4	Ethene, chloro-
U042	110-75-8	Ethene, (2-chloroethoxy)-
U078	75-35-4	Ethene, 1,1-dichloro-
U079	156-60-5	Ethene, 1,2-dichloro-, (E)-
U210	127-18-4	Ethene, tetrachloro-
U228	79-01-6	Ethene, trichloro-
U112	141-78-6	Ethyl acetate (I)
U113	140-88-5	Ethyl acrylate (I)
U238	51-79-6	Ethyl carbamate (urethane)
U117	60-29-7	Ethyl ether (I)
U114	111-54-6	Ethylenebisdithiocarbamic acid, salts & esters
U067	106-93-4	Ethylene dibromide
U077	107-06-2	Ethylene dichloride
U359	110-80-5	Ethylene glycol monoethyl ether
U115	75-21-8	Ethylene oxide (I,T)
U116	96-45-7	Ethylenethiourea
U076	75-34-3	Ethylidene dichloride

Hazardous waste No.	Chemical abstracts No.	Substance
U118	97-63-2	Ethyl methacrylate
U119	62-50-0	Ethyl methanesulfonate
U120	206-44-0	Fluoranthene
U122	50-00-0	Formaldehyde
U123	64-18-6	Formic acid (C,T)
U124	110-00-9	Furan (I)
U125	98-01-1	2-Furancarboxaldehyde (I)
U147	108-31-6	2,5-Furandione
U213	109-99-9	Furan, tetrahydro-(I)
U125	98-01-1	Furfural (I)
U124	110-00-9	Furfuran (I)
U206	18883-66-4	Glucopyranose, 2-deoxy-2-(3-methyl-3-nitrosoureido)-, D-
U206	18883-66-4	D-Glucose, 2-deoxy-2-[[[(methylnitrosoamino)-carbonyl]amino]-
U126	765-34-4	Glycidylaldehyde
U163	70-25-7	Guanidine, N-methyl-N'-nitro-N-nitroso-
U127	118-74-1	Hexachlorobenzene
U128	87-68-3	Hexachlorobutadiene
U130	77-47-4	Hexachlorocyclopentadiene
U131	67-72-1	Hexachloroethane
U132	70-30-4	Hexachlorophene
U243	1888-71-7	Hexachloropropene
U133	302-01-2	Hydrazine (R,T)
U086	1615-80-1	Hydrazine, 1,2-diethyl-
U098	57-14-7	Hydrazine, 1,1-dimethyl-
U099	540-73-8	Hydrazine, 1,2-dimethyl-
U109	122-66-7	Hydrazine, 1,2-diphenyl-
U134	7664-39-3	Hydrofluoric acid (C,T)
U134	7664-39-3	Hydrogen fluoride (C,T)
U135	7783-06-4	Hydrogen sulfide
U135	7783-06-4	Hydrogen sulfide H ₂ S
U096	80-15-9	Hydroperoxide, 1-methyl-1-phenylethyl- (R)
U116	96-45-7	2-Imidazolidinethione
U137	193-39-5	Indeno[1,2,3-cd]pyrene
U190	85-44-9	1,3-Isobenzofurandione
U140	78-83-1	Isobutyl alcohol (I,T)
U141	120-58-1	Isosafrole
U142	143-50-0	Kepone
U143	303-34-4	Lasiocarpine
U144	301-04-2	Lead acetate
U146	1335-32-6	Lead, bis(acetato-O)tetrahydroxytri-
U145	7446-27-7	Lead phosphate
U146	1335-32-6	Lead subacetate
U129	58-89-9	Lindane
U163	70-25-7	MNNG
U147	108-31-6	Maleic anhydride
U148	123-33-1	Maleic hydrazide
U149	109-77-3	Malononitrile
U150	148-82-3	Melphalan
U151	7439-97-6	Mercury
U152	126-98-7	Methacrylonitrile (I, T)
U092	124-40-3	Methanamine, N-methyl- (I)
U029	74-83-9	Methane, bromo-
U045	74-87-3	Methane, chloro- (I, T)
U046	107-30-2	Methane, chloromethoxy-
U068	74-95-3	Methane, dibromo-
U080	75-09-2	Methane, dichloro-
U075	75-71-8	Methane, dichlorodifluoro-
U138	74-88-4	Methane, iodo-
U119	62-50-0	Methanesulfonic acid, ethyl ester
U211	56-23-5	Methane, tetrachloro-
U153	74-93-1	Methanethiol (I, T)
U225	75-25-2	Methane, tribromo-
U044	67-66-3	Methane, trichloro-
U121	75-69-4	Methane, trichlorofluoro-
U036	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
U154	67-56-1	Methanol (I)
U155	91-80-5	Methapyrilene
U142	143-50-0	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-
U247	72-43-5	Methoxychlor

Hazardous waste No.	Chemical abstracts No.	Substance
U154	67-58-1	Methyl alcohol (I)
U029	74-83-9	Methyl bromide
U186	504-60-9	1-Methylbutadiene (I)
U045	74-87-3	Methyl chloride (I,T)
U156	79-22-1	Methyl chlorocarbonate (I,T)
U226	71-55-6	Methyl chloroform
U157	56-49-5	3-Methylcholanthrene
U158	101-14-4	4,4'-Methylenebis(2-chloroaniline)
U068	74-95-3	Methylene bromide
U080	75-09-2	Methylene chloride
U159	78-93-3	Methyl ethyl ketone (MEK) (I,T)
U160	1338-23-4	Methyl ethyl ketone peroxide (R,T)
U138	74-88-4	Methyl iodide
U161	108-10-1	Methyl isobutyl ketone (I)
U162	80-62-6	Methyl methacrylate (I,T)
U161	108-10-1	4-Methyl-2-pentanone (I)
U164	56-04-2	Methylthiouracil
U010	50-07-7	Mitomycin C
U059	20830-81-3	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy)-alpha-L-lyxo-hexopyranosyl]oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-
U167	134-32-7	1-Naphthalenamine
U168	91-59-8	2-Naphthalenamine
U026	494-03-1	Naphthalenamine, N,N'-bis(2-chloroethyl)-
U165	91-20-3	Naphthalene
U047	91-58-7	Naphthalene, 2-chloro-
U166	130-15-4	1,4-Naphthalenedione
U236	72-57-1	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)bis[5-amino-4-hydroxy]-, tetrasodium salt
U166	130-15-4	1,4-Naphthoquinone
U167	134-32-7	alpha-Naphthylamine
U168	91-59-8	beta-Naphthylamine
U217	10102-45-1	Nitric acid, thallium(1+) salt
U169	98-95-3	Nitrobenzene (I,T)
U170	100-02-7	p-Nitrophenol
U171	79-46-9	2-Nitropropane (I,T)
U172	924-16-3	N-Nitrosodi-n-butylamine
U173	1116-54-7	N-Nitrosodiethanolamine
U174	55-18-5	N-Nitrosodiethylamine
U176	759-73-9	N-Nitroso-N-ethylurea
U177	684-93-5	N-Nitroso-N-methylurea
U178	615-53-2	N-Nitroso-N-methylurethane
U179	100-75-4	N-Nitrosopiperidine
U180	930-55-2	N-Nitrosopyrrolidine
U181	99-55-8	5-Nitro-o-toluidine
U193	1120-71-4	1,2-Oxathiolane, 2,2-dioxide
U058	50-18-0	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide
U115	75-21-8	Oxirane (I,T)
U126	765-34-4	Oxiranecarboxyaldehyde
U041	106-89-8	Oxirane, (chloromethyl)-
U182	123-63-7	Paraldehyde
U183	608-93-5	Pentachlorobenzene
U184	76-01-7	Pentachloroethane
U185	82-68-8	Pentachloronitrobenzene (PCNB)
See	87-86-5	Pentachlorophenol
F027		
U161	108-10-1	Pentanol, 4-methyl-
U186	504-60-9	1,3-Pentadiene (I)
U187	62-44-2	Phenacetin
U188	108-95-2	Phenol
U048	95-57-8	Phenol, 2-chloro-
U039	59-50-7	Phenol, 4-chloro-3-methyl-
U081	120-83-2	Phenol, 2,4-dichloro-
U082	87-65-0	Phenol, 2,6-dichloro-
U089	56-53-1	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-
U101	105-67-9	Phenol, 2,4-dimethyl-
U052	1319-77-3	Phenol, methyl-
U132	70-30-4	Phenol, 2,2'-methylenebis[3,4,6-trichloro-
U170	100-02-7	Phenol, 4-nitro-

Hazardous waste No.	Chemical abstracts No.	Substance
See F027	87-86-5	Phenol, pentachloro-
See F027	58-90-2	Phenol, 2,3,4,6-tetrachloro-
See F027	95-95-4	Phenol, 2,4,5-trichloro-
See F027	88-06-2	Phenol, 2,4,6-trichloro-
U150	148-82-3	L-Phenylalanine, 4-[bis(2-chloroethyl)amino]-
U145	7446-27-7	Phosphoric acid, lead(2+) salt (2:3)
U087	3288-58-2	Phosphorodithioic acid, O,O-diethyl S-methyl ester
U189	1314-80-3	Phosphorus sulfide (R)
U190	85-44-9	Phthalic anhydride
U191	109-06-8	2-Picoline
U179	100-75-4	Piperidine, 1-nitroso-
U192	23950-58-5	Pronamide
U194	107-10-8	1-Propanamine (I,T)
U111	621-64-7	1-Propanamine, N-nitroso-N-propyl-
U110	142-84-7	1-Propanamine, N-propyl- (I)
U066	96-12-8	Propane, 1,2-dibromo-3-chloro-
U083	78-87-5	Propane, 1,2-dichloro-
U149	109-77-3	Propanedinitrile
U171	79-46-9	Propane, 2-nitro- (I,T)
U027	108-60-1	Propane, 2,2'-oxybis[2-chloro-
U193	1120-71-4	1,3-Propane sultone
See F027	93-72-1	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-
U235	126-72-7	1-Propanol, 2,3-dibromo-, phosphate (3:1)
U140	78-83-1	1-Propanol, 2-methyl- (I,T)
U002	67-64-1	2-Propanone (I)
U007	79-06-1	2-Propanamide
U084	542-75-6	1-Propene, 1,3-dichloro-
U243	1888-71-7	1-Propene, 1,1,2,3,3,3-hexachloro-
U009	107-13-1	2-Propenenitrile
U152	126-98-7	2-Propenenitrile, 2-methyl- (I,T)
U008	79-10-7	2-Propenoic acid (I)
U113	140-88-5	2-Propenoic acid, ethyl ester (I)
U118	97-63-2	2-Propenoic acid, 2-methyl-, ethyl ester
U162	80-62-6	2-Propenoic acid, 2-methyl-, methyl ester (I,T)
U194	107-10-8	n-Propylamine (I,T)
U083	78-87-5	Propylene dichloride
U148	123-33-1	3,6-Pyridazinedione, 1,2-dihydro-
U196	110-96-1	Pyridine
U191	109-06-8	Pyridine, 2-methyl-
U237	66-75-1	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-
U164	56-04-2	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thioxo-
U180	930-55-2	Pyrrolidine, 1-nitroso-
U200	50-55-5	Reserpine
U201	108-46-3	Resorcinol
U202	81-07-2	Saccharin, & salts
U203	94-59-7	Safrole
U204	7783-00-8	Selenious acid
U204	7783-00-8	Selenium dioxide
U205	7488-56-4	Selenium sulfide
U205	7488-56-4	Selenium sulfide SeS ₂ (R,T)
U015	115-02-6	L-Serine, diazoacetate (ester)
See F027	93-72-1	Silvex (2,4,5-TP)
U206	18883-66-4	Streptozotocin
U103	77-78-1	Sulfuric acid, dimethyl ester
U189	1314-80-3	Sulfur phosphide (R)
See F027	93-76-5	2,4,5-T
U207	95-94-3	1,2,4,5-Tetrachlorobenzene
U208	630-20-6	1,1,1,2-Tetrachloroethane
U209	79-34-5	1,1,2,2-Tetrachloroethane
U210	127-18-4	Tetrachloroethylene
See F027	58-90-2	2,3,4,6-Tetrachlorophenol

Hazardous waste No.	Chemical abstracts No.	Substance
U213	109-99-9	Tetrahydrofuran (I)
U214	563-68-8	Thallium(I) acetate
U215	6533-73-9	Thallium(I) carbonate
U216	7791-12-0	Thallium(I) chloride
U216	7791-12-0	Thallium chloride TlCl
U217	10102-45-1	Thallium(I) nitrate
U218	62-55-5	Thioacetamide
U153	74-93-1	Thiomethanol (I,T)
U244	137-26-8	Thioperoxydicarbonic diamide [(H ₂ N)C(S)] ₂ S ₂ , tetramethyl-
U219	62-56-6	Thiourea
U244	137-26-8	Thiram
U220	108-88-3	Toluene
U221	25376-45-8	Toluenediamine
U223	26471-62-5	Toluene diisocyanate (R,T)
U328	95-53-4	o-Toluidine
U353	106-49-0	p-Toluidine
U222	636-21-5	o-Toluidine hydrochloride
U011	61-82-5	1H-1,2,4-Triazol-3-amine
U227	79-00-5	1,1,2-Trichloroethane
U228	79-01-6	Trichloroethylene
U121	75-69-4	Trichloromonofluoromethane
See F027	95-95-4	2,4,5-Trichlorophenol
See F027	88-06-2	2,4,6-Trichlorophenol
U234	99-35-4	1,3,5-Trinitrobenzene (R,T)
U182	123-63-7	1,3,5-Trioxane, 2,4,6-trimethyl-
U235	126-72-7	Tris(2,3-dibromopropyl) phosphate
U236	72-57-1	Trypan blue
U237	66-75-1	Uracil mustard
U176	759-73-9	Urea, N-ethyl-N-nitroso-
U177	684-93-5	Urea, N-methyl-N-nitroso-
U043	75-01-4	Vinyl chloride
U248	¹ 81-81-2	Warfarin, & salts, when present at concentrations of 0.3% or less
U239	1330-20-7	Xylene (I)
U200	50-55-5	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-, methyl ester, (3beta,16beta,17alpha,18beta,20alpha)-
U249	1314-84-7	Zinc phosphide Zn ₃ P ₂ , when present at concentrations of 10% or less

¹ CAS Number given for parent compound only.

(Approved by the Office of Management and Budget under control number 2050-0047)
[45 FR 78529, 78541, Nov. 25, 1980]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting § 261.33, see the List of CFR Sections Affected in the Finding Aids section of this volume.

§ 261.35 Deletion of certain hazardous waste codes following equipment cleaning and replacement.

(a) Wastes from wood preserving processes at plants that do not resume or initiate use of chlorophenolic preservatives will not meet the listing definition of F032 once the generator has met all of the requirements of paragraphs (b) and (c) of this section. These wastes may, however, continue to meet another hazardous waste listing description or may exhibit one or more of the hazardous waste characteristics.

(b) Generators must either clean or replace all process equipment that

may have come into contact with chlorophenolic formulations or constituents thereof, including, but not limited to, treatment cylinders, sumps, tanks, piping systems, drip pads, fork lifts, and trams, in a manner that minimizes or eliminates the escape of hazardous waste or constituents, leachate, contaminated drippage, or hazardous waste decomposition products to the ground water, surface water, or atmosphere.

(1) Generators shall do one of the following:

(i) Prepare and follow an equipment cleaning plan and clean equipment in accordance with this section;

(ii) Prepare and follow an equipment replacement plan and replace equipment in accordance with this section; or

(iii) Document cleaning and replacement in accordance with this section, carried out after termination of use of chlorophenolic preservations.

(2) Cleaning Requirements.

(i) Prepare and sign a written equipment cleaning plan that describes:

(A) The equipment to be cleaned;

(B) How the equipment will be cleaned;

(C) The solvent to be used in cleaning;

(D) How solvent rinses will be tested; and

(E) How cleaning residues will be disposed.

(ii) Equipment must be cleaned as follows:

(A) Remove all visible residues from process equipment;

(B) Rinse process equipment with an appropriate solvent until dioxins and dibenzofurans are not detected in the final solvent rinse.

(iii) Analytical requirements.

(A) Rinses must be tested in accordance with SW-846, Method 8290.

(B) "Not detected" means at or below the lower method calibration limit (MCL) in Method 8290, Table 1.

(iv) The generator must manage all residues from the cleaning process as F032 waste.

(3) Replacement requirements.

(i) Prepare and sign a written equipment replacement plan that describes:

(A) The equipment to be replaced;

(B) How the equipment will be replaced; and

(C) How the equipment will be disposed.

(ii) The generator must manage the discarded equipment as F032 waste.

(4) Documentation requirements.

(i) Document that previous equipment cleaning and/or replacement was performed in accordance with this section and occurred after cessation of use of chlorophenolic preservatives.

(c) The generator must maintain the following records documenting the cleaning and replacement as part of the facility's operating record:

(1) The name and address of the facility;

(2) Formulations previously used and the date on which their use ceased in each process at the plant;

(3) Formulations currently used in each process at the plant;

(4) The equipment cleaning or replacement plan;

(5) The name and address of any persons who conducted the cleaning and replacement;

(6) The dates on which cleaning and replacement were accomplished;

(7) The dates of sampling and testing;

(8) A description of the sample handling and preparation techniques, including techniques used for extraction, containerization, preservation, and chain-of-custody of the samples;

(9) A description of the tests performed, the date the tests were performed, and the results of the tests;

(10) The name and model numbers of the instrument(s) used in performing the tests;

(11) QA/QC documentation; and

(12) The following statement signed by the generator or his authorized representative:

I certify under penalty of law that all process equipment required to be cleaned or replaced under 40 CFR 261.35 was cleaned or replaced as represented in the equipment cleaning and replacement plan and accompanying documentation. I am aware that there are significant penalties for providing false information, including the possibility of fine or imprisonment.

[55 FR 50482, Dec. 6, 1990, as amended at 56 FR 30195, July 1, 1991]

EFFECTIVE DATE NOTE: At 55 FR 50482, Dec. 6, 1990, § 261.35 was added. Paragraph (c) contains information collection and recordkeeping requirements and will not become effective until approval has been given by the Office of Management and Budget. A notice will be published in the **FEDERAL REGISTER** once approval has been obtained.

APPENDICES TO PART 261

APPENDIX I—REPRESENTATIVE SAMPLING METHODS

The methods and equipment used for sampling waste materials will vary with the form and consistency of the waste materials to be sampled. Samples collected using the sampling protocols listed below, for sam-

pling waste with properties similar to the indicated materials, will be considered by the Agency to be representative of the waste.

Extremely viscous liquid—ASTM Standard D140-70 Crushed or powdered material—ASTM Standard D346-75 Soil or rock-like material—ASTM Standard D420-69 Soil-like material—ASTM Standard D1452-65

Fly Ash-like material—ASTM Standard D2234-76 [ASTM Standards are available from ASTM, 1916 Race St., Philadelphia, PA 19103]

Containerized liquid wastes—"COLIWASA" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods,"^{*} U.S. Environmental Protection Agency, Office of Solid Waste, Washington, D.C. 20460. [Copies may be obtained from Solid Waste Information, U.S. Environmental Protection Agency, 26 W. St. Clair St., Cincinnati, Ohio 45268]

Liquid waste in pits, ponds, lagoons, and similar reservoirs—"Pond Sampler" described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods."^{*}

This manual also contains additional information on application of these protocols.

APPENDIX II—METHOD 1311 TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

1.0 Scope and Application

1.1 The TCLP is designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.

1.2 If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run.

1.3 If an analysis of any one of the liquid fractions of the TCLP extract indicates that a regulated compound is present at such high concentrations that, even after accounting for dilution from the other fractions of the extract, the concentration would be equal to or above the regulatory level for that compound, then the waste is hazardous and it is not necessary to analyze the remaining fractions of the extract.

1.4 If an analysis of extract obtained using a bottle extractor shows that the concentration of any regulated volatile analyte

equals or exceeds the regulatory level for that compound, then the waste is hazardous and extraction using the ZHE is not necessary. However, extract from a bottle extractor cannot be used to demonstrate that the concentration of volatile compounds is below the regulatory level.

2.0 Summary of Method

2.1 For liquid wastes (i.e., those containing less than 0.5% dry solid material), the waste, after filtration through a 0.6 to 0.8 μm glass fiber filter, is defined as the TCLP extract.

2.2 For wastes containing greater than or equal to 0.5% solids, the liquid, if any, is separated from the solid phase and stored for later analysis; the particle size of the solid phase is reduced, if necessary. The solid phase is extracted with an amount of extraction fluid equal to 20 times the weight of the solid phase. The extraction fluid employed is a function of the alkalinity of the solid phase of the waste. A special extractor vessel is used when testing for volatile analytes (see Table 1 for a list of volatile compounds). Following extraction, the liquid extract is separated from the solid phase by filtration through a 0.6 to 0.8 μm glass fiber filter.

2.3 If compatible (i.e., multiple phases will not form on combination), the initial liquid phase of the waste is added to the liquid extract, and these are analyzed together. If incompatible, the liquids are analyzed separately and the results are mathematically combined to yield a volume-weighted average concentration.

3.0 Interferences

3.1 Potential interferences that may be encountered during analysis are discussed in the individual analytical methods.

4.0 Apparatus and Materials

4.1 Agitation apparatus: The agitation apparatus must be capable of rotating the extraction vessel in an end-over-end fashion (see Figure 1) at 30 ± 2 rpm. Suitable devices known to EPA are identified in Table 2.

4.2 Extraction Vessels.

4.2.1 Zero-Headspace Extraction Vessel (ZHE). This device is for use only when the waste is being tested for the mobility of volatile analytes (i.e., those listed in Table 1). The ZHE (depicted in Figure 2) allows for liquid/solid separation within the device, and effectively precludes headspace. This type of vessel allows for initial liquid/solid separation, extraction, and final extract filtration without opening the vessel (see section 4.3.1). The vessels shall have an internal volume of 500-600 mL, and be equipped to accommodate a 90-110 mm

^{*}These methods are also described in "Samplers and Sampling Procedures for Hazardous Waste Streams," EPA 600/2-80-018, January 1980.

filter. The devices contain VITON®¹ O-rings which should be replaced frequently. Suitable ZHE devices known to EPA are identified in Table 3.

For the ZHE to be acceptable for use, the piston within the ZHE should be able to be moved with approximately 15 pounds per square inch (psi) or less. If it takes more pressure to move the piston, the O-rings in the device should be replaced. If this does not solve the problem, the ZHE is unacceptable for TCLP analyses and the manufacturer should be contacted.

The ZHE should be checked for leaks after every extraction. If the device contains a built-in pressure gauge, pressurize the device to 50 psi, allow it to stand unattended for 1 hour, and recheck the pressure. If the device does not have a built-in pressure gauge, pressurize the device to 50 psi, submerge it in water, and check for the presence of air bubbles escaping from any of the fittings. If pressure is lost, check all fittings and inspect and replace O-rings, if necessary. Retest the device. If leakage problems cannot be solved, the manufacturer should be contacted.

Some ZHEs use gas pressure to actuate the ZHE piston, while others use mechanical pressure (see Table 3). Whereas the volatiles procedures (see section 7.3) refers to pounds per square inch (psi), for the mechanically actuated piston, the pressure applied is measured in torque-inch-pounds. Refer to the manufacturer's instructions as to the proper conversion.

4.2.2 Bottle Extraction Vessel. When the waste is being evaluated using the nonvolatile extraction, a jar with sufficient capacity to hold the sample and the extraction fluid is needed. Headspace is allowed in this vessel.

The extraction bottles may be constructed from various materials, depending on the analytes to be analyzed and the nature of the waste (see section 4.3.3). It is recommended that borosilicate glass bottles be used instead of other types of glass, especially when inorganics are of concern. Plastic bottles, other than polytetrafluoroethylene, shall not be used if organics are to be investigated. Bottles are available from a number of laboratory suppliers. When this type of extraction vessel is used, the filtration device discussed in section 4.3.2 is used for initial liquid/solid separation and final extract filtration.

4.3 Filtration Devices: It is recommended that all filtrations be performed in a hood.

4.3.1 Zero-Headspace Extractor Vessel (ZHE): When the waste is evaluated for volatiles, the zero-headspace extraction vessel described in section 4.2.1 is used for filtra-

tion. The device shall be capable of supporting and keeping in place the glass fiber filter and be able to withstand the pressure needed to accomplish separation (50 psi).

NOTE: When it is suspected that the glass fiber filter has been ruptured, an in-line glass fiber filter may be used to filter the material within the ZHE.

4.3.2 Filter Holder: When the waste is evaluated for other than volatile analytes, any filter holder capable of supporting a glass fiber filter and able to withstand the pressure needed to accomplish separation may be used. Suitable filter holders range from simple vacuum units to relatively complex systems capable of exerting pressures of up to 50 psi or more. The type of filter holder used depends on the properties of the material to be filtered (see section 4.3.3). These devices shall have a minimum internal volume of 300 mL and be equipped to accommodate a minimum filter size of 47 mm (filter holders having an internal capacity of 1.5 L or greater, and equipped to accommodate a 142 mm diameter filter, are recommended). Vacuum filtration can only be used for wastes with low solids content (<10%) and for highly granular, liquid-containing wastes. All other types of wastes should be filtered using positive pressure filtration. Suitable filter holders known to EPA are shown in Table 4.

4.3.3 Materials of Construction: Extraction vessels and filtration devices shall be made of inert materials which will not leach or absorb waste components. Glass, polytetrafluoroethylene (PTFE), or type 316 stainless steel equipment may be used when evaluating the mobility of both organic and inorganic components. Devices made of high density polyethylene (HDPE), polypropylene (PP), or polyvinyl chloride (PVC) may be used only when evaluating the mobility of metals. Borosilicate glass bottles are recommended for use over other types of glass bottles, especially when inorganics are analytes of concern.

4.4 Filters: Filters shall be made of borosilicate glass fiber, shall contain no binder materials, and shall have an effective pore size of 0.6 to 0.8 μm , or equivalent. Filters known to EPA which meet these specifications are identified in Table 5. Pre-filters must not be used. When evaluating the mobility of metals, filters shall be acid-washed prior to use by rinsing with 1N nitric acid followed by three consecutive rinses with deionized distilled water (a minimum of 1 L per rinse is recommended). Glass fiber filter are fragile and should be handled with care.

4.5 pH Meters: The meter should be accurate to ± 0.05 units at 25°C.

¹ VITON® is a registered trademark of DuPont.

4.6 ZHE Extract Collection Devices: TEDLAR®² bags or glass, stainless steel or PTFE gag-tight syringes are used to collect the initial liquid phase and the final extract of the waste when using the ZHE device. The devices listed are recommended for use under the following conditions:

4.6.1 If a waste contains an aqueous liquid phase or if a waste does not contain a significant amount of nonaqueous liquid (i.e., <1% of total waste), the TEDLAR® bag or a 600 mL syringe should be used to collect and combine the initial liquid and solid extract.

4.6.2 If a waste contains a significant amount of nonaqueous liquid in the initial liquid phase (i.e., >1% of total waste), the syringe or the TEDLAR® bag may be used for both the initial solid/liquid separation and the final extract filtration. However, analysts should use one or the other, not both.

4.6.3 If the waste contains no initial liquid phase (is 100% solid) or has no significant solid phase (is 100% liquid), either the TEDLAR® bag or the syringe may be used. If the syringe is used, discard the first 5 mL of liquid expressed from the device. The remaining aliquots are used for analysis.

4.7 ZHE Extraction Fluid Transfer Devices: Any device capable of transferring the extraction fluid into the ZHE without changing the nature of the extraction fluid is acceptable (e.g., a positive displacement or peristaltic pump, a gas tight syringe, pressure filtration unit (see section 4.3.2), or other ZHE device).

4.8 Laboratory Balance: Any laboratory balance accurate to within ± 0.01 grams may be used (all weight measurements are to be within ± 0.1 grams).

4.9 Beaker or Erlenmeyer flask, glass, 500 mL.

4.10 Watchglass, appropriate diameter to cover beaker or erlenmeyer flask.

4.11 Magnetic stirrer.

5.0 Reagents

5.1 Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available. Other grades may be used, provided it is first ascertained that the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination.

5.2 Reagent water. Reagent water is defined as water in which an interferant is not observed at or above the methods detection limit of the analyte(s) of interest. For non-

volatile extractions, ASTM Type II water or equivalent meets the definition of reagent water. For volatile extractions, it is recommended that reagent water be generated by any of the following methods. Reagent water should be monitored periodically for impurities.

5.2.1 Reagent water for volatile extractions may be generated by passing tap water through a carbon filter bed containing about 500 grams of activated carbon (Calgon Corp., Filtrasorb-300 or equivalent).

5.2.2 A water purification system (Millipore Super-Q or equivalent) may also be used to generate reagent water for volatile extractions.

5.2.3 Reagent water for volatile extractions may also be prepared by boiling water for 15 minutes. Subsequently, while maintaining the water temperature at 90 ± 5 degrees C, bubble a contaminant-free inert gas (e.g., nitrogen) through the water for 1 hour. While still hot, transfer the water to a narrow mouth screw-cap bottle under zero-headspace and seal with a Teflon-lined septum and cap.

5.3 Hydrochloric acid (1N), HCl, made from ACS reagent grade.

5.4 Nitric acid (1N), HNO₃, made from ACS reagent grade.

5.5 Sodium hydroxide (1N), NaOH, made from ACS reagent grade.

5.6 Glacial acetic acid, CH₃CH₂OOH, ACS reagent grade.

5.7 Extraction fluid.

5.7.1 Extraction fluid #1: Add 5.7 mL glacial CH₃CH₂OOH to 500 mL of reagent water (See section 5.2), add 64.3 mL of 1N NaOH, and dilute to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 4.93 ± 0.05 .

5.7.2 Extraction fluid #2: Dilute 5.7 mL glacial CH₃CH₂OOH with reagent water (See section 5.2) to a volume of 1 liter. When correctly prepared, the pH of this fluid will be 2.88 ± 0.05 .

NOTE: These extraction fluids should be monitored frequently for impurities. The pH should be checked prior to use to ensure that these fluids are made up accurately. If impurities are found or the pH is not within the above specifications, the fluid shall be discarded and fresh extraction fluid prepared.

5.8 Analytical standards shall be prepared according to the appropriate analytical method.

6.0 Sample Collection, Preservation, and Handling

6.1 All samples shall be collected using an appropriate sampling plan.

6.2 The TCLP may place requirements on the minimal size of the field sample, depending upon the physical state or states of

² TEDLAR® is a registered trademark of Dupont.

the waste and the analytes of concern. An aliquot is needed for preliminary evaluation of which extraction fluid is to be used for the nonvolatile analyte extraction procedure. Another aliquot may be needed to actually conduct the nonvolatile extraction (see section 1.4 concerning the use of this extract for volatile organics). If volatile organics are of concern, another aliquot may be needed. Quality control measures may require additional aliquots. Further, it is always wise to collect more samples just in case something goes wrong with the initial attempt to conduct the test.

6.3 Preservatives shall not be added to samples before extraction.

6.4 Samples may be refrigerated unless refrigeration results in irreversible physical change to the waste. If precipitation occurs, the entire sample (including precipitate) should be extracted.

6.5 When the waste is to be evaluated for volatile analytes, care shall be taken to minimize the loss of volatiles. Samples shall be collected and stored in a manner intended to prevent the loss of volatile analytes (e.g., samples should be collected in Teflon-lined septum capped vials and stored at 4 °C. Samples should be opened only immediately prior to extraction).

6.6 TCLP extracts should be prepared for analysis and analyzed as soon as possible following extraction. Extracts or portions of extracts for metallic analyte determinations must be acidified with nitric acid to a pH <2, unless precipitation occurs (see section 7.2.14 if precipitation occurs). Extracts should be preserved for other analytes according to the guidance given in the individual analysis methods. Extracts or portions of extracts for organic analyte determinations shall not be allowed to come into contact with the atmosphere (i.e., no headspace) to prevent losses. See section 8.0 (QA requirements) for acceptable sample and extract holding times.

7.0 Procedure

7.1 Preliminary Evaluations. Perform preliminary TCLP evaluations on a minimum 100 gram aliquot of waste. This aliquot may not actually undergo TCLP extraction. These preliminary evaluations include: (1) Determination of the percent solids (section 7.1.1); (2) determination of whether the waste contains insignificant solids and is, therefore, its own extract after filtration (section 7.1.2); (3) determination of whether the solid portion of the waste requires particle size reduction (section 7.1.3); and (4) determination of which of the two extraction fluids are to be used for the nonvolatile TCLP extraction of the waste (section 7.1.4.).

7.1.1 Preliminary determination of percent solids: Percent solids is defined as that fraction of a waste sample (as a percentage

of the total sample) from which no liquid may be forced out by an applied pressure, as described below.

7.1.1.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solids) proceed to section 7.1.3.

7.1.1.2 If the sample is liquid or multiphasic, liquid/solid separation to make a preliminary determination of percent solids is required. This involves the filtration device described in section 4.3.2 and is outlined in sections 7.1.1.3 through 7.1.1.9.

7.1.1.3 Pre-weigh the filter and the container that will receive the filtrate.

7.1.1.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure.

7.1.1.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight.

7.1.1.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Centrifugation is to be used only as an aid to filtration. If used, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.

7.1.1.7 Quantitatively transfer the waste sample to the filter holder (liquid and solid phases). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature then allow the sample to warm up to room temperature in the device before filtering.

NOTE: If waste material (>1% of original sample weight) has obviously adhered to the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in section 7.1.1.5 to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is not reached under 10 psi, and if no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within any 2 minute period), stop the filtration.

NOTE: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.1.1.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase.

NOTE: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in section 7.1.1.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid. Do not replace

the original filter with a fresh filter under any circumstances. Use only one filter.

7.1.1.9 Determine the weight of the liquid phase by subtracting the weight of the filtrate container (see section 7.1.1.3) from the total weight of the filtrate-filled container. Determine the weight of the solid phase of the waste sample by subtracting the weight of the liquid phase from the weight of the total waste sample, as determined in section 7.1.1.5 or 7.1.1.7.

Record the weight of the liquid and solid phases. Calculate the percent solids as follows:

$$\text{Percent solids} = \frac{\text{Weight of solid (section 7.1.1.9)}}{\text{Total weight of waste (section 7.1.1.5 or 7.1.1.7)}} \times 100$$

7.1.2 If the percent solids determined in section 7.1.1.9 is equal to or greater than 0.5%, then proceed either to section 7.1.3 to determine whether the solid material requires particle size reduction or to section 7.1.2.1 if it is noticed that a small amount of the filtrate is entrained in wetting of the filter. If the percent solids determined in section 7.1.1.9 is less than 0.5%, then proceed to section 7.2.9 if the nonvolatile TCLP is to be performed and to section 7.3 with a fresh portion of the waste if the volatile TCLP is to be performed.

7.1.2.1 Remove the solid phase and filter from the filtration apparatus.

7.1.2.2 Dry the filter and solid phase at $100 \pm 20^\circ\text{C}$ until two successive weighings yield the same value within $\pm 1\%$. Record the final weight.

NOTE: Caution should be taken to ensure that the subject solid will not flash upon heating. It is recommended that the drying oven be vented to a hood or other appropriate device.

7.1.2.3 Calculate the percent dry solids as follows:

$$\% \text{ dry solids} = \frac{(\text{Weight of dry waste + filter}) - \text{tared weight of filter}}{\text{Initial weight of waste (section 7.1.1.5 or 7.1.1.7)}} \times 100$$

7.1.2.4 If the percent dry solids is less than 0.5%, then proceed to section 7.2.9 if the nonvolatile TCLP is to be performed, and to section 7.3 if the volatile TCLP is to be performed. If the percent dry solids is greater than or equal to 0.5%, and if the nonvolatile TCLP is to be performed, return to the beginning of this section (7.1) and, with a fresh portion of waste, determine whether particle size reduction is necessary (section 7.1.3) and determine the appropriate extraction fluid (section 7.1.4). If only the volatile TCLP is to be performed, see the note in section 7.1.4.

7.1.3 Determination of whether the waste requires particle size reduction (particle size is reduced during this step): Using the solid portion of the waste, evaluate the solid for particle size. Particle size reduction is required, unless the solid has a surface area per gram of material equal to or greater than 3.1 cm^2 , or is smaller than 1 cm in

its narrowest dimension (i.e., is capable of passing through a 9.5 mm (0.375 inch) standard sieve). If the surface area is smaller or the particle size larger than described above, prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described above. If the solids are prepared for organic volatiles extraction, special precautions must be taken (see section 7.3.6).

NOTE: Surface area criteria are meant for filamentous (e.g., paper, cloth, and similar) waste materials. Actual measurement of surface area is not required, nor is it recommended. For materials that do not obviously meet the criteria, sample-specific methods would need to be developed and employed to measure the surface area. Such methodology is currently not available.

7.1.4 Determination of appropriate extraction fluid: If the solid content of the waste is greater than or equal to 0.5% and if the sample will be extracted for nonvolatile constituents (section 7.2), determine the appropriate fluid (section 5.7) for the nonvolatiles extraction as follows:

NOTE: TCLP extraction for volatile constituents uses only extraction fluid #1 (section 5.7.1). Therefore, if TCLP extraction for nonvolatiles is not required, proceed to section 7.3.

7.1.4.1 Weigh out a small subsample of the solid phase of the waste, reduce the solid (if necessary) to a particle size of approximately 1 mm in diameter or less, and transfer 5.0 grams of the solid phase of the waste to a 500 mL beaker or Erlenmeyer flask.

7.1.4.2 Add 96.5 mL of reagent water to the beaker, cover with a watchglass, and stir vigorously for 5 minutes using a magnetic stirrer. Measure and record the pH. If the pH is <5.0, use extraction fluid #1. Proceed to section 7.2.

7.1.4.3 If the pH from section 7.1.4.2 is >5.0, add 3.5 mL 1N NCl, slurry briefly, cover with a watchglass, heat to 50°C, and hold at 50°C for 10 minutes.

7.1.4.4 Let the solution cool to room temperature and record the pH. If the pH is <5.0, use extraction fluid #1. If the pH is >5.0, use extraction fluid #2. Proceed to section 7.2.

7.1.5 If the aliquot of the waste used for the preliminary evaluation (sections 7.1.1-7.1.4) was determined to be 100% solid at section 7.1.1.1, then it can be used for the section 7.2 extraction (assuming at least 100 grams remain), and the section 7.3 extraction (assuming at least 25 grams remain). If the aliquot was subjected to the procedure in section 7.1.1.7, then another aliquot shall be used for the volatile extraction procedure in section 7.3. The aliquot of the waste subjected to the procedure in section 7.1.1.7 might be appropriate for use for the section 7.2 extraction if an adequate amount of solid (as determined by section 7.1.1.9) was obtained. The amount of solid necessary is dependent upon whether a sufficient amount of extract will be produced to support the analyses. If an adequate amount of solid remains, proceed to section 7.2.10 of the nonvolatile TCLP extraction.

7.2 Procedure When Volatiles are not Involved. A minimum sample size of 100 grams (solid and liquid phases) is recommended. In some cases, a larger sample size may be appropriate, depending on the solids content of the waste sample (percent solids, See section 7.1.1), whether the initial liquid phase of the waste will be miscible with the aqueous extract of the solid, and whether inorganics, semivolatile organics, pesticides, and herbicides are all analytes of concern.

Enough solids should be generated for extraction such that the volume of TCLP extract will be sufficient to support all of the analyses required. If the amount of extract generated by a single TCLP extraction will not be sufficient to perform all of the analyses, more than one extraction may be performed and the extracts from each combined and aliquoted for analysis.

7.2.1 If the waste will obviously yield no liquid when subjected to pressure filtration (i.e., is 100% solid, see section 7.1.1), weigh out a subsample of the waste (100 gram minimum) and proceed to section 7.2.9.

7.2.2 If the sample is liquid or multiphase, liquid/solid separation is required. This involves the filtration device described in section 4.3.2 and is outlined in sections 7.2.3 to 7.2.8.

7.2.3 Pre-weigh the container that will receive the filtrate.

7.2.4 Assemble the filter holder and filter following the manufacturer's instructions. Place the filter on the support screen and secure. Acid-wash the filter if evaluating the mobility of metals (see section 4.4).

NOTE: Acid-washed filters may be used for all nonvolatile extractions even when metals are not of concern.

7.2.5 Weigh out a subsample of the waste (100 gram minimum) and record the weight. If the waste contains <0.5% dry solids (section 7.1.2), the liquid portion of the waste, after filtration, is defined as the TCLP extract. Therefore, enough of the sample should be filtered so that the amount of filtered liquid will support all of the analyses required of the TCLP extract. For wastes containing >0.5% dry solids (sections 7.1.1 or 7.1.2), use the percent solids information obtained in section 7.1.1 to determine the optimum sample size (100 gram minimum) for filtration. Enough solids should be generated by filtration to support the analyses to be performed on the TCLP extract.

7.2.6 Allow slurries to stand to permit the solid phase to settle. Wastes that settle slowly may be centrifuged prior to filtration. Use centrifugation only as an aid to filtration. If the waste is centrifuged, the liquid should be decanted and filtered followed by filtration of the solid portion of the waste through the same filtration system.

7.2.7 Quantitatively transfer the waste sample (liquid and solid phases) to the filter holder (see section 4.3.2). Spread the waste sample evenly over the surface of the filter. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering.

NOTE: If waste material (>1% of the original sample weight) has obviously adhered to

the container used to transfer the sample to the filtration apparatus, determine the weight of this residue and subtract it from the sample weight determined in section 7.2.5, to determine the weight of the waste sample that will be filtered.

Gradually apply vacuum or gentle pressure of 1-10 psi, until air or pressurizing gas moves through the filter. If this point is reached under 10 psi, and if no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if the pressurizing gas has not moved through the filter, and if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When the pressurizing gas begins to move through the filter, or when the liquid flow has ceased at 50 psi (i.e., filtration does not result in any additional filtrate within a 2 minute period), stop the filtration.

NOTE: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.2.8 The material in the filter holder is defined as the solid phase of the waste, and the filtrate is defined as the liquid phase. Weigh the filtrate. The liquid phase may now be either analyzed (See section 7.2.12) or stored at 4°C until time of analysis.

NOTE: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying vacuum or pressure filtration, as outlined in section 7.2.7, this material may not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the extraction as a solid. Do not replace the original filter with a fresh filter under any circumstances. Use only one filter.

7.2.9 If the waste contains <0.5% dry solids (see section 7.1.2), proceed to section 7.2.13. If the waste contains >0.5% dry solids (see section 7.1.1 or 7.1.2), and if particle size reduction of the solid was needed in section 7.1.3, proceed to section 7.2.10. If the waste as received passes a 9.5 mm sieve, quantitatively transfer the solid material into the extractor bottle along with the filter used to separate the initial liquid from the solid phase, and proceed to section 7.2.11.

7.2.10 Prepare the solid portion of the waste for extraction by crushing, cutting, or grinding the waste to a surface area or particle size as described in section 7.1.3. When the surface area or particle size has been appropriately altered, quantitatively transfer the solid material into an extractor bottle. Include the filter used to separate the initial liquid from the solid phase.

NOTE: Sieving of the waste is not normally required. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended. If sieving is necessary, a Teflon-coated sieve should be used to avoid contamination of the sample.

7.2.11 Determine the amount of extraction fluid to add to the extractor vessel as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (section 7.1.1)} \times \text{weight of waste filtered (section 7.2.5 or 7.2.7)}}{100}$$

Slowly add this amount of appropriate extraction fluid (see section 7.1.4) to the extractor vessel. Close the extractor bottle tightly (it is recommended that Teflon tape be used to ensure a tight seal), secure in rotary agitation device, and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction takes place) shall be maintained at $23 \pm 2^\circ\text{C}$ during the extraction period.

NOTE: As agitation continues, pressure may build within the extractor bottle for some types of wastes (e.g., limed or calcium carbonate containing waste may evolve gases such as carbon dioxide). To relieve excess pressure, the extractor bottle may be periodically opened (e.g., after 15 minutes, 30 minutes, and 1 hour) and vented into a hood.

7.2.12 Following the 18 ± 2 hour extraction, separate the material in the extractor vessel into its component liquid and solid phases by filtering through a new glass fiber filter, as outlined in section 7.2.7. For final filtration of the TCLP extract, the glass fiber filter may be changed, if necessary, to facilitate filtration. Filter(s) shall be acid-washed (see section 4.4) if evaluating the mobility of metals.

7.2.13 Prepare the TCLP extract as follows:

7.2.13.1 If the waste contained no initial liquid phase, the filtered liquid material obtained from section 7.2.12 is defined as the TCLP extract. Proceed to section 7.2.14.

7.2.13.2 If compatible (e.g., multiple phases will not result on combination), combine the filtered liquid resulting from section 7.2.12 with the initial liquid phase of the waste obtained in section 7.2.7. This combined liquid is defined as the TCLP extract. Proceed to section 7.2.14.

7.2.13.3 If the initial liquid phase of the waste, as obtained from section 7.2.7, is not or may not be compatible with the filtered liquid resulting from section 7.2.12, do not

combine these liquids. Analyze these liquids, collectively defined as the TCLP extract, and combine the results mathematically, as described in section 7.2.14.

7.2.14 Following collection of the TCLP extract, the pH of the extract should be recorded. Immediately aliquot and preserve the extract for analysis. Metals aliquots must be acidified with nitric acid to pH <2. If precipitation is observed upon addition of nitric acid to a small aliquot of the extract, then the remaining portion of the extract for metals analyses shall not be acidified and the extract shall be analyzed as soon as possible. All other aliquots must be stored under refrigeration (4 °C) until analyzed. The TCLP extract shall be prepared and analyzed according to appropriate analytical methods. TCLP extracts to be analyzed for metals shall be acid digested except in those instances where digestion causes loss of metallic analytes. If an analysis of the undigested extract shows that the concentration of any regulated metallic analyte exceeds the regulatory level, then the waste is hazardous and digestion of the extract is not necessary. However, data on undigested extracts alone cannot be used to demonstrate that the waste is not hazardous. If the individual phases are to be analyzed separately, determine the volume of the individual phases (to ± 0.5%), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phase (L).

C_1 = The concentration of the analyte of concern in the first phase (mg/L).

V_2 = The volume of the second phase (L).

C_2 = The concentration of the analyte of concern in the second phase (mg/L).

7.2.15 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to section 8.0 for quality assurance requirements.

7.3 Procedure When Volatiles are Involved. Use the ZHE device to obtain TCLP extract for analysis of volatile compounds only. Extract resulting from the use of the ZHE shall not be used to evaluate the mobility of nonvolatile analytes (e.g., metals, pesticides, etc.).

The ZHE device has approximately a 500 mL internal capacity. The ZHE can thus accommodate a maximum of 25 grams of solid (defined as that fraction of a sample from

which no additional liquid may be forced out by an applied pressure of 50 psi), due to the need to add an amount of extraction fluid equal to 20 times the weight of the solid phase.

Charge the ZHE with sample only once and do not open the device until the final extract (of the solid) has been collected. Repeated filling of the ZHE to obtain 25 grams of solid is not permitted.

Do not allow the waste, the initial liquid phase, or the extract to be exposed to the atmosphere for any more time than is absolutely necessary. Any manipulation of these materials should be done when cold (4°C) to minimize loss of volatiles.

7.3.1 Pre-weigh the (evacuated) filtrate collection container (See section 4.6) and set aside. If using a TEDLAR® bag, express all liquid from the ZHE device into the bag, whether for the initial or final liquid/solid separation, and take an aliquot from the liquid in the bag for analysis. The containers listed in section 4.6 are recommended for use under the conditions stated in sections 4.6.1-4.6.3.

7.3.2 Place the ZHE piston within the body of the ZHE (it may be helpful first to moisten the piston O-rings slightly with extraction fluid). Adjust the piston within the ZHE body to a height that will minimize the distance the piston will have to move once the ZHE is charged with sample (based upon sample size requirements determined from section 7.3, section 7.1.1 and/or 7.1.2). Secure the gas inlet/outlet flange (bottom flange) onto the ZHE body in accordance with the manufacturer's instructions. Secure the glass fiber filter between the support screens and set aside. Set liquid inlet/outlet flange (top flange) aside.

7.3.3 If the waste is 100% solid (see section 7.1.1), weigh out a subsample (25 gram maximum) of the waste, record weight, and proceed to section 7.3.5.

7.3.4 If the waste contains <5% dry solids (section 7.1.2), the liquid portion of waste, after filtration, is defined as the TCLP extract. Filter enough of the sample so that the amount of filtered liquid will support all of the volatile analyses required. For wastes containing >5% dry solids (sections 7.1.1 and/or 7.1.2), use the percent solids information obtained in section 7.1.1 to determine the optimum sample size to charge into the ZHE. The recommended sample size is as follows:

7.3.4.1 For wastes containing <5% solids (see Section 7.1.1), weigh out a 500 gram subsample of waste and record the weight.

7.3.4.2 For wastes containing >5% solids (see Section 7.1.1), determine the amount of waste to charge into the ZHE as follows:

$$\text{Weight of waste to charge ZHE} = \frac{25}{\text{percent solids (section 7.1.1)}} \times 100$$

Weigh out a subsample of the waste of the appropriate size and record the weight.

7.3.5 If particle size reduction of the solid portion of the waste was required in section 7.1.3, proceed to section 7.3.6. If particle size reduction was not required in section 7.1.3, proceed to section 7.3.7.

7.3.6 Prepare the waste for extraction by crushing, cutting, or grinding the solid portion of the waste to a surface area or particle size as described in section 7.1.3.1. Wastes and appropriate reduction equipment should be refrigerated, if possible, to 4°C prior to particle size reduction. The means used to effect particle size reduction must not generate heat in and of itself. If reduction of the solid phase of the waste is necessary, exposure of the waste to the atmosphere should be avoided to the extent possible.

NOTE: Sieving of the waste is not recommended due to the possibility that volatiles may be lost. The use of an appropriately graduated ruler is recommended as an acceptable alternative. Surface area requirements are meant for filamentous (e.g., paper, cloth) and similar waste materials. Actual measurement of surface area is not recommended.

When the surface area or particle size has been appropriately altered, proceed to section 7.3.7.

7.3.7 Waste slurries need not be allowed to stand to permit the solid phase to settle. Do not centrifuge wastes prior to filtration.

7.3.8 Quantitatively transfer the entire sample (liquid and solid phases) quickly to the ZHE. Secure the filter and support screens onto the top flange of the device and secure the top flange to the ZHE body in accordance with the manufacturer's instructions. Tighten all ZHE fittings and place the device in the vertical position (gas inlet/outlet flange on the bottom). Do not attach the extract collection device to the top plate.

NOTE: If waste material (>1% of original sample weight) has obviously adhered to the container used to transfer the sample to the ZHE, determine the weight of this residue and subtract it from the sample weight determined in section 7.3.4 to determine the weight of the waste sample that will be filtered.

Attach a gas line to the gas inlet/outlet valve (bottom flange) and, with the liquid inlet/outlet valve (top flange) open, begin applying gentle pressure of 1-10 psi (or more if necessary) to force all headspace

slowly out of the ZHE device into a hood. At the first appearance of liquid from the liquid inlet/outlet valve, quickly close the valve and discontinue pressure. If filtration of the waste at 4 °C reduces the amount of expressed liquid over what would be expressed at room temperature, then allow the sample to warm up to room temperature in the device before filtering. If the waste is 100% solid (see section 7.1.1), slowly increase the pressure to a maximum of 50 psi to force most of the headspace out of the device and proceed to section 7.3.12.

7.3.9 Attach the evacuated pre-weighed filtrate collection container to the liquid inlet/outlet valve and open the valve. Begin applying gentle pressure of 1-10 psi to force the liquid phase of the sample into the filtrate collection container. If no additional liquid has passed through the filter in any 2 minute interval, slowly increase the pressure in 10 psi increments to a maximum of 50 psi. After each incremental increase of 10 psi, if no additional liquid has passed through the filter in any 2 minute interval, proceed to the next 10 psi increment. When liquid flow has ceased such that continued pressure filtration at 50 psi does not result in any additional filtrate within a 2 minute period, stop the filtration. Close the liquid inlet/outlet valve, discontinue pressure to the piston, and disconnect and weigh the filtrate collection container.

NOTE: Instantaneous application of high pressure can degrade the glass fiber filter and may cause premature plugging.

7.3.10 The material in the ZHE is defined as the solid phase of the waste and the filtrate is defined as the liquid phase.

NOTE: Some wastes, such as oily wastes and some paint wastes, will obviously contain some material that appears to be a liquid. Even after applying pressure filtration, this material will not filter. If this is the case, the material within the filtration device is defined as a solid and is carried through the TCLP extraction as a solid.

If the original waste contained <0.5% dry solids (see section 7.1.2), this filtrate is defined as the TCLP extract and is analyzed directly. Proceed to section 7.3.15.

7.3.11 The liquid phase may now be either analyzed immediately (See sections 7.3.13 through 7.3.15) or stored at 4°C under minimal headspace conditions until time of analysis.

Determine the weight of extraction fluid #1 to add to the ZHE as follows:

$$\text{Weight of extraction fluid} = \frac{20 \times \text{percent solids (section 7.1.1)} \times \text{weight of waste filtered (section 7.3.4 or 7.3.8)}}{100}$$

7.3.12 The following sections detail how to add the appropriate amount of extraction fluid to the solid material within the ZHE and agitation of the ZHE vessel. Extraction fluid #1 is used in all cases (See section 5.7).

7.3.12.1 With the ZHE in the vertical position, attach a line from the extraction fluid reservoir to the liquid inlet/outlet valve. The line used shall contain fresh extraction fluid and should be preflushed with fluid to eliminate any air pockets in the line. Release gas pressure on the ZHE piston (from the gas inlet/outlet valve), open the liquid inlet/outlet valve, and begin transferring extraction fluid (by pumping or similar means) into the ZHE. Continue pumping extraction fluid into the ZHE until the appropriate amount of fluid has been introduced into the device.

7.3.12.2 After the extraction fluid has been added, immediately close the liquid inlet/outlet valve and disconnect the extraction fluid line. Check the ZHE to ensure that all valves are in their closed positions. Manually rotate the device in an end-over-end fashion 2 or 3 times. Reposition the ZHE in the vertical position with the liquid inlet/outlet valve on top. Pressurize the ZHE to 5-10 psi (if necessary) and slowly open the liquid inlet/outlet valve to bleed out any headspace (into a hood) that may have been introduced due to the addition of extraction fluid. This bleeding shall be done quickly and shall be stopped at the first appearance of liquid from the valve. Re-pressurize the ZHE with 5-10 psi and check all ZHE fittings to ensure that they are closed.

7.3.12.3 Place the ZHE in the rotary agitation apparatus (if it is not already there) and rotate at 30 ± 2 rpm for 18 ± 2 hours. Ambient temperature (i.e., temperature of room in which extraction occurs) shall be maintained at $22 \pm 3^\circ\text{C}$ during agitation.

7.3.13 Following the 18 ± 2 hour agitation period, check the pressure behind the ZHE piston by quickly opening and closing the gas inlet/outlet valve and noting the escape of gas. If the pressure has not been maintained (i.e., no gas release observed), the device is leaking. Check the ZHE for leaking as specified in section 4.2.1, and perform the extraction again with a new sample of waste. If the pressure within the device has been maintained, the material in the extractor vessel is once again separated into its component liquid and solid phases. If the waste contained an initial liquid phase, the liquid may be filtered directly

into the same filtrate collection container (i.e., TEDLAR® bag) holding the initial liquid phase of the waste. A separate filtrate collection container must be used if combining would create multiple phases, or there is not enough volume left within the filtrate collection container. Filter through the glass fiber filter, using the ZHE device as discussed in section 7.3.9. All extract shall be filtered and collected if the TEDLAR® bag is used, if the extract is multiphasic, or if the waste contained an initial liquid phase (see sections 4.6 and 7.3.1).

NOTE: An in-line glass fiber filter may be used to filter the material within the ZHE if it is suspected that the glass fiber filter has been ruptured.

7.3.14 If the original waste contained no initial liquid phase, the filtered liquid material obtained from section 7.3.13 is defined as the TCLP extract. If the waste contained an initial liquid phase, the filtered liquid material obtained from section 7.3.13 and the initial liquid phase (section 7.3.9) are collectively defined as the TCLP extract.

7.3.15 Following collection of the TCLP extract, immediately prepare the extract for analysis and store with minimal headspace at 4°C until analyzed. Analyze the TCLP extract according to the appropriate analytical methods. If the individual phases are to be analyzed separately (i.e., are not miscible), determine the volume of the individual phases (to 0.5%), conduct the appropriate analyses, and combine the results mathematically by using a simple volume-weighted average:

$$\text{Final Analyte Concentration} = \frac{(V_1)(C_1) + (V_2)(C_2)}{V_1 + V_2}$$

where:

V_1 = The volume of the first phases (L).

C_1 = The concentration of the analyte of concern in the first phase (mg/L).

V_2 = The volume of the second phase (L).

C_2 = The concentration of the analyte of concern in the second phase (mg/L).

7.3.16 Compare the analyte concentrations in the TCLP extract with the levels identified in the appropriate regulations. Refer to section 8.0 for quality assurance requirements.

8.0 Quality Assurance

8.1 A minimum of one blank (using the same extraction fluid as used for the samples) must be analyzed for every 20 extractions that have been conducted in an extraction vessel.

8.2 A matrix spike shall be performed for each waste type (e.g., wastewater treatment sludge, contaminated soil, etc.) unless the result exceeds the regulatory level and the data is being used solely to demonstrate that the waste property exceeds the regulatory level. A minimum of one matrix spike must be analyzed for each analytical batch. The bias determined from the matrix spike determination shall be used to correct the measured values. (See sections 8.2.4 and 8.2.5.) As a minimum, follow the matrix spike addition guidance provided in each analytical method.

8.2.1 Matrix spikes are to be added after filtration of the TCLP extract and before preservation. Matrix spikes should not be added prior to TCLP extraction of the sample.

8.2.2 In most cases, matrix spikes should be added at a concentration equivalent to the corresponding regulatory level. If the analyte concentration is less than one half the regulatory level, the spike concentration may be as low as one half of the analyte concentration, but may not be not less than five times the method detection limit. In order to avoid differences in matrix effects, the matrix spikes must be added to the same nominal volume of TCLP extract as that which was analyzed for the unspiked sample.

8.2.3 The purpose of the matrix spike is to monitor the performance of the analytical methods used, and to determine whether matrix interferences exist. Use of other internal calibration methods, modification of the analytical methods, or use of alternate analytical methods may be needed to accurately measure the analyte concentration of the TCLP extract when the recovery of the matrix spike is below the expected analytical method performance.

8.2.4 Matrix spike recoveries are calculated by the following formula:

$$\%R (\% \text{ Recovery}) = 100 (X_s - X_u) / K$$

where:

X_s = measured value for the spiked sample,
 X_u = measured value for the unspiked sample, and
 K = known value of the spike in the sample.

8.2.5 Measured values are corrected for analytical bias using the following formula:

$$X_c = 100 (X_u / \%R)$$

where:

X_c = corrected value, and
 X_u = measured value of the unspiked sample.

8.3 All quality control measures described in the appropriate analytical methods shall be followed.

8.4 Samples must undergo TCLP extraction within the following time periods:

SAMPLE MAXIMUM HOLDING TIMES (DAYS)

	From: Field collection to: TCLP extraction	From: TCLP extraction to: Prepara- tive extraction	From: prepara- tive extraction to: determi- native analysis	Total elapsed time
Volatiles	14	NA	14	28
Semivola- tiles	14	7	40	61
Mercury	28	NA	28	56
Metals, except mercury	180	NA	180	360

NA = Not applicable.

If sample holding times are exceeded, the values obtained will be considered minimal concentrations. Exceeding the holding time is not acceptable in establishing that a waste does not exceed the regulatory level. Exceeding the holding time will not invalidate characterization if the waste exceeds the regulatory level.

TABLE 1—VOLATILE ANALYTES ^{1,2}

Compound	CAS No.
Acetone	67-64-1
Benzene	71-43-2
n-Butyl alcohol	71-36-3
Carbon disulfide	75-15-0
Carbon tetrachloride	56-23-5
Chlorobenzene	108-90-7
Chloroform	67-66-3
1,2-Dichloroethane	107-06-2
1,1-Dichloroethylene	75-35-4
Ethyl acetate	141-78-6
Ethyl benzene	100-41-4
Ethyl ether	60-29-7
Isobutanol	78-83-1
Methanol	67-56-1
Methylene chloride	75-09-2
Methyl ethyl ketone	78-93-3
Methyl isobutyl ketone	108-10-1
Tetrachloroethylene	127-18-4
Toluene	108-88-3
1,1,1-Trichloroethane	71-55-6
Trichloroethylene	79-01-6
Trichlorofluoromethane	75-69-4
1,1,2-Trichloro-1,2,2-trifluoroethane	76-13-1
Vinyl chloride	75-01-4
Xylene	1330-20-7

¹ When testing for any or all of these analytes, the zero-headspace extractor vessel shall be used instead of the bottle extractor.

² Benzene, carbon tetrachloride, chlorobenzene, chloroform, 1,2-dichloroethane, 1,1-dichloroethylene, methyl ethyl ketone, tetrachloroethylene, trichloroethylene, and vinyl chloride are toxicity characteristic constituents.

¹ Any device that meets the specifications listed in section 4.2.1. of the method is acceptable.

² This device uses a 110 mm filter.

TABLE 2—SUITABLE ROTARY AGITATION APPARATUS ¹

Company	Location	Model No.
Analytical Testing and Consulting Services, Inc.	Warrington, PA, (215) 343-4490.	4-vessel (DC20S), 8-vessel (DC20), 12-vessel (DC20B).
Associated Design and Manufacturing Company.	Alexandria VA, (703) 549-5999.	2-vessel (3740-2), 4-vessel (3740-4), 6-vessel (3740-6), 8-vessel (3740-8), 12-vessel (3740-12), 24-vessel (3740-24).
Environmental Machine and Design, Inc.	Lynchburg, VA, (804) 845-6424.	8-vessel (08-00-00) 4-vessel (04-00-00).
IRA Machine Shop and Laboratory.	Santurce, PR, (809) 752-4004.	8-vessel (011001).
Lars Lande Manufacturing.	Whitmore Lake, MI, (313) 449-4116.	10-vessel (01VRE), 5-vessel (5VRE).
Millipore Corp.	Bedford, MA, (800) 225-3384.	4-ZHE or 4 1-liter, bottle extractor, (YT300RAHW).

¹ Any device that rotates the extraction vessel in an end-over-end fashion at 30 ± 2 rpm is acceptable.

TABLE 3—SUITABLE ZERO-HEADSPACE EXTRACTOR VESSELS ¹

Company	Location	Model No.
Analytical Testing & Consulting Services, Inc..	Warrington, PA, (215) 343-4490.	C102, Mechanical Pressure Device.
Associated Design and Manufacturing Company.	Alexandria VA, (703) 549-5999.	3745-ZHE, Gas Pressure Device.
Lars Lande Manufacturing *.	Whitmore Lake, MI, (313) 449-4116.	ZHE-11, Gas Pressure Device.
Millipore Corporation.	Bedford, MA, (800) 225-3384.	YT30090HW, Gas Pressure Device.
Environmental Machine and Design, Inc..	Lynchburg, VA, (804) 845-6424.	VOLA-TOX1, Gas Pressure Device.

TABLE 4—SUITABLE FILTER HOLDERS ¹

Company	Location	Model/catalogue No.	Size
Nucleopore Corporation.	Pleasanton, CA, (800) 882-7711.	425910 410400	142mm, 47 mm.
Micro Filtration Systems.	Dublin, CA, (800) 334-7132, (415) 828-6010.	302400 311400	142 mm, 47 mm.
Millipore Corporation.	Bedford, MA, (800) 225-3384.	YT30142HW XX1004700	142 mm, 47 mm.

¹ Any device capable of separating the liquid from the solid phase of the waste is suitable, providing that it is chemically compatible with the waste and the constituents to be analyzed. Plastic devices (not listed above) may be used when only inorganic analytes are of concern. The 142 mm size filter holder is recommended.

TABLE 5—SUITABLE FILTER MEDIA ¹

Company	Location	Model	Pore Size (μm)
Millipore Corporation.	Bedford, MA, (800) 225-3384.	AP40	0.7
Nucleopore Corporation.	Pleasanton, CA, (415) 463-2530.	211625	0.7
Whatman Laboratory Products, Inc..	Clifton, NJ, (201) 773-5800.	GFF	0.7
Micro Filtration Systems.	Dublin, CA, (800) 334-7132, (415) 828-6010.	GF75	0.7

¹ Any filter that meets the specifications in section 4.4 of the Method is suitable.

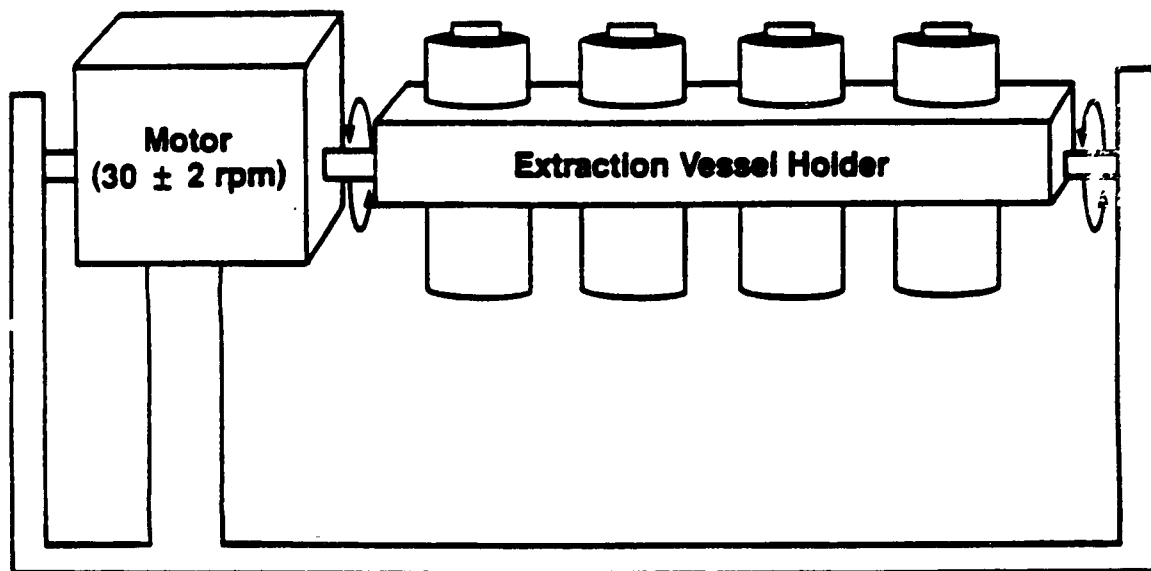


Figure 1. Rotary Agitation Apparatus

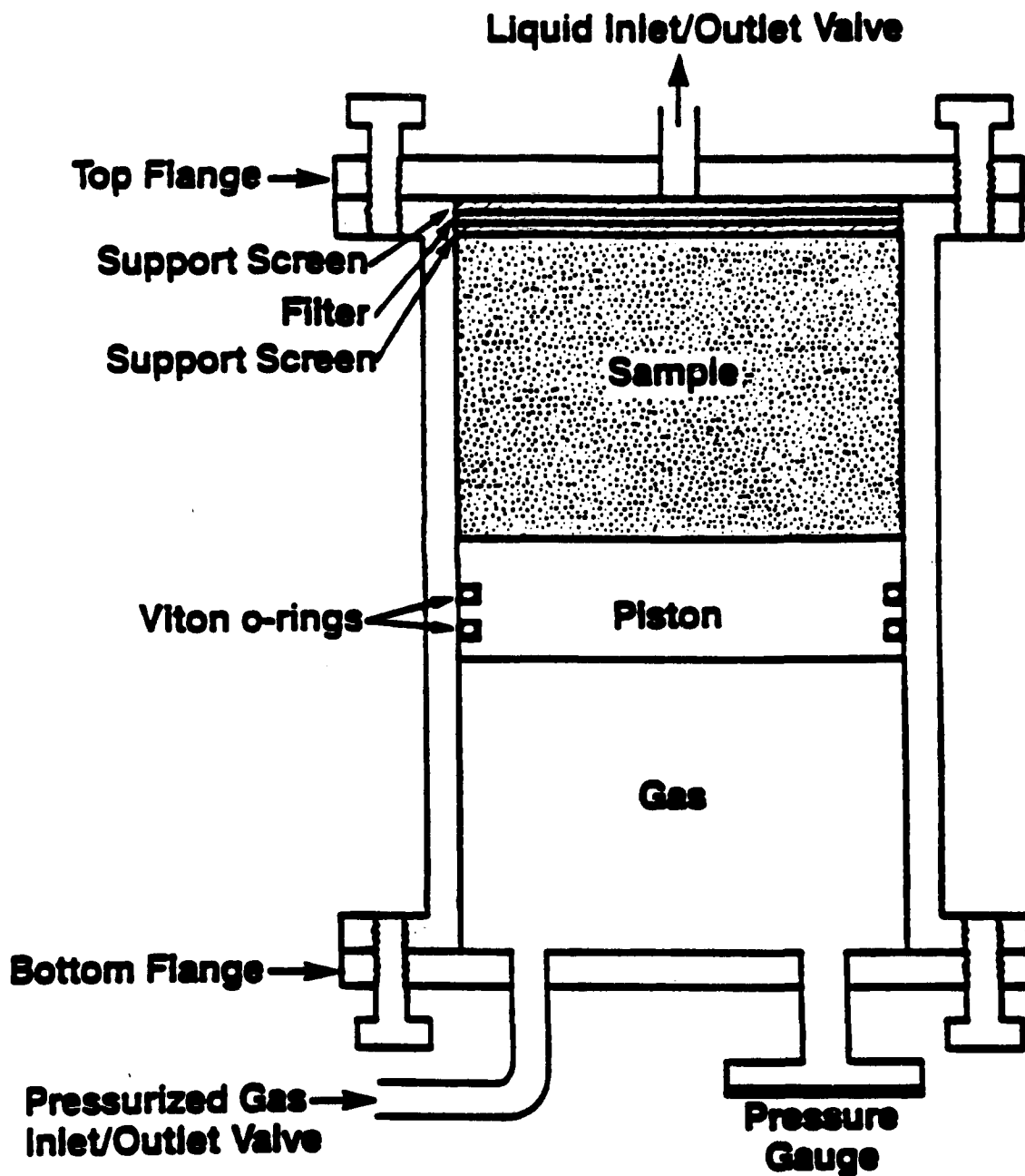
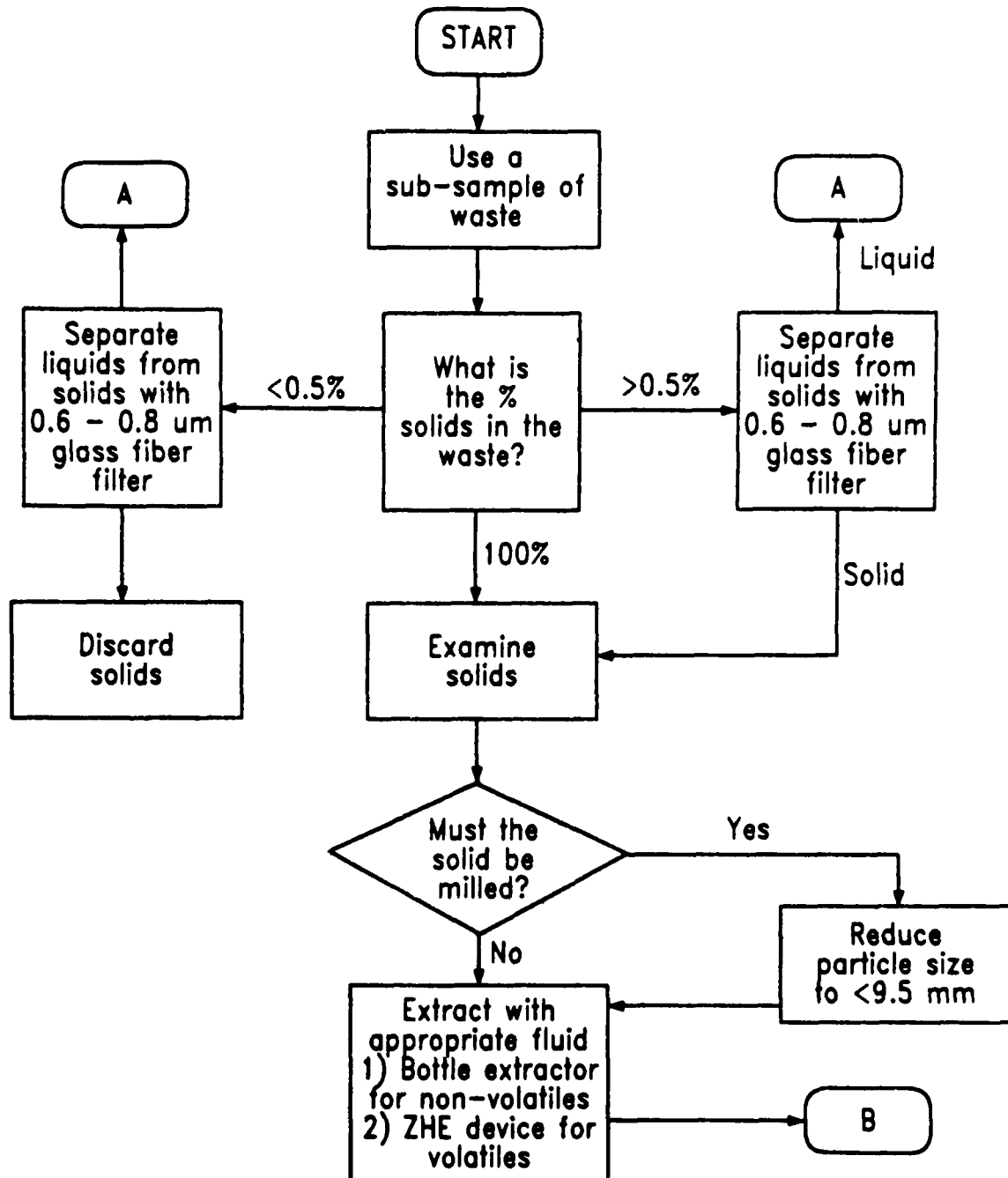


Figure 2. Zero-Headspace Extractor (ZHE)

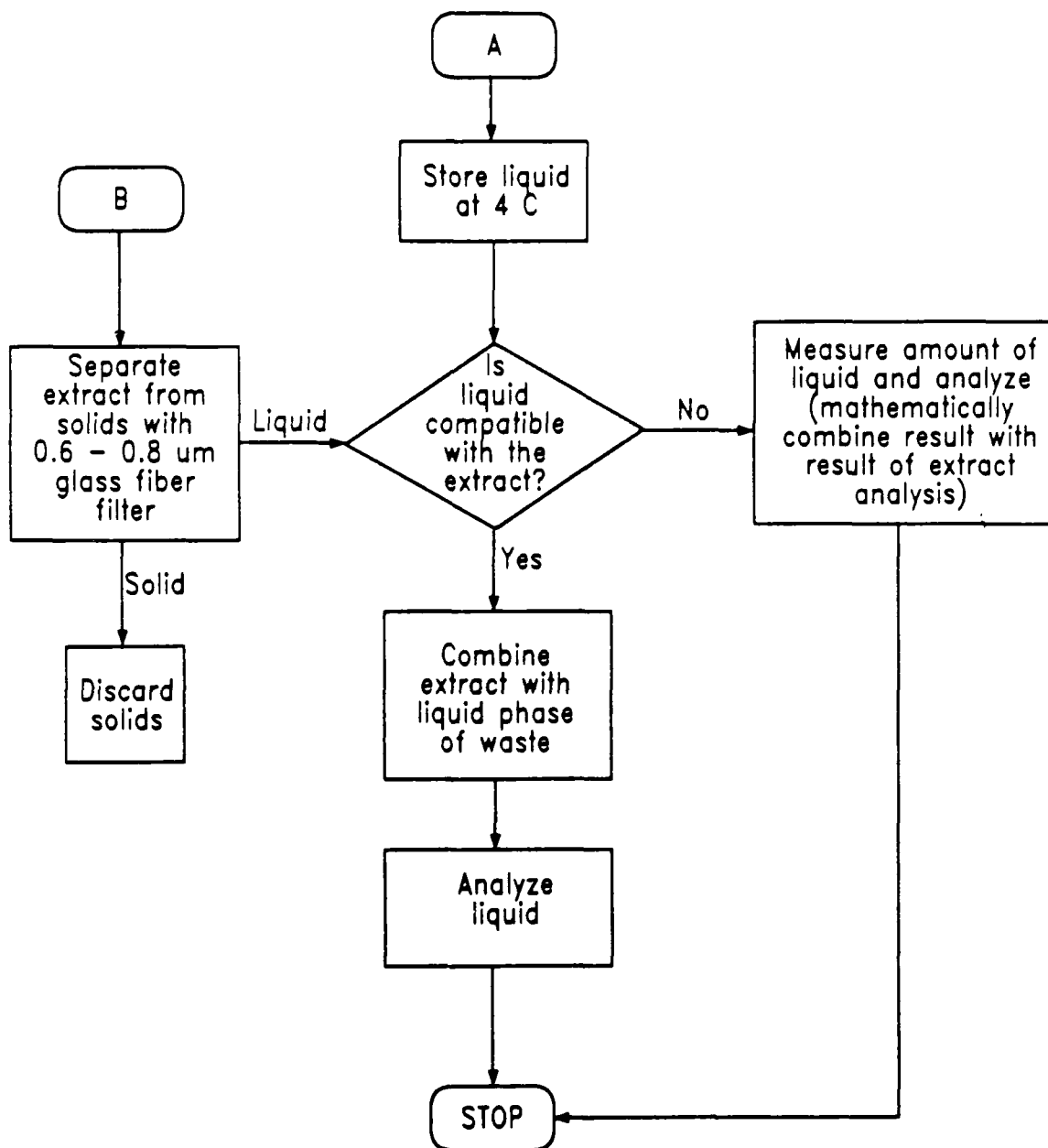
METHOD 1311

TOXICITY CHARACTERISTIC LEACHATE PROCEDURE



METHOD 1311 (CONTINUED)

TOXICITY CHARACTERISTIC LEACHATE PROCEDURE



[55 FR 26987, June 29, 1990]

APPENDIX III—CHEMICAL ANALYSIS TEST METHODS

Tables 1, 2, and 3 specify the appropriate analytical procedures, described in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," (incorporated by reference, see § 260.11) which shall be used to determine whether a sample contains a given Appendix VII or VIII toxic constituent.

Table 1 identifies each Appendix VII or VIII organic constituent along with the approved measurement method. Table 2 identifies the corresponding methods for inorganic species. Table 3 summarizes the contents of SW-846 and supplies specific section and method numbers for sampling and analysis methods.

Prior to final sampling and analysis method selection the analyst should consult the specific section or method described in SW-846 for additional guidance on which of the approved methods should be employed for a specific sample analysis situation.

TABLE 1—ANALYSIS METHODS FOR ORGANIC
CHEMICALS CONTAINED IN SW-846

Compound	Method Numbers
Acetonitrile.....	8030, 8240
Acrolein.....	8030, 8240
Acrylamide.....	8015, 8240
Acrylonitrile.....	8030, 8240
2-Amino-1-methylbenzene (<i>o</i> -Toluidine).....	8250
4-Amino-1-methylbenzene (<i>p</i> -Toluidine).....	8250
Aniline.....	8250
Benzene.....	8020, 8024
Benz(a)anthracene.....	8100, 8250, 8310
Benzo(a)pyrene.....	8100, 8250, 8310
Benzotrichloride.....	8120, 8250
Benzyl chloride.....	8120, 8250
Benzo(b)fluoranthene.....	8100, 8250, 8310
Benzo(k)fluoranthene.....	8100, 8250, 8270, 8310
Bis(2-chloroethoxymethane).....	8010, 8240
Bis(2-chloroethyl)ether.....	8010, 8240
Bis(2-chloroisopropyl)ether.....	8010, 8240
Carbon disulfide.....	8015, 8240
Carbon tetrachloride.....	8010, 8240
Chlordane.....	8080, 8250
Chlorinated biphenyls.....	8080, 8250
Chlorinated dibenzo- <i>p</i> -dioxins.....	8280
Chlorinated dibenzofurans.....	8280
Chloroacetaldehyde.....	8010, 8240
Chlorobenzene.....	8020, 8240
Chloroform.....	8010, 8240
Chloromethane.....	8010, 8240
2-Chlorophenol.....	8040, 8250
Chrysene.....	8100, 8250, 8310
Creosote ¹	8100, 8250

TABLE 1—ANALYSIS METHODS FOR ORGANIC
CHEMICALS CONTAINED IN SW-846—Continued

Compound	Method Numbers
Cresol(s).....	8040, 8250
Cresylic Acid(s).....	8040, 8250
Dichlorobenzene(s).....	8010, 8120, 8250
Dichloroethane(s).....	8010, 8240
Dichloromethane.....	8010, 8240
Dichlorophenoxyacetic acid.....	8150, 8250
Dichloropropanol.....	8120, 8250
Dimethyl sulfate.....	8250, 8270
1,1-Dimethylhydrazine (UDMH).....	8250
2,4-Dimethylphenol.....	8040, 8250
Dinitrobenzene.....	8090, 8250
4,6-Dinitro- <i>o</i> -cresol.....	8040, 8230
2,4-Dinitrotoluene.....	8090, 8250
2,6-Dinitrotoluene.....	8060, 8250
Endrin.....	8080, 8250
2-Ethoxyethanol.....	8030, 8240
Ethyl ether.....	8015, 8240
Ethylene dibromide.....	8010, 8240
Ethylene thiourea.....	8250, 8330
Formaldehyde.....	8015, 8240
Formic acid.....	8250
Heptachlor.....	8080, 8250
Hexachlorobenzene.....	8120, 8250
Hexachlorobutadiene.....	8120, 8250
Hexachloroethane.....	8010, 8240
Hexachlorocyclopentadiene.....	8120, 8250
Lindane.....	8080, 8250
Maleic anhydride.....	8250
Methanol.....	8010, 8240
Methomyl.....	8250
Methyl bromide.....	8010, 8240, 8260
Methyl ethyl ketone.....	8015, 8240
Methyl isobutyl ketone.....	8015, 8240
Napthalene.....	8100, 8250
Napthoquinone.....	8090, 8250
Nitrobenzene.....	8090, 8250
4-Nitrophenol.....	8040, 8240
2-Nitropropane.....	8030, 8240
Paraldehyde (trimer of acetaldehyde).....	8015, 8240
Pentachlorophenol.....	8040, 8250
Phenol.....	8040, 8250
Phorate.....	8140
Phosphorodithioic acid esters.....	8140
Phthalic anhydride.....	8090, 8250
2-Picoline.....	8090, 8250
Pyridine.....	8090, 8250
Tetrachlorobenzene(s).....	8120, 8250
Tetrachloroethane(s).....	8010, 8240
Tetrachloroethene.....	8010, 8240
Tetrachlorophenol.....	8040, 8250
Toluene.....	8020, 8024
Toluene diisocyanate(s).....	8250
Toluenediamine.....	8250
2,4-Toluenediamine.....	8250
2,6-Toluenediamine.....	8250
3,4-Toluenediamine.....	8250
Toxaphene.....	8080, 8250
Trichloroethane.....	8010, 8240
Trichloroethene(s).....	8010, 8240
Trichlorofluoromethane.....	8010, 8240
Trichlorophenol(s).....	8040, 8250
2,4,5-Trichlorophenoxy propionic acid.....	8150, 8250
Trichloropropane.....	8010, 8240
Vinyl chloride.....	8010, 8240

TABLE 1—ANALYSIS METHODS FOR ORGANIC CHEMICALS CONTAINED IN SW-846—Continued

Compound	Method Numbers
Vinylidene chloride.....	8010, 8240
Xylene.....	8020, 8240

¹ Analyte for phenanthrene and carbazole; if these are present in a ratio between 1.4:1 and 5:1 creosote should be considered present.

TABLE 2—ANALYSIS METHODS FOR INORGANIC CHEMICALS AND MISCELLANEOUS GROUPS OF ANALYTES CONTAINED IN SW-846^a

Compound	Third Edition Method(s)	Second Edition Method(s)
Aluminum.....	6010	
Antimony.....	6010	7040, 7041
Arsenic.....	6010	7060, 7061
Barium.....	6010	7080, 7081
Beryllium.....	6010, 7090, 7091	
Boron.....	6010	
Cadmium.....	6010	7130, 7131
Calcium.....	6010	
Chromium.....	6010	7190, 7191
Chromium, Hexavalent.....	7198	7195, 7196, 7197
Cobalt.....	6010	
Copper.....	6010, 7210, 7211	
Iron.....	6010, 7380, 7381	
Lead.....	6010	7420, 7421
Magnesium.....	6010	
Manganese.....	6010, 7460, 7461	
Mercury.....		7470, 7471
Molybdenum.....	6010	
Nickel.....	6010	7520, 7521

TABLE 2—ANALYSIS METHODS FOR INORGANIC CHEMICALS AND MISCELLANEOUS GROUPS OF ANALYTES CONTAINED IN SW-846^a—Continued

Compound	Third Edition Method(s)	Second Edition Method(s)
Osmium.....	7550	
Potassium.....	6010	
Selenium.....	6010	7740, 7741
Silicon.....	6010	
Silver.....	6010	7760, 7761
Sodium.....	6010, 7770	
Thallium.....	6010, 7840, 7841	
Vanadium.....	6010, 7910, 7911	
Zinc.....	6010, 7950, 7951	
Cyanides.....		9010
Total Organic Halides.....	9022	9020
Sulfides.....		9030
Sulfates.....	9035, 9036, 9038	
Total Organic Carbon.....	9060	
Phenolics.....	9065, 9066*, 9067	
Oil and Grease.....	9070, 9071	
Total Coliform.....	9131, 9132	
Nitrate.....	9200	
Chlorides.....	9250, 9251, 9252	
Gross Alpha and Gross Beta.....	9310	
Alpha-Emitting Radium Isotopes.....	9315	
Radium-228.....	9320	

^a The Third Edition of SW-846 and its Revision I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 783-3238, document number 955-001-00000-1.

* When Method 9066 is used it must be preceded by the manual distillation specified in procedure 7.1 of Method 9065. Just prior to distillation in method 9065, adjust the sulfuric acid-preserved sample to pH 4 with 1+9 NaOH. After the manual distillation is completed, the autoanalyzer manifold is simplified by connecting the re-sample line directly to the sampler.

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846 ^a

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Quality Control.....	1.0		10.0	
Introduction.....	1.1		10.1	
Quality Control.....	1.2			
Method Detection Limit.....	1.3			
Data Reporting.....	1.4			
Quality Control Documentation.....	1.5			
References.....	1.6			
Choosing the Correct Procedure.....	2.0			
Purpose.....	2.1			
Required Information.....	2.2			
Implementing the Guidance.....	2.3			
Characteristics.....	2.4			
Ground Water.....	2.5			
References.....	2.6			
Metallic Analytes.....	3.0			
Sampling Considerations.....	3.1			
Sample Preparation Methods.....	3.2			

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846 *—Continued

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Acid Digestion of Waters for Total Recoverable or Dissolved Metals for Analysis by Flame AAS or ICP.....	3.2	3005		
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Flame AAS or ICP.....	3.2	3010	4.1	3010
Acid Digestion of Aqueous Samples and Extracts for Total Metals for Analysis by Furnace AAS.....	3.2	3020	4.1	3020
Dissolution Procedure for Oils, Greases, or Waxes.....	3.2	3040	4.1	3040
Acid Digestion of Sediments, Sludges and Soils.....	3.2	3050	4.1	3050
Methods for the Determination of Metals.....	3.3			
Inductively Coupled Plasma Atomic Emissions Spectroscopy.....	3.3	*6010		
Atomic Absorption Methods.....	3.3	7000		
Aluminum, Flame AAS.....	3.3	7020		
Antimony, Flame AAS.....	3.3	7040	7.0	7040
Antimony, Furnace AAS.....	3.3	7041	7.0	7041
Arsenic, Furnace AAS.....	3.3	7060	7.0	7060
Arsenic, Gaseous Hydride AAS.....	3.3	7061	7.0	7061
Barium, Flame AAS.....	3.3	7080	7.0	7080
Barium, Furnace AAS.....	3.3	7081	7.0	7081
Beryllium, Flame AAS.....	3.3	*7090		
Beryllium, Furnace AAS.....	3.3	*7091		
Cadmium, Flame AAS.....	3.3	7130	7.0	7130
Cadmium, Furnace AAS.....	3.3	7131	7.0	7131
Calcium, Flame AAS.....	3.3	7140		
Chromium, Flame AAS.....	3.3	7190	7.0	7190
Chromium, Furnace AAS.....	3.3	7191	7.0	7191
Chromium, Hexavalent, Coprecipitation.....	3.3	7195	7.0	7195
Chromium, Hexavalent, Colorimetric.....	3.3	7196	7.0	7196
Chromium, Hexavalent, Chelation/Extraction.....	3.3	7197	7.0	7197
Chromium, Hexavalent, Differential Pulse Polarography.....	3.3	*7198		
Cobalt, Flame AAS.....	3.3	7200		
Cobalt, Furnace AAS.....	3.3	7201		
Copper, Flame AAS.....	3.3	*7210		
Copper, Furnace AAS.....	3.3	*7211		
Iron, Flame AAS.....	3.3	*7380		
Iron, Furnace AAS.....	3.3	*7381		
Lead, Flame AAS.....	3.3	7420	7.0	7420
Lead, Furnace AAS.....	3.3	7421	5.0	7421
Magnesium, Flame AAS.....	3.3	7450		
Manganese, Flame AAS.....	3.3	*7460		
Manganese, Furnace AAS.....	3.3	*7461		
Mercury in Liquid Waste, Manual Cold Vapor Technique.....	3.3	7470	7.0	7470
Mercury in Solid or Semisolid Waste, Manual Cold Vapor Technique.....	3.3	7471	7.0	7471
Molybdenum, Flame AAS.....	3.3	7480		
Molybdenum, Furnace AAS.....	3.3	7481		
Nickel, Flame AAS.....	3.3	7520	7.0	7520
Osmium, Flame AAS.....	3.3	*7550		
Potassium, Flame AAS.....	3.3	7610		
Selenium, Furnace AAS.....	3.3	7740	7.0	7740
Selenium, Gaseous Hydride AAS.....	3.3	7741	7.0	7741
Silver, Flame AAS.....	3.3	7760	7.0	7760
Silver, Furnace AAS.....	3.3	7761	7.0	7761
Sodium, Flame AAS.....	3.3	*7770		
Thallium, Flame AAS.....	3.3	*7840		
Thallium, Furnace AAS.....	3.3	*7841		
Tin, Flame AAS.....	3.3	7870		
Vanadium, Flame AAS.....	3.3	*7910		
Vanadium, Furnace AAS.....	3.3	*7911		
Zinc, Flame AAS.....	3.3	*7950		
Zinc, Furnace AAS.....	3.3	*7951		
Organic Analytes.....	4.0		8.0	
Sampling Considerations.....	4.1			
Sample Preparation Methods.....	4.2			
Extractions and Preparations.....	4.2.1			
Organic Extraction and Sample Preparation.....	4.2.1	3500		
Separatory Funnel Liquid-Liquid Extraction.....	4.2.1	3510	4.2	3510
Continuous Liquid-Liquid Extraction.....	4.2.1	3520	4.2	3520

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846 *—Continued

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Soxhlet Extraction.....	4.2.1	3540	4.2	3540
Ultrasonic Extraction.....	4.2.1	3550	4.2	3550
Waste Dilution.....	4.2.1	3580		
Purge-and-Trap.....	4.2.1	5030	5.0	5030
Protocol for Analysis of Sorbent Cartridges from VOST.....	4.2.1	*5040		
Cleanup.....	4.2.2			
Cleanup.....	4.2.2	3600		
Alumina Column Cleanup.....	4.2.2	3610		
Alumina Column Cleanup and Separation of Petroleum Wastes.....	4.2.2	*3611		
Florisil Column Cleanup.....	4.2.2	3620		
Silica Gel Cleanup.....	4.2.2	3630		
Gel-Permeation Cleanup.....	4.2.2	3640		
Acid-Base Partition Cleanup.....	4.2.2	3650	4.2	3530
Sulfur Cleanup.....	4.2.2	3660		
Determination of Organic Analytes.....	4.3			
Gas Chromatographic Methods.....	4.3.1		8.1	
Gas Chromatography.....	4.3.1	8000		
Halogenated Volatile Organics.....	4.3.1	8010	8.1	8010
EDB and DBCP.....	4.3.1	8011		
Nonhalogenated Volatile Organics.....	4.3.1	8015	8.1	8015
Aromatic Volatile Organics.....	4.3.1	8020	8.1	8020
Volatile Organic Compounds in Water by Purge-and-Trap Capillary Column GC with PID and Electrolytic Conductivity Detector in Series.....	4.3.1	8021		
Acrolein, Acrylonitrile, Acetonitrile.....	4.3.1	8030	8.1	8030
Phenols.....	4.3.1	8040	8.1	8040
Phthalate Esters.....	4.3.1	8060	8.1	8060
Nitrosamines.....	4.3.1	8070		
Organochlorine Pesticides and PCBs as Aroclors.....	4.3.1	8080	8.1	8080
Nitroaromatics and Cyclic Ketones.....	4.3.1	8090	8.1	8090
Polynuclear Aromatic Hydrocarbons.....	4.3.1	8100	8.1	8100
Haloethers.....	4.3.1	8110		
Chlorinated Hydrocarbons.....	4.3.1	8120	8.1	8120
Organophosphorus Pesticides.....	4.3.1	8140	8.1	8140
Organophosphorus Pesticides: Capillary Column.....	4.3.1	8141		
Chlorinated Herbicides.....	4.3.1	8150	8.1	8150
Gas Chromatographic/Mass Spectroscopic Methods.....	4.3.2		8.2	
GC/MS Volatiles.....	4.3.2	8240	8.2	8240
GC/MS Semivolatiles, Packed Column.....	4.3.2	8250	8.2	8250
GC/MS for Volatiles Capillary Column.....	4.3.2	8260		
GC/MS Semivolatiles, Capillary Column.....	4.3.2	8270	8.2	8270
Analysis of Chlorinated Dioxins and Dibenzofurans.....	4.3.2	8280		
High Performance Liquid Chromatographic Methods (HPLC).....	4.3.3		8.3	
Polynuclear Aromatic Hydrocarbons.....	4.3.3	8310	8.3	8310
Miscellaneous Screening Methods.....	4.4			
Headspace.....	4.4	3810	5.0	5020
Hexadecane Extraction and Screening of Purgeable Organics.....	4.4	3820		
Miscellaneous Test Methods.....	5.0		9.0	
Total and Amenable Cyanide (Colorimetric, Manual).....	5.0	9010	9.0	9010
Total and Amenable Cyanide (Colorimetric, Automated).....	5.0	9012		
Total Organic Halides (TOX).....	5.0	9020	9.0	9020
Purgeable Organic Halides (POX).....	5.0	9021		
Total Organic Halides (TOX) by Neutron Activation Analysis.....	5.0	*9022		
Acid-Soluble and Acid-Insoluble Sulfides.....	5.0	9030	9.0	9030
Extractable Sulfides.....	5.0	9031		
Sulfate, (Colorimetric, Automated, Chloranilate).....	5.0	*9035		
Sulfate, (Colorimetric, Automated, Methylthymol Blue, AA II).....	5.0	*9036		
Sulfate, (Turbidimetric).....	5.0	*9038		
Total Organic Carbon.....	5.0	*9060		
Phenolics, (Spectrophotometric, Manual 4-AAP).....	5.0	*9065		
Phenolics, (Colorimetric, Automated 4-AAP).....	5.0	*9066		
Phenolics, (Spectrophotometric, MBTH).....	5.0	*9067		

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846 *—Continued

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Total Recoverable Oil and Grease (Gravimetric, Separatory Funnel Extraction).....	5.0	*9070		
Oil and Grease Extraction Method for Sludge Samples.....	5.0	*9071		
Total Coliform: Multiple Tube Fermentation.....	5.0	*9131		
Total Coliform: Membrane Filter.....	5.0	*9132		
Nitrate.....	5.0	*9200		
Chloride (Colorimetric, Automated Ferricyanide AAI).....	5.0	*9250		
Chloride (Colorimetric, Automated Ferricyanide AAI).....	5.0	*9251		
Chloride (Titrimetric, Mercuric Nitrate).....	5.0	*9252		
Properties.....	6.0			
Multiple Extraction Procedure.....	6.0	*1320		
Extraction Procedure for Oily Wastes.....	6.0	*1330		
pH Electrometric Measurement.....	6.0	9040	9.0	9040
pH Paper Method.....	6.0	9041		
Soil pH.....	6.0	9045		
Specific Conductance.....	6.0	9050		
Cation-Exchange Capacity of Soils (Ammonium Acetate).....	6.0	*9080		
Cation-Exchange Capacity of Soils (Sodium Acetate).....	6.0	*9081		
Compatibility Test for Wastes and Membrane Liners.....	6.0	9090		
Paint Filter Liquids Test.....	6.0	9095	9.0	9095
Saturated Hydraulic Conductivity, Saturated Leachate Conductivity, and Intrinsic Permeability.....	6.0	*9100		
Gross Alpha and Gross Beta.....	6.0	*9310		
Alpha-Emitting Radium Isotopes.....	6.0	*9315		
Radium-228.....	6.0	*9320		
Introduction and Regulatory Definitions.....	7.0		2.0	
Ignitability.....	7.1		2.1.1	
Corrosivity.....	7.2		2.1.2	
Reactivity.....	7.3		2.1.3	
Test Method to Determine Hydrogen Cyanide Released from Wastes.....	7.3			
Test Method to Determine Hydrogen Sulfide Released from Wastes.....	7.3			
Extraction Procedure Toxicity.....	7.4		2.1.4	
Methods for Determining Characteristics.....	8.0		2.0	
Ignitability.....	8.1		2.1.1	
Pensky-Martens Closed-Cup Method.....	8.1	1010	2.1.1	1010
Setaflash Closed-Cup Method.....	8.1	1020	2.1.1	1020
Corrosivity.....	8.2		2.1.2	
Corrosivity Toward Steel.....	8.2	1110	2.1.2	1110
Reactivity.....	8.3		2.1.3	
Toxicity.....	8.4		2.1.4	
Extraction Procedure (EP) Toxicity Test Method and Structural Integrity Test.....	8.4	1310	2.1.4	1310
Sampling Plan.....	9.0		1.0	
Design and Development.....	9.1		1.0, 1.1	
Implementation.....	9.2		1.2, 1.3, 1.4	
Sampling Methods.....	10.0			
Modified Method 5 Sampling Train, Appendix A and B.....	10.0	*0010		
Source Assessment Sampling System (SASS).....	10.0	*0020		
Volatile Organic Sampling Train.....	10.0	*0030		
Ground Water Monitoring.....	11.0			
Background and Objectives.....	11.1			
Relationship to the Regulations and to Other Documents.....	11.2			
Revisions and Additions.....	11.3			
Acceptable Designs and Practices.....	11.4			
Unacceptable Designs and Practices.....	11.5			
Land Treatment Monitoring.....	12.0			
Background.....	12.1			
Treatment Zone.....	12.2			
Regulatory Definition.....	12.3			
Monitoring and Sampling Strategy.....	12.4			
Analysis.....	12.5			
References and Bibliography.....	12.6			
Incineration.....	13.0			
Introduction.....	13.1			
Regulatory Definition.....	13.2			
Waste Characterization Strategy.....	13.3			

TABLE 3—SAMPLING AND ANALYSIS METHODS CONTAINED IN SW-846 *—Continued

Title	Third Edition		Second Edition	
	Section No.	Method No.	Section No.	Method No.
Stack-Gas Effluent Characterization Strategy.....	13.4			
Additional Effluent Characterization Strategy.....	13.5			
Selection of Specific Sampling and Analysis Methods.....	13.6			
References.....	13.7			

*The Third Edition of SW-846 and its Revision I are available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402, (202) 738-3238, document number 955-001-00000-1.

*This method may be used in conjunction with or in addition to the methods found in the Second Edition of SW-846 as amended by Updates I and II.

When Method 9066 is used it must be preceded by the manual distillation specified in procedure 7.1 of Method 9065. Just prior to distillation in Method 9065, adjust the sulfuric acid-preserved sample to pH 4 with 1+9 NaOH. After the manual distillation is completed, the autoanalyzer manifold is simplified by connecting the re-sample line directly to the sampler.

[48 FR 15257, Apr. 8, 1983, as amended at 50 FR 2000, Jan. 14, 1985; 50 FR 42942, Oct. 23, 1985; 51 FR 5330, Feb. 13, 1986; 51 FR 6541, Feb. 25, 1986; 51 FR 37729, Oct. 24, 1986; 54 FR 41407, Oct. 6, 1989; 54 FR 40267, Sept. 29, 1989; 55 FR 8950, Mar. 9, 1990; 55 FR 18505, May 2, 1990; 55 FR 50483, Dec. 6, 1990]

APPENDIX IV—[RESERVED FOR RADIOACTIVE WASTE TEST METHODS]

APPENDIX V—[RESERVED FOR INFECTION WASTE TREATMENT SPECIFICATIONS]

APPENDIX VI—[RESERVED FOR ETIOLOGIC AGENTS]

APPENDIX VII—BASIS FOR LISTING HAZARDOUS WASTE

EPA hazardous waste No.	Hazardous constituents for which listed
F001.....	Tetrachloroethylene, methylene chloride trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons.
F002.....	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trichloroethane, ortho-dichlorobenzene, trichlorofluoromethane.
F003.....	N.A.
F004.....	Cresols and cresylic acid, nitrobenzene.
F005.....	Toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, 2-ethoxyethanol, benzene, 2-nitropropane.
F006.....	Cadmium, hexavalent chromium, nickel, cyanide (complexed).
F007.....	Cyanide (salts).
F008.....	Cyanide (salts).
F009.....	Cyanide (salts).
F010.....	Cyanide (salts).
F011.....	Cyanide (salts).
F012.....	Cyanide (complexed).
F019.....	Hexavalent chromium, cyanide (complexed).

EPA hazardous waste No.	Hazardous constituents for which listed
F020.....	Tetra- and pentachlorodibenzo- <i>p</i> -dioxins; tetra- and pentachlorodi-benzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
F021.....	Penta- and hexachlorodibenzo- <i>p</i> -dioxins; penta- and hexachlorodibenzofurans; pentachlorophenol and its derivatives.
F022.....	Tetra-, penta-, and hexachlorodibenzo- <i>p</i> -dioxins; tetra-, penta-, and hexachlorodibenzofurans.
F023.....	Tetra-, and pentachlorodibenzo- <i>p</i> -dioxins; tetra- and pentachlorodibenzofurans; tri- and tetrachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
F024.....	Chloromethane, dichloromethane, trichloromethane, carbon tetrachloride, chloroethylene, 1,1-dichloroethane, 1,2-dichloroethane, trans-1,2-dichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, 1,1,1,2-tetra-chloroethane, 1,1,2,2-tetrachloroethane, tetrachloroethylene, pentachloroethane, hexachloroethane, allyl chloride (3-chloropropene), dichloropropane, dichloropropene, 2-chloro-1,3-butadiene, hexachloro-1,3-butadiene, hexachlorocyclopentadiene, hexachlorocyclohexane, benzene, chlorobenzene, dichlorobenzenes, 1,2,4-trichlorobenzene, tetrachlorobenzene, pentachlorobenzene, hexachlorobenzene, toluene, naphthalene.

EPA hazard- ous waste No.	Hazardous constituents for which listed
F025.....	Chloromethane; Dichloromethane; Trichloromethane; Carbon tetrachloride; Chloroethylene; 1,1-Dichloroethane; 1,2-Dichloroethane; trans-1,2-Dichloroethylene; 1,1-Dichloroethylene; 1,1,1-Trichloroethane; 1,1,2-Trichloroethane; Trichloroethylene; 1,1,1,2-Tetrachloroethane; 1,1,2,2-Tetrachloroethane; Tetrachloroethylene; Pentachloroethane; Hexachloroethane; Allyl chloride (3-Chloropropene); Dichloropropane; Dichloropropene; 2-Chloro-1,3-butadiene; Hexachloro-1,3-butadiene; Hexachlorocyclopentadiene; Benzene; Chlorobenzene; Dichlorobenzene; 1,2,4-Trichlorobenzene; Tetrachlorobenzene; Pentachlorobenzene; Hexachlorobenzene; Toluene; Naphthalene.
F026.....	Tetra-, penta-, and hexachlorodibenzo- <i>p</i> -dioxins; tetra-, penta-, and hexachlorodibenzofurans.
F027.....	Tetra-, penta-, and hexachlorodibenzo- <i>p</i> -dioxins; tetra-, penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
F028.....	Tetra-, penta-, and hexachlorodibenzo- <i>p</i> -dioxins; tetra-, penta-, and hexachlorodibenzofurans; tri-, tetra-, and pentachlorophenols and their chlorophenoxy derivative acids, esters, ethers, amine and other salts.
F032.....	Benz(a)anthracene, benzo(a)pyrene, dibenz(a,h)-anthracene, indeno(1,2,3-cd)pyrene, pentachlorophenol, arsenic, chromium, tetra-, penta-, hexa-, heptachlorodibenzo- <i>p</i> -dioxins, tetra-, penta-, hexa-, heptachlorodibenzofurans.
F034.....	Benz(a)anthracene, benzo(k)fluoranthene, benzo(a)pyrene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene, arsenic, chromium.
F035.....	Arsenic, chromium, lead.
F037.....	Benzene, benzo(a)pyrene, chrysene, lead, chromium.
F038.....	Benzene, benzo(a)pyrene, chrysene, lead, chromium.
F039.....	All constituents for which treatment standards are specified for multi-source leachate (wastewaters and nonwastewaters) under 40 CFR 268.43(a), Table CCW.
K001.....	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetrachlorophenols, 2,4-dinitrophenol, cresosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, benz(a)anthracene, dibenz(a)anthracene, acenaphthalene.
K002.....	Hexavalent chromium, lead
K003.....	Hexavalent chromium, lead.
K004.....	Hexavalent chromium.
K005.....	Hexavalent chromium, lead.
K006.....	Hexavalent chromium.
K007.....	Cyanide (complexed), hexavalent chromium.
K008.....	Hexavalent chromium.
K009.....	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid.
K010.....	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde.
K011.....	Acrylonitrile, acetonitrile, hydrocyanic acid.
K013.....	Hydrocyanic acid, acrylonitrile, acetonitrile.
K014.....	Acetonitrile, acrylamide.

EPA hazard- ous waste No.	Hazardous constituents for which listed
K015.....	Benzyl chloride, chlorobenzene, toluene, benzotrichloride.
K016.....	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene.
K017.....	Epichlorohydrin, chloroethers [bis(chloromethyl) ether and bis (2-chloroethyl) ethers], trichloropropane, dichloropropanols.
K018.....	1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene.
K019.....	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K020.....	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes (1,1,2,2-tetrachloroethane and 1,1,1,2-tetrachloroethane), trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride.
K021.....	Antimony, carbon tetrachloride, chloroform.
K022.....	Phenol, tars (polycyclic aromatic hydrocarbons).
K023.....	Phthalic anhydride, maleic anhydride.
K024.....	Phthalic anhydride, 1,4-naphthoquinone.
K025.....	Meta-dinitrobenzene, 2,4-dinitrotoluene.
K026.....	Paraldehyde, pyridines, 2-picoline.
K027.....	Toluene diisocyanate, toluene-2, 4-diamine.
K028.....	1,1,1-trichloroethane, vinyl chloride.
K029.....	1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform.
K030.....	Hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane, ethylene dichloride.
K031.....	Arsenic.
K032.....	Hexachlorocyclopentadiene.
K033.....	Hexachlorocyclopentadiene.
K034.....	Hexachlorocyclopentadiene.
K035.....	Cresosote, chrysene, naphthalene, fluoranthene, benzo(b) fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd) pyrene, benzo(a)anthracene, dibenzo(a)anthracene, acenaphthalene.
K036.....	Toluene, phosphorodithioic and phosphorothioic acid esters.
K037.....	Toluene, phosphorodithioic and phosphorothioic acid esters.
K038.....	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K039.....	Phosphorodithioic and phosphorothioic acid esters.
K040.....	Phorate, formaldehyde, phosphorodithioic and phosphorothioic acid esters.
K041.....	Toxaphene.
K042.....	Hexachlorobenzene, ortho-dichlorobenzene.
K043.....	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol.
K044.....	N.A.
K045.....	N.A.
K046.....	Lead.
K047.....	N.A.
K048.....	Hexavalent chromium, lead.
K049.....	Hexavalent chromium, lead.
K050.....	Hexavalent chromium.
K051.....	Hexavalent chromium, lead.
K052.....	Lead.
K060.....	Cyanide, naphthalene, phenolic compounds, arsenic.
K061.....	Hexavalent chromium, lead, cadmium.

EPA hazardous waste No.	Hazardous constituents for which listed
K062.....	Hexavalent chromium, lead.
K064.....	Lead, cadmium.
K065.....	Do.
K066.....	Do.
K069.....	Hexavalent chromium, lead, cadmium.
K071.....	Mercury.
K073.....	Chloroform, carbon tetrachloride, hexachloroethane, trichloroethane, tetrachloroethylene, dichloroethylene, 1,1,2,2-tetrachloroethane.
K083.....	Aniline, diphenylamine, nitrobenzene, phenylenediamine.
K084.....	Arsenic.
K085.....	Benzene, dichlorobenzenes, trichlorobenzenes, tetrachlorobenzenes, pentachlorobenzene, hexachlorobenzene, benzyl chloride.
K086.....	Lead, hexavalent chromium.
K087.....	Phenol, naphthalene.
K088.....	Cyanide (complexes).
K090.....	Chromium.
K091.....	Do.
K093.....	Phthalic anhydride, maleic anhydride.
K094.....	Phthalic anhydride.
K095.....	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane.
K096.....	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane.
K097.....	Chlordane, heptachlor.
K098.....	Toxaphene.
K099.....	2,4-dichlorophenol, 2,4,6-trichlorophenol.
K100.....	Hexavalent chromium, lead, cadmium.
K101.....	Arsenic.
K102.....	Arsenic.
K103.....	Aniline, nitrobenzene, phenylenediamine.
K104.....	Aniline, benzene, diphenylamine, nitrobenzene, phenylenediamine.
K105.....	Benzene, monochlorobenzene, dichlorobenzenes, 2,4,6-trichlorophenol.
K106.....	Mercury.

EPA hazardous waste No.	Hazardous constituents for which listed
K107.....	1,1-Dimethylhydrazine (UDMH).
K108.....	1,1-Dimethylhydrazine (UDMH).
K109.....	1,1-Dimethylhydrazine (UDMH).
K110.....	1,1-Dimethylhydrazine (UDMH).
K111.....	2,4-Dinitrotoluene.
K112.....	2,4-Toluenediamine, <i>o</i> -toluidine, <i>p</i> -toluidine, aniline.
K113.....	2,4-Toluenediamine, <i>o</i> -toluidine, <i>p</i> -toluidine, aniline.
K114.....	2,4-Toluenediamine, <i>o</i> -toluidine, <i>p</i> -toluidine.
K115.....	2,4-Toluenediamine.
K116.....	Carbon tetrachloride, tetrachloroethylene, chloroform, phosgene.
K117.....	Ethylene dibromide.
K118.....	Ethylene dibromide.
K123.....	Ethylene thiourea.
K124.....	Ethylene thiourea.
K125.....	Ethylene thiourea.
K126.....	Ethylene thiourea.
K131.....	Dimethyl sulfate, methyl bromide.
K132.....	Methyl bromide.
K136.....	Ethylene dibromide.

N.A.—Waste is hazardous because it fails the test for the characteristic of ignitability, corrosivity, or reactivity.

[46 FR 4619, Jan. 16, 1981, as amended at 46 FR 27477, May 20, 1981; 49 FR 5312, Feb. 10, 1984; 50 FR 2000, Jan. 14, 1985; 50 FR 42942, Oct. 23, 1985; 51 FR 5330, Feb. 13, 1986; 51 FR 6541, Feb. 25, 1986; 51 FR 37729, Oct. 24, 1986; 54 FR 35421, Sept. 13, 1989; 54 FR 41407, Oct. 6, 1989; 54 FR 50978, Dec. 11, 1989; 55 FR 18505, May 2, 1990; 55 FR 22684, June 1, 1990; 55 FR 46396, Nov. 2, 1990; 55 FR 50483, Dec. 6, 1990]

APPENDIX VIII—HAZARDOUS CONSTITUENTS

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Acetonitrile.....	Same.....	75-05-8	U003
Acetophenone.....	Ethanone, 1-phenyl.....	98-86-2	U004
2-Acetylaminofluorene.....	Acetamide, N-9H-fluoren-2-yl.....	53-96-3	U005
Acetyl chloride.....	Same.....	75-36-5	U006
1-Acetyl-2-thiourea.....	Acetamide, N-(aminothioxomethyl).....	591-08-2	P002
Acrolein.....	2-Propenal.....	107-02-8	P003
Acrylamide.....	2-Propenamide.....	79-06-1	U007
Acrylonitrile.....	2-Propenenitrile.....	107-13-1	U009
Aflatoxins.....	Same.....	1402-68-2	
Aldicarb.....	Propanal, 2-methyl-2-(methylthio)-, O-[(methylamino)carbonyl]oxime.	116-06-3	P070
Aldrin.....	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1 α ,4 α ,4 β ,5 α ,8 α ,8 β)-	309-00-2	P004
Allyl alcohol.....	2-Propen-1-ol.....	107-18-6	P005
Allyl chloride.....	1-Propane, 3-chloro.....	107-18-6	
Aluminum phosphide.....	Same.....	20859-73-8	P006
4-Aminobiphenyl.....	[1,1'-Biphenyl]-4-amine.....	92-67-1	

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
5-(Aminomethyl)-3-isoxazolol	3(2H)-isoxazolone, 5-(aminomethyl)-	2763-98-4	P007
4-Aminopyridine	4-Pyridinamine	504-24-5	P008
Amitrole	1H-1,2,4-Triazol-3-amine	61-82-5	U011
Ammonium vanadate	Vanadic acid, ammonium salt	7803-55-6	P119
Aniline	Benzenamine	62-53-3	U012
Antimony	Same	7440-36-0	
Antimony compounds, N.O.S. ¹			
Aramite	Sulfurous acid, 2-chloroethyl 2-[4-(1,1-dimethylethyl)phenoxy]-1-methylethyl ester.	140-57-8	
Arsenic	Same	7440-38-2	
Arsenic compounds, N.O.S. ¹			
Arsenic acid	Arsenic acid H ₃ AsO ₄	7778-39-4	P010
Arsenic pentoxide	Arsenic oxide As ₂ O ₅	1303-28-2	P011
Arsenic trioxide	Arsenic oxide As ₂ O ₃	1327-53-3	P012
Auramine	Benzenamine, 4,4'-carbonimidoylbis[N,N-dimethyl-]	492-80-8	U014
Azaserine	L-Serine, diazoacetate (ester)	115-02-6	U015
Barium	Same	7440-39-3	
Barium compounds, N.O.S. ¹			
Barium cyanide	Same	542-62-1	P013
Benz[c]acridine	Same	225-51-4	U016
Benz[a]anthracene	Same	56-55-3	U018
Benzal chloride	Benzene, (dichloromethyl)-	98-87-3	U017
Benzene	Same	71-43-2	U019
Benzeneearsonic acid	Arsonic acid, phenyl-	98-05-5	
Benzidine	[1,1'-Biphenyl]-4,4'-diamine	92-87-5	U021
Benzo[b]fluoranthene	Benz[e]acephenanthrylene	205-99-2	
Benzo[j]fluoranthene	Same	205-82-3	
Benzo[k]fluoranthene	Same	207-08-9	
Benzo[a]pyrene	Same	50-32-8	U022
p-Benzoquinone	2,5-Cyclohexadiene-1,4-dione	106-51-4	U197
Benzotrichloride	Benzene, (trichloromethyl)-	98-07-7	U023
Benzyl chloride	Benzene, (chloromethyl)-	100-44-7	P028
Beryllium	Same	7440-41-7	P015
Beryllium compounds, N.O.S. ¹			
Bromoacetone	2-Propanone, 1-bromo-	598-31-2	P017
Bromoform	Methane, tribromo-	75-25-2	U225
4-Bromophenyl phenyl ether	Benzene, 1-bromo-4-phenoxy-	101-55-3	U030
Brucine	Strychnidin-10-one, 2,3-dimethoxy-	357-57-3	P018
Butyl benzyl phthalate	1,2-Benzenedicarboxylic acid, butyl phenyl-methyl ester.	85-68-7	
Cacodylic acid	Arsinic acid, dimethyl-	75-60-5	U136
Cadmium	Same	7440-43-9	
Cadmium compounds, N.O.S. ¹			
Calcium chromate	Chromic acid H ₂ CrO ₄ , calcium salt	13765-19-0	U032
Calcium cyanide	Calcium cyanide Ca(CN) ₂	592-01-8	P021
Carbon disulfide	Same	75-15-0	P022
Carbon oxyfluoride	Carbonic difluoride	353-50-4	U033
Carbon tetrachloride	Methane, tetrachloro-	56-23-5	U211
Chloral	Acetaldehyde, trichloro-	75-87-6	U034
Chlorambucil	Benzenebutanolic acid, 4-[bis(2-chloroethyl)amino]-	305-03-3	U035
Chlordane	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-	57-74-9	U036
Chlordane (alpha and gamma isomers)			U036
Chlorinated benzenes, N.O.S. ¹			
Chlorinated ethane, N.O.S. ¹			
Chlorinated fluorocarbons, N.O.S. ¹			
Chlorinated naphthalene, N.O.S. ¹			
Chlorinated phenol, N.O.S. ¹			
Chloromaphazin	Naphthalenamine, N,N'-bis(2-chloroethyl)-	494-03-1	U026
Chloroacetaldehyde	Acetaldehyde, chloro-	107-20-0	P023
Chloroalkyl ethers, N.O.S. ¹			
p-Chloroaniline	Benzenamine, 4-chloro-	106-47-8	P024
Chlorobenzene	Benzene, chloro-	108-90-7	U037
Chlorobenzilate	Benzenoacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy-, ethyl ester.	510-15-6	U038
p-Chloro-m-cresol	Phenol, 4-chloro-3-methyl-	59-50-7	U039
2-Chloroethyl vinyl ether	Ethene, (2-chloroethoxy)-	110-75-8	U042
Chloroform	Methane, trichloro-	67-66-3	U044
Chloromethyl methyl ether	Methane, chloromethoxy-	107-30-2	U046

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
beta-Chloronaphthalene	Naphthalene, 2-chloro	91-58-7	U047
o-Chlorophenol	Phenol, 2-chloro	95-57-8	U048
1-(o-Chlorophenyl)thiourea	Thiourea, (2-chlorophenyl)-	5344-82-1	P026
Chloroprene	1,3-Butadiene, 2-chloro	126-99-8	
3-Chloropropionitrile	Propanenitrile, 3-chloro	542-76-7	P027
Chromium	Same	7440-47-3	
Chromium compounds, N.O.S. ¹	Same		
Chrysene	Same	218-01-9	U050
Citrus red No. 2	2-Naphthalenol, 1-[(2,5-dimethoxyphenyl)azo]-	6358-53-8	
Coal tar creosote	Same	8007-45-2	
Copper cyanide	Copper cyanide CuCN	544-92-3	P029
Creosote	Same		U051
Cresol (Cresylic acid)	Phenol, methyl-	1319-77-3	U052
Crotonaldehyde	2-Butenal	4170-30-3	U053
Cyanides (soluble salts and complexes) N.O.S. ¹			P030
Cyanogen	Ethanedinitrile	460-19-5	P031
Cyanogen bromide	Cyanogen bromide (CN)Br	506-68-3	U246
Cyanogen chloride	Cyanogen chloride (CN)Cl	506-77-4	P033
Cycasin	beta-D-Glucopyranoside, (methyl-ONN-azoxy)methyl	14901-08-7	
2-Cyclohexyl-4,6-dinitrophenol	Phenol, 2-cyclohexyl-4,6-dinitro	131-89-5	P034
Cyclophosphamide	2H-1,3,2-Oxazaphosphorin-2-amine, N,N-bis(2-chloroethyl)tetrahydro-, 2-oxide	50-18-0	U058
2,4-D	Acetic acid, (2,4-dichlorophenoxy)-	94-75-7	U240
2,4-D, salts, esters			U240
Daunomycin	5,12-Naphthacenedione, 8-acetyl-10-[(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxy]-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-, (8S-cis)-	20830-81-3	U059
DDD	Benzene, 1,1'-(2,2-dichloroethylidene)bis[4-chloro-	72-54-8	U060
DDE	Benzene, 1,1'-(dichloroethenylidene)bis[4-chloro-	72-55-9	
DDT	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-chloro-	50-29-3	U061
Diallate	Carbamothioic acid, bis(1-methylethyl)-, S-(2,3-dichloro-2-propenyl) ester	2303-16-4	U062
Dibenz[a,h]acridine	Same	226-36-8	
Dibenz[a,j]acridine	Same	224-42-0	
Dibenz[a,h]anthracene	Same	53-70-3	U063
7H-Dibenzo[c,g]carbazole	Same	194-59-2	
Dibenzo[a,e]pyrene	Naphtho[1,2,3,4-def]chrysene	192-65-4	
Dibenzo[a,h]pyrene	Dibenzo[b,def]chrysene	189-64-0	
Dibenzo[a,i]pyrene	Benzo[rs]pentaphene	189-55-9	U064
1,2-Dibromo-3-chloropropane	Propane, 1,2-dibromo-3-chloro-	96-12-8	U066
Dibutyl phthalate	1,2-Benzenedicarboxylic acid, dibutyl ester	84-74-2	U069
o-Dichlorobenzene	Benzene, 1,2-dichloro-	95-50-1	U070
m-Dichlorobenzene	Benzene, 1,3-dichloro-	541-73-1	U071
p-Dichlorobenzene	Benzene, 1,4-dichloro-	106-46-7	U072
Dichlorobenzene, N.O.S. ¹	Benzene, dichloro-	25321-22-6	
3,3'-Dichlorobenzidine	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dichloro-	91-94-1	U073
1,4-Dichloro-2-butene	2-Butene, 1,4-dichloro-	764-41-0	U074
Dichlorodifluoromethane	Methane, dichlorodifluoro-	75-71-8	U075
Dichloroethylene, N.O.S. ¹	Dichloroethylene	25323-30-2	
1,1-Dichloroethylene	Ethene, 1,1-dichloro-	75-35-4	U078
1,2-Dichloroethylene	Ethene, 1,2-dichloro-, (E)-	156-60-5	U079
Dichloroethyl ether	Ethane, 1,1'-oxybis[2-chloro-	111-44-4	U025
Dichloroisopropyl ether	Propane, 2,2'-oxybis[2-chloro-	108-60-1	U027
Dichloromethoxy ethane	Ethane, 1,1'-[methylenebis(oxy)]bis[2-chloro-	111-91-1	U024
Dichloromethyl ether	Methane, oxybis[chloro-	542-88-1	P016
2,4-Dichlorophenol	Phenol, 2,4-dichloro-	120-83-2	U081
2,6-Dichlorophenol	Phenol, 2,6-dichloro-	87-85-0	U082
Dichlorophenylarsine	Arsinous dichloride, phenyl-	696-28-6	P036
Dichloropropane, N.O.S. ¹	Propane, dichloro-	26638-19-7	
Dichloropropanol, N.O.S. ¹	Propanol, dichloro-	26545-73-3	
Dichloropropene, N.O.S. ¹	1-Propene, dichloro-	26952-23-8	
1,3-Dichloropropene	1-Propene, 1,3-dichloro-	542-75-6	U084

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Dieldrin.....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2aalpha,3beta,6beta,6aalpha,7beta,7aalpha)-.	60-57-1	P037
1,2:3,4-Diepoxybutane.....	2,2'-Bioxirane.....	1484-53-5	U085
Diethylarsine.....	Arsine, diethyl-.....	692-42-2	P038
1,4-Diethyleneoxide.....	1,4-Dioxane.....	123-91-1	U108
Diethylhexyl phthalate.....	1,2-Benzenedicarboxylic acid, bis(2-ethylhexyl) ester.	117-81-7	U028
N,N'-Diethylhydrazine.....	Hydrazine, 1,2-diethyl-.....	1615-80-1	U086
O,O-Diethyl S-methyl dithiophosphate.....	Phosphorodithioic acid, O,O-diethyl S-methyl ester.	3288-58-2	U087
Diethyl-p-nitrophenyl phosphate.....	Phosphoric acid, diethyl 4-nitrophenyl ester....	311-45-5	P041
Diethyl phthalate.....	1,2-Benzenedicarboxylic acid, diethyl ester.....	84-86-2	U088
O,O-Diethyl O-pyrazinyl phosphorothioate....	Phosphorothioic acid, O,O-diethyl O-pyrazinyl ester.	297-97-2	P040
Diethylstilbestrol.....	Phenol, 4,4'-(1,2-diethyl-1,2-ethenediyl)bis-, (E)-.	56-53-1	U089
Dihydrosafrole.....	1,3-Benzodioxole, 5-propyl-.....	94-58-6	U090
Diisopropylfluorophosphate (DFP).....	Phosphorofluoric acid, bis(1-methylethyl) ester.	55-91-4	P043
Dimethoate.....	Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester.	60-51-5	P044
3,3'-Dimethoxybenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethoxy-....	119-90-4	U091
p-Dimethylaminoazobenzene.....	Benzenamine, N,N-dimethyl-4-(phenylazo)-.....	60-11-7	U093
7,12-Dimethylbenz[a]anthracene.....	Benz[a]anthracene, 7,12-dimethyl-.....	57-97-6	U094
3,3'-Dimethylbenzidine.....	[1,1'-Biphenyl]-4,4'-diamine, 3,3'-dimethyl-....	119-93-7	U095
Dimethylcarbamoyl chloride.....	Carbamic chloride, dimethyl-.....	79-44-7	U097
1,1-Dimethylhydrazine.....	Hydrazine, 1,1-dimethyl-.....	57-14-7	U098
1,2-Dimethylhydrazine.....	Hydrazine, 1,2-dimethyl-.....	540-73-8	U099
alpha,alpha-Dimethylphenethylamine.....	Benzenethanamine, alpha,alpha-dimethyl-.....	122-09-8	P046
2,4-Dimethylphenol.....	Phenol, 2,4-dimethyl-.....	105-67-9	U101
Dimethyl phthalate.....	1,2-Benzenedicarboxylic acid, dimethyl ester....	131-11-3	U102
Dimethyl sulfate.....	Sulfuric acid, dimethyl ester.....	77-78-1	U103
Dinitrobenzene, N.O.S. ¹	Benzene, dinitro-.....	25154-54-5	
4,6-Dinitro-o-cresol.....	Phenol, 2-methyl-4,6-dinitro-.....	534-52-1	P047
4,6-Dinitro-o-cresol salts.....			P047
2,4-Dinitrophenol.....	Phenol, 2,4-dinitro-.....	51-28-5	P048
2,4-Dinitrotoluene.....	Benzene, 1-methyl-2,4-dinitro-.....	121-14-2	U105
2,6-Dinitrotoluene.....	Benzene, 2-methyl-1,3-dinitro-.....	606-20-2	U106
Dinoseb.....	Phenol, 2-(1-methylpropyl)-4,6-dinitro.....	88-85-7	P020
Di-n-octyl phthalate.....	1,2-Benzenedicarboxylic acid, dioctyl ester.....	117-84-0	U017
Diphenylamine.....	Benzenamine, N-phenyl-.....	122-39-4	
1,2-Diphenylhydrazine.....	Hydrazine, 1,2-diphenyl-.....	122-66-7	U109
Di-n-propylnitrosamine.....	1-Propanamine, N-nitroso-N-propyl-.....	621-84-7	U111
Disulfoton.....	Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)ethyl] ester.	298-04-4	P039
Dithiobiuret.....	Thioimidodicarbonic diamide [(H ₂ N)C(S)] ₂ NH.	541-53-7	P049
Endosulfan.....	6,9-Methano-2,4,3-benzodioxathiepin, 6,7,8,9,10,10-hexachloro-1,5,5a,6,9,9a-hexahydro-, 3-oxide.	115-29-7	P050
Endothall.....	7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid.	145-73-3	P088
Endrin.....	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha,2beta,2beta,3alpha,6alpha,6abeta,7beta,7aalpha)-.	72-20-8	P051
Endrin metabolites.....			P051
Epichlorohydrin.....	Oxirane, (chloromethyl)-.....	106-89-8	U041
Epinephrine.....	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-, (R)-.	51-43-4	P042
Ethyl carbamate (urethane).....	Carbamic acid, ethyl ester.....	51-79-6	U238
Ethyl cyanide.....	Propanenitrile.....	107-12-0	P101
Ethylenebisdithiocarbamic acid.....	Carbamodithioic acid, 1,2-ethanediybis-.....	111-54-6	U114
Ethylenebisdithiocarbamic acid, salts and esters.			U114
Ethylene dibromide.....	Ethane, 1,2-dibromo-.....	106-83-4	U067
Ethylene dichloride.....	Ethane, 1,2-dichloro-.....	107-06-2	U077
Ethylene glycol monoethyl ether.....	Ethanol, 2-ethoxy-.....	110-80-5	U359

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Ethyleneimine.....	Aziridine.....	151-58-4	P054
Ethylene oxide.....	Oxirane.....	75-21-8	U115
Ethylenethiourea.....	2-Imidazolidinethione.....	96-45-7	U116
Ethylidene dichloride.....	Ethane, 1,1-dichloro-.....	75-34-3	U076
Ethyl methacrylate.....	2-Propenoic acid, 2-methyl-, ethyl ester.....	97-63-2	U118
Ethyl methanesulfonate.....	Methanesulfonic acid, ethyl ester.....	62-50-0	U119
Famphur.....	Phosphorothioic acid, O-[4-[(dimethylamino)sulfonyl]phenyl] O,O-dimethyl ester.....	52-85-7	P097
Fluoranthene.....	Same.....	206-44-0	U120
Fluorine.....	Same.....	7782-41-4	P056
Fluoroacetamide.....	Acetamide, 2-fluoro-.....	640-19-7	P057
Fluoroacetic acid, sodium salt.....	Acetic acid, fluoro-, sodium salt.....	62-74-8	P058
Formaldehyde.....	Same.....	50-00-0	U122
Formic acid.....	Same.....	64-18-6	U123
Glycidylaldehyde.....	Oxiranecarboxyaldehyde.....	765-34-4	U126
Halomethanes, N.O.S. ¹			
Heptachlor.....	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-.....	76-44-8	P059
Heptachlor epoxide.....	2,5-Methano-2H-indeno[1,2-b]oxirane, 2,3,4,5,6,7,7-heptachloro-1a,1b,5,5a,6,6a-hexahydro-, (1aalpha,1bbeta,2alpha,5alpha,5abeta,6beta,6aalpha)-.....	1024-57-3	
Heptachlor epoxide (alpha, beta, and gamma isomers).....			
Heptachlorodibenzofurans.....			
Heptachlorodibenzo-p-dioxins.....			
Hexachlorobenzene.....	Benzene, hexachloro-.....	118-74-1	U127
Hexachlorobutadiene.....	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-.....	87-68-3	U128
Hexachlorocyclopentadiene.....	1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-.....	77-47-4	U130
Hexachlorodibenzo-p-dioxins.....			
Hexachlorodibenzofurans.....			
Hexachloroethane.....	Ethane, hexachloro-.....	67-72-1	U131
Hexachlorophene.....	Phenol, 2,2'-methylenebis[3,4,6-trichloro-.....	70-30-4	U132
Hexachloropropene.....	1-Propene, 1,1,2,3,3,3-hexachloro-.....	1888-71-7	U243
Hexaethyl tetraphosphate.....	Tetraphosphoric acid, hexaethyl ester.....	757-58-4	P062
Hydrazine.....	Same.....	302-01-2	U133
Hydrogen cyanide.....	Hydrocyanic acid.....	74-90-8	P063
Hydrogen fluoride.....	Hydrofluoric acid.....	7664-39-3	U134
Hydrogen sulfide.....	Hydrogen sulfide H ₂ S.....	7783-06-4	U135
Indeno[1,2,3-cd]pyrene.....	Same.....	193-39-5	U137
Isobutyl alcohol.....	1-Propanol, 2-methyl-.....	78-83-1	U140
Isodrin.....	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha,4alpha,4abeta,5beta,8beta,8abeta)-.....	465-73-6	P060
Isosafrole.....	1,3-Benzodioxole, 5-(1-propenyl)-.....	120-58-1	U141
Kepone.....	1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one, 1,1a,3,3a,4,5,5,5a,5b,6-decachlorooctahydro-.....	143-50-0	U142
Lasiocarpine.....	2-Butenoic acid, 2-methyl-, 7-[[[2,3-dihydroxy-2-(1-methoxyethyl)-3-methyl-1-oxobutoxy]methyl]-2,3,5,7a-tetrahydro-1H-pyrrolizin-1-yl ester, [1S-[1alpha(Z),7(2S*,3R*),7aalpha]]-.....	303-34-1	4143
Lead.....	Same.....	7439-92-1	
Lead compounds, N.O.S. ¹			
Lead acetate.....	Acetic acid, lead(2+) salt.....	301-04-2	U144
Lead subphosphate.....	Phosphoric acid, lead(2+) salt (2:3).....	7446-27-7	U145
Lead subacetate.....	Lead, bis(acetato-O)tetrahydroxytri-.....	1335-32-6	U146
Lindane.....	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1alpha,2alpha,3beta,4alpha,5alpha,6beta)-.....	58-89-9	U129
Maleic anhydride.....	2,5-Furandione.....	108-31-6	U147
Maleic hydrazide.....	3,6-Pyridazinedione, 1,2-dihydro-.....	123-33-1	U148
Malononitrile.....	Propanedinitrile.....	109-77-3	U149
Melphalan.....	L-Phenylalanine, 4-[bis(2-chloroethyl)aminol]-.....	148-82-3	U150
Mercury.....	Same.....	7439-97-6	U151
Mercury compounds, N.O.S. ¹			
Mercury fulminate.....	Fulminic acid, mercury(2+) salt.....	628-86-4	P065
Methacrylonitrile.....	2-Propenenitrile, 2-methyl-.....	126-98-7	U152

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Methapyrilene	1,2-Ethanediamine, N,N-dimethyl-N'-2-pyridinyl-N'-(2-thienylmethyl)-	91-80-5	U155
Methomyl	Ethanimidothioic acid, N-[[[(methylamino)carbonyl]oxy]-, methyl ester.	16752-77-5	P086
Methoxychlor	Benzene, 1,1'-(2,2,2-trichloroethylidene)bis[4-methoxy-	72-43-5	U247
Methyl bromide	Methane, bromo-	74-83-9	U029
Methyl chloride	Methane, chloro-	74-87-3	U045
Methyl chlorocarbonate	Carbonochloridic acid, methyl ester	79-22-1	U156
Methyl chloroform	Ethane, 1,1,1-trichloro-	71-55-8	U226
3-Methylcholanthrene	Benz[<i>a</i>]aceanthrylene, 1,2-dihydro-3-methyl-	56-49-5	U157
4,4'-Methylenebis(2-chloroaniline)	Benzenamine, 4,4'-methylenebis[2-chloro-	101-14-4	U158
Methylene bromide	Methane, dibromo-	74-85-3	U068
Methylene chloride	Methane, dichloro-	75-09-2	U080
Methyl ethyl ketone (MEK)	2-Butanone	78-93-3	U159
Methyl ethyl ketone peroxide	2-Butanone, peroxide	1338-23-4	U160
Methyl hydrazine	Hydrazine, methyl-	60-34-4	P068
Methyl iodide	Methane, iodo-	74-88-4	U138
Methyl isocyanate	Methane, isocyanato-	624-83-9	P064
2-Methylacetonitrile	Propanenitrile, 2-hydroxy-2-methyl-	75-86-5	P069
Methyl methacrylate	2-Propenoic acid, 2-methyl-, methyl ester	80-62-6	U162
Methyl methanesulfonate	Methanesulfonic acid, methyl ester	66-27-3	
Methyl parathion	Phosphorothioic acid, O,O-dimethyl O-(4-nitrophenyl) ester.	298-00-0	P071
Methylthiouracil	4(1H)-Pyrimidinone, 2,3-dihydro-6-methyl-2-thio-	56-04-2	U164
Mitomycin C	Azino[2',3':3,4]pyrrolo[1,2- <i>a</i>]indole-4,7-dione, 6-amino-8-[[[(aminocarbonyl)oxy]methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1a <i>S</i> -(1a <i>alpha</i> ,8 <i>beta</i> ,8a <i>alpha</i> ,8b <i>alpha</i>)]-	50-07-7	U010
MNNG	Guanidine, N-methyl-N-nitro-N-nitroso-	70-25-7	U163
Mustard gas	Ethane, 1,1'-thiobis[2-chloro-	505-60-2	
Naphthalene	Same	91-20-3	U165
1,4-Naphthoquinone	1,4-Naphthalenedione	130-15-4	U166
alpha-Naphthylamine	1-Naphthalenamine	134-32-7	U167
beta-Naphthylamine	2-Naphthalenamine	91-59-8	U168
alpha-Naphthylthiourea	Thiourea, 1-naphthalenyl-	86-88-4	P072
Nickel	Same	7440-02-0	
Nickel compounds, N.O.S. ¹			
Nickel carbonyl	Nickel carbonyl Ni(CO) ₄ , (T-4)-	13463-39-3	P073
Nickel cyanide	Nickel cyanide Ni(CN) ₂	557-19-7	P074
Nicotine	Pyridine, 3-(1-methyl-2-pyrrolidinyl)-, (S)-	54-11-5	P075
Nicotine salts			P075
Nitric oxide	Nitrogen oxide NO	10102-43-9	P076
p-Nitroaniline	Benzenamine, 4-nitro-	100-01-6	P077
Nitrobenzene	Benzene, nitro-	98-95-3	U169
Nitrogen dioxide	Nitrogen oxide NO ₂	10102-44-0	P078
Nitrogen mustard	Ethanamine, 2-chloro-N-(2-chloroethyl)-N-methyl-	51-75-2	
Nitrogen mustard, hydrochloride salt			
Nitrogen mustard N-oxide	Ethanamine, 2-chloro-N-(2-chloroethyl)-N-methyl-, N-oxide.	126-85-2	
Nitrogen mustard, N-oxide, hydrochloride salt			
Nitroglycerin	1,2,3-Propanetriol, trinitrate	55-63-0	P081
p-Nitrophenol	Phenol, 4-nitro-	100-02-7	U170
2-Nitropropane	Propane, 2-nitro-	79-46-9	U171
Nitrosamines, N.O.S. ¹		35576-91-1D	
N-Nitrosodi-n-butylamine	1-Butanamine, N-butyl-N-nitroso-	924-16-3	U172
N-Nitrosodiethanolamine	Ethanol, 2,2'-(nitrosoimino)bis-	1116-54-7	U173
N-Nitrosodiethylamine	Ethanamine, N-ethyl-N-nitroso-	55-18-5	U174
N-Nitrosodimethylamine	Methanamine, N-methyl-N-nitroso-	62-75-9	P082
N-Nitroso-N-ethylurea	Urea, N-ethyl-N-nitroso-	759-73-9	U176
N-Nitrosomethylethylamine	Ethanamine, N-methyl-N-nitroso-	10595-95-6	
N-Nitroso-N-methylurea	Urea, N-methyl-N-nitroso-	684-93-5	U177
N-Nitroso-N-methylurethane	Carbamic acid, methylnitroso-, ethyl ester	615-53-2	U178
N-Nitrosomethylvinylamine	Vinylamine, N-methyl-N-nitroso-	4549-40-0	P084
N-Nitrosomorpholine	Morpholine, 4-nitroso-	59-89-2	
N-Nitrosomorpholine	Pyridine, 3-(1-nitroso-2-pyrrolidinyl)-, (S)-	16543-55-8	

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
N-Nitrosopiperidine	Piperidine, 1-nitroso	100-75-4	U179
N-Nitrosopyrrolidine	Pyrrolidine, 1-nitroso	930-55-2	U180
N-Nitrososarcosine	Glycine, N-methyl-N-nitroso	13256-22-9	
5-Nitro-o-toluidine	Benzenamine, 2-methyl-5-nitro	89-55-8	U181
Octamethylpyrophosphoramide	Diphosphoramide, octamethyl	152-18-9	P085
Osmium tetroxide	Osmium oxide OsO ₄ , (T-4)	20816-12-0	P087
Paraldehyde	1,3,5-Trioxane, 2,4,6-trimethyl	123-63-7	U182
Parathion	Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	58-38-2	P089
Pentachlorobenzene	Benzene, pentachloro	608-93-5	U183
Pentachlorodibenzo-p-dioxins			
Pentachlorodibenzofurans			
Pentachloroethane	Ethane, pentachloro	76-01-7	U184
Pentachloronitrobenzene (PCNB)	Benzene, pentachloronitro	82-68-8	U185
Pentachlorophenol	Phenol, pentachloro	87-86-5	See F027
Phenacetin	Acetamide, N-(4-ethoxyphenyl)	62-44-2	U187
Phenol	Same	108-95-2	U188
Phenylenediamine	Benzenediamine	25265-76-3	
Phenylmercury acetate	Mercury, (acetato-O)phenyl	62-38-4	P092
Phenylthiourea	Thiourea, phenyl	103-85-5	P093
Phosgene	Carbonic dichloride	75-44-5	P095
Phosphine	Same	7803-51-2	P096
Phorate	Phosphorodithioic acid, O,O-diethyl S-[(ethylthio)methyl] ester	298-02-2	P094
Phthalic acid esters, N.O.S. ¹			
Phthalic anhydride	1,3-Isobenzofurandione	85-44-9	U190
2-Picoline	Pyridine, 2-methyl	109-06-8	U191
Polychlorinated biphenyls, N.O.S. ¹			
Potassium cyanide	Potassium cyanide K(CN)	151-50-8	P098
Potassium silver cyanide	Argentate(1-), bis(cyano-C)-, potassium	506-61-6	P099
Pronamide	Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propenyl)-	23950-58-5	U192
1,3-Propane sultone	1,2-Oxathiolane, 2,2-dioxide	1120-71-4	U193
n-Propylamine	1-Propanamine	107-10-8	U194
Propargyl alcohol	2-Propyn-1-ol	107-19-7	P102
Propylene dichloride	Propane, 1,2-dichloro	78-87-5	U083
1,2-Propyleneimine	Aziridine, 2-methyl	75-55-8	P067
Propylthiouracil	4(1H)-Pyrimidinone, 2,3-dihydro-6-propyl-2-thioxo-	51-52-5	
Pyridine	Same	110-86-1	U196
Reserpine	Yohimban-16-carboxylic acid, 11,17-dimethoxy-18-[(3,4,5-trimethoxybenzoyl)oxy]-smethyl ester, (3beta,16beta,17alpha,18beta,20alpha)-	50-55-5	U200
Resorcinol	1,3-Benzenediol	108-46-3	U201
Saccharin	1,2-Benzisothiazol-3(2H)-one, 1,1-dioxide	81-07-2	U202
Saccharin salts			U202
Safrole	1,3-Benzodioxole, 5-(2-propenyl)-	84-59-7	U203
Selenium	Same	7782-49-2	
Selenium compounds, N.O.S. ¹			
Selenium dioxide	Selenious acid	7783-00-8	U204
Selenium sulfide	Selenium sulfide SeS ₂	7488-56-4	U205
Selenourea	Same	630-10-4	P103
Silver	Same	7440-22-4	
Silver compounds, N.O.S. ¹			
Silver cyanide	Silver cyanide Ag(CN)	506-64-9	P104
Silvex (2,4,5-TP)	Propanoic acid, 2-(2,4,5-trichlorophenoxy)-	93-72-1	See F027
Sodium cyanide	Sodium cyanide Na(CN)	143-33-9	P106
Streptozotocin	D-Glucose, 2-deoxy-2-[[[(methylnitrosoamino)carbonyl]amino]-	18883-66-4	U206
Strychnine	Strychnidin-10-one	57-24-8	P108
Strychnine salts			P108
TCDD	Dibenzo[b,e][1,4]dioxin, 2,3,7,8-tetrachloro	1748-01-6	
1,2,4,5-Tetrachlorobenzene	Benzene, 1,2,4,5-tetrachloro	95-84-3	U207
Tetrachlorodibenzo-p-dioxins			
Tetrachlorodibenzofurans			
Tetrachloroethane, N.O.S. ¹	Ethane, tetrachloro, N.O.S.	25322-20-7	
1,1,1,2-Tetrachloroethane	Ethane, 1,1,1,2-tetrachloro	630-20-6	U208
1,1,2,2-Tetrachloroethane	Ethane, 1,1,2,2-tetrachloro	79-34-5	U209
Tetrachloroethylene	Ethene, tetrachloro	127-18-4	U210
2,3,4,6-Tetrachlorophenol	Phenol, 2,3,4,6-tetrachloro	58-90-2	See F027
Tetraethylthiopyrophosphate	Thiodiphosphoric acid, tetraethyl ester	3689-24-5	P109

Common name	Chemical abstracts name	Chemical abstracts No.	Hazardous waste No.
Tetraethyl lead.....	Plumbane, tetraethyl.....	78-00-2	P110
Tetraethyl pyrophosphate.....	Diphosphoric acid, tetraethyl ester.....	107-49-3	P111
Tetranitromethane.....	Methane, tetranitro.....	509-14-8	P112
Thallium.....	Same.....	7440-28-0	.....
Thallium compounds, N.O.S. ¹.....	.....	.....	.....
Thallic oxide.....	Thallium oxide Tl_2O_3	1314-32-5	P113
Thallium(I) acetate.....	Acetic acid, thallium(1+) salt.....	563-68-8	U214
Thallium(I) carbonate.....	Carbonic acid, dithallium(1+) salt.....	6533-73-9	U215
Thallium(I) chloride.....	Thallium chloride $TlCl$	7791-12-0	U216
Thallium(I) nitrate.....	Nitric acid, thallium(1+) salt.....	10102-45-1	U217
Thallium selenite.....	Selenious acid, dithallium(1+) salt.....	12039-52-0	P114
Thallium(I) sulfate.....	Sulfuric acid, dithallium(1+) salt.....	7448-18-6	P115
Thioacetamide.....	Ethanethioamide.....	62-55-5	U218
Thiofanox.....	2-Butanone, 3,3-dimethyl-1-(methylthio)-, 0-[(methylamino)carbonyl] oxime.....	39196-18-4	P045
Thiomethanol.....	Methanethiol.....	74-83-1	U153
Thiophenol.....	Benzenethiol.....	108-98-5	P014
Thiosemicarbazide.....	Hydrazinecarbothioamide.....	79-19-6	P116
Thiourea.....	Same.....	62-56-6	U219
Thiram.....	Thioperoxydicarbonic diamide $[(H_2N)C(S)]_2S_2$, tetramethyl.....	137-26-6	U244
Toluene.....	Benzene, methyl.....	108-88-3	U220
Toluenediamine.....	Benzenediamine, ar-methyl.....	25376-45-8	U221
Toluene-2,4-diamine.....	1,3-Benzenediamine, 4-methyl.....	95-80-7	.....
Toluene-2,6-diamine.....	1,3-Benzenediamine, 2-methyl.....	823-40-5	.....
Toluene-3,4-diamine.....	1,2-Benzenediamine, 4-methyl.....	496-72-0	.....
Toluene diisocyanate.....	Benzene, 1,3-diisocyanatomethyl.....	26471-62-5	U223
o-Toluidine.....	Benzenamine, 2-methyl.....	95-53-4	U328
o-Toluidine hydrochloride.....	Benzenamine, 2-methyl-, hydrochloride.....	636-21-5	U222
p-Toluidine.....	Benzenamine, 4-methyl.....	106-49-0	U353
Toxaphene.....	Same.....	8001-35-2	P123
1,2,4-Trichlorobenzene.....	Benzene, 1,2,4-trichloro.....	120-82-1	.....
1,1,2-Trichloroethane.....	Ethane, 1,1,2-trichloro.....	79-00-5	U227
Trichloroethylene.....	Ethene, trichloro.....	79-01-6	U228
Trichloromethanethiol.....	Methanethiol, trichloro.....	75-70-7	P118
Trichloromonofluoromethane.....	Methane, trichlorofluoro.....	75-69-4	U121
2,4,5-Trichlorophenol.....	Phenol, 2,4,5-trichloro.....	95-95-4	See F027
2,4,6-Trichlorophenol.....	Phenol, 2,4,6-trichloro.....	88-06-2	See F027
2,4,5-T.....	Acetic acid, (2,4,5-trichlorophenoxy)-.....	93-76-5	See F027
Trichloropropane, N.O.S. ¹.....	.....	25735-29-9	.....
1,2,3-Trichloropropane.....	Propane, 1,2,3-trichloro.....	96-18-4	.....
O,O,O-Triethyl phosphorothioate.....	Phosphorothioic acid, O,O,O-triethyl ester.....	126-68-1	.....
1,3,5-Trinitrobenzene.....	Benzene, 1,3,5-trinitro.....	99-35-4	U234
Tris(1-aziridinyl)phosphine sulfide.....	Aziridine, 1,1',1''-phosphinothioylidynetris.....	52-24-4	.....
Tris(2,3-dibromopropyl) phosphate.....	1-Propanol, 2,3-dibromo-, phosphate (3:1).....	126-72-7	U235
Trypan blue.....	2,7-Naphthalenedisulfonic acid, 3,3'-[(3,3'-dimethyl[1,1'-biphenyl]-4,4'-diyl)bis(azo)]-bis[5-amino-4-hydroxy-, tetrasodium salt.....	72-57-1	U236
Uracil mustard.....	2,4-(1H,3H)-Pyrimidinedione, 5-[bis(2-chloroethyl)amino]-.....	66-75-1	U237
Vanadium pentoxide.....	Vanadium oxide V_2O_5	1314-62-1	P120
Vinyl chloride.....	Ethene, chloro.....	75-01-4	U043
Warfarin.....	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, when present at concentrations less than 0.3%.....	81-81-2	U248
Warfarin.....	2H-1-Benzopyran-2-one, 4-hydroxy-3-(3-oxo-1-phenylbutyl)-, when present at concentrations greater than 0.3%.....	81-81-2	P001
Warfarin salts, when present at concentrations less than 0.3%.....	.....	.....	U248
Warfarin salts, when present at concentrations greater than 0.3%.....	.....	.....	P001
Zinc cyanide.....	Zinc cyanide $Zn(CN)_2$	557-21-1	P121
Zinc phosphide.....	Zinc phosphide Zn_3P_2 , when present at concentrations greater than 10%.....	1314-84-7	P122
Zinc phosphide.....	Zinc phosphide Zn_3P_2 , when present at concentrations of 10% or less.....	1314-84-7	U249

¹ The abbreviation N.O.S. (not otherwise specified) signifies those members of the general class not specifically listed by name in this appendix.

[53 FR 13388, Apr. 22, 1988, as amended at 53 FR 43881, Oct. 31, 1988; 54 FR 50978, Dec. 11, 1989; 55 FR 50483, Dec. 6, 1990; 56 FR 7568, Feb. 25, 1991]

APPENDIX IX—WASTES EXCLUDED UNDER §§ 260.20 AND 260.22

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES

Facility	Address	Waste description
Arco Building Products.	Sugarcreek, Ohio.	Dewatered wastewater treatment sludge (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after August 15, 1986.
Arco Chemical Co.	Miami, FL.....	Dewatered wastewater treatment sludge (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after April 29, 1986.
Arkansas Department of Pollution Control and Ecology.	Vertac Superfund site, Jacksonville, Arkansas.	<p>Kiln ash, cyclone ash, and calcium chloride salts from incineration of residues (EPA Hazardous Waste No. F020 and F023) generated from the primary production of 2,4,5-T and 2,4-D after August 24, 1990. This one-time exclusion applies only to the incineration of the waste materials described in the petition, and it is conditional upon the data obtained from ADPC&E's full-scale incineration facility. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, ADPC&E must implement a testing program for the petitioned waste. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Testing:</i> Sample collection and analyses (including quality control (QC) procedures) must be performed according to SW-846 methodologies.</p> <p>(A) <i>Initial testing:</i> Representative grab samples must be taken from each drum and kiln ash and cyclone ash generated from each 24 hours of operation, and the grab samples composited to form one composite sample of ash for each 24-hour period. Representative grab samples must also be taken from each drum of calcium chloride salts generated from each 24 hours of operation and composited to form one composite sample of calcium chloride salts for each 24-hour period. The initial testing requirements must be fulfilled for the following wastes: (i) Incineration by-products generated prior to and during the incinerator's trial burn; (ii) incineration by-products from the treatment of 2,4-D wastes for one week (or 7 days if incineration is not on consecutive days) after completion of the trial burn; (iii) incineration by-products from the treatment of blended 2,4-D and 2,4, 5-T wastes for two weeks (or 14 days if incineration is not on consecutive days) after completion of the trial burn; and (iv) incineration by-products from the treatment of blended 2,4-D and 2,4,5-T wastes for one week (or 7 days if incineration is not on consecutive days) when the percentage of 2, 4, 5-T wastes exceeds the maximum percentage treated under Condition (1)(A)(iii). Prior to disposal of the residues from each 24-hour sampling period, the daily composite must be analyzed for all the constituents listed in Condition (3). ADPC&E must report the analytical test data, including quality control information, obtained during this initial period no later than 90 days after the start of the operation.</p> <p>(B) <i>Subsequent testing:</i> Representative grab samples of each drum of kiln and cyclone ash generated from each week of operation must be composited to form one composite sample of ash for each weekly period. Representative grab samples of each drum of calcium chloride salts generated from each week of operation must also be composited to form one composite sample of calcium chloride salts for each weekly period.</p> <p>Prior to disposal of the residues from each weekly sampling period, the weekly composites must be analyzed for all of the constituents listed in Condition (3). The analytical data, including quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA.</p> <p>(2) <i>Waste holding:</i> The incineration residues that are generated must be stored as hazardous until the initial verification analyses or subsequent analyses are completed.</p> <p>If the composite incineration residue samples (from either Condition (1)(A) or Condition (1)(B)) do not exceed any of the delisting levels set in Condition (3), the incineration residues corresponding to these samples may be managed and disposed of in accordance with all applicable solid waste regulations.</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>If any composite incineration residue sample exceeds any of the delisting levels set in Condition (3), the incineration residues generated during the time period corresponding to this sample must be retreated until they meet these levels (analyses must be repeated) or managed and disposed of in accordance with subtitle C of RCRA. Incineration residues which are generated but for which analysis is not complete or valid must be managed and disposed of in accordance with subtitle C of RCRA, until valid analyses demonstrate that the wastes meet the delisting levels.</p> <p>(3) <i>Delisting levels:</i> If concentrations in one or more of the incineration residues for any of the hazardous constituents listed below exceed their respective maximum allowable concentrations also listed below, the batch of failing waste must either be re-treated until it meets these levels or managed and disposed of in accordance with subtitle C of RCRA.</p> <p>(A) Inorganics (Leachable): Arsenic, 0.32 ppm; Barium, 6.3 ppm; Cadmium, 0.06 ppm; Chromium, 0.32 ppm; Cyanide, 4.4 ppm; Lead, 0.32 ppm; Mercury, 0.01 ppm; Nickel, 4.4 ppm; Selenium, 0.06 ppm; Silver, 0.32 ppm. Metal concentrations must be measured in the waste leachate as per 40 CFR 261.24. Cyanide extractions must be conducted using distilled water.</p> <p>(B) Organics: Benzene, 0.87 ppm; Benzo(a)anthracene, 0.10 ppm; Benzo(a)pyrene, 0.04 ppm; Benzo (b)fluoranthene, 0.16 ppm; Chlorobenzene, 152 ppm; o-Chlorophenol, 44 ppm; Chrysene, 15 ppm; 2, 4-D, 107 ppm; DDE, 1.0 ppm; Dibenz(a,h)anthracene, 0.007 ppm; 1, 4-Dichlorobenzene, 265 ppm; 1, 1-Dichloroethylene, 1.3 ppm; trans-1,2-Dichloroethylene, 37 ppm; Dichloromethane, 0.23 ppm; 2,4-Dichlorophenol, 43 ppm; Hexachlorobenzene, 0.26 ppm; Indeno (1,2,3-cd) pyrene, 30 ppm; Polychlorinated biphenyls, 12 ppm; 2,4,5-T, 1×10^{-6} ppm; 1,2,4,5-Tetrachlorobenzene, 56 ppm; Tetrachloroethylene, 3.4 ppm; Trichloroethylene, 1.1 ppm; 2,4,5-Trichlorophenol, 21,000 ppm; 2,4,6-Trichlorophenol, 0.35 ppm.</p> <p>(C) Chlorinated dioxins and furans: 2,3,7,8-Tetrachlorodibenzo-p-dioxin equivalents, 4×10^{-7} ppm.</p> <p>The petitioned by-product must be analyzed for the tetra-, penta-, hexa-, and heptachlorodibenzo-p-dioxins, and the tetra-, penta-, hexa-, and heptachlorodibenzofurans to determine the 2, 3, 7, 8-tetra- chlorodibenzo-p-dioxin equivalent concentration. The analysis must be conducted using Method 8290, a high resolution gas chromatography/high resolution mass spectrometry method, and must achieve practical quantitation limits of 15 parts per trillion (ppt) for the tetra- and penta- homologs, and 37 ppt for the hexa- and hepta- homologs.</p> <p>(4) <i>Termination of testing:</i> Due to the possible variability of the incinerator feeds, the testing requirements of Condition (1)(B) will continue indefinitely.</p> <p>(5) <i>Data submittals:</i> Within one week of system start-up, ADPC&E must notify the Section Chief, Variances Section (see address below) when the full-scale incineration system is on-line and waste treatment has begun. The data obtained through Condition (1)(A) must be submitted to the Section Chief, Variances Section, PSD/OSW (OS-343), U.S. EPA, 401 M Street SW., Washington, DC 20460, within the time period specified. At the Section Chief's request, ADPC&E must submit analytical data obtained through Condition (1)(B) within the time period specified by the Section Chief. Failure to submit the required data obtained from Condition (1)(A) within the specified time period or to maintain the required records for the time specified in Condition (1)(B) (or to submit data within the time specified by the Section Chief) will be considered by the Agency, at its discretion, sufficient basis to revoke ADPC&E's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement:</p> <p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code, which include, but may not be limited to, 18 U.S.C. 1001 and 42 U.S.C. 6928), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete. In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
BBC Brown Boveri, Inc.	Sanford, FL.....	Dewatered Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after October 17, 1986.
Boeing Commercial Airplane Co.	Auburn, Washington.	Residually contaminated soils in an inactive sludge pile containment area on March 27, 1990, previously used to store wastewater treatment sludges generated from electroplating operations (EPA Hazardous Waste No. F006).
Bommer Industries Inc.	Landrum, SC....	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from their electroplating operations and contained in evaporation ponds #1 and #2 on August 12, 1987.
Capitol Products Corp.	Harrisburg, PA..	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after September 12, 1986.
Capitol Products Corporation.	Kentland, IN	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after November 17, 1986.
Chamberlain-Featherlite, Inc.	Hot Springs, AR.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after July 16, 1986.
Cincinnati Metropolitan Sewer District.	Cincinnati, OH..	Sluiced bottom ash (approximately 25,000 cubic yards) contained in the South Lagoon, on September 13, 1985 which contains EPA Hazardous Waste Nos. F001, F002, F003, F004, and F005.
Clay Equipment Corporation.	Cedar Falls, Iowa.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) and spent cyanide bath solutions (EPA Hazardous Waste No. F009) generated from electroplating operations and disposed of in an on-site surface impoundment. This is a onetime exclusion. This exclusion was published on August 1, 1989.
Continental Can Co.	Olympia, WA	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after September 12, 1986.
Dover Corp., Norris Div.	Tulsa, OK.....	Dewatered wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from their electroplating operations after April 29, 1986.
Eli Lilly and Company.	Clinton, Indiana.	Incinerator scrubber liquids, entering and contained in their onsite surface impoundment, and solids settling from these liquids originating from the burning of spent solvents (EPA Hazardous Waste Nos. F002, F003, and F005) contained in their onsite surface impoundment and solids retention area on August 18, 1988 and any new incinerator scrubber liquids and settled solids generated in the surface impoundment and disposed of in the retention area after August 12, 1988.
EPA's Mobile Incineration System.	Denney Farm Site; McDowell, MO.	Process wastewater, rotary kiln ash, CHEAF media, and other solids (except spent activated carbon) (EPA Hazardous Waste Nos. F020, F022, F023, F026, F027, and F028) generated during the field demonstration of EPA's Mobile Incinerator at the Denney Farm Site in McDowell, Missouri, after July 25, 1985, so long as: (1) The incinerator is functioning properly; (2) a grab sample is taken from each tank of wastewater generated and the EP leachate values do not exceed 0.03 ppm for mercury, 0.14 ppm for selenium, and 0.68 ppm for chromium; and (3) a grab sample is taken from each drum of soil or ash generated and a core sample is collected from each CHEAF roll generated and the EP leachate values of daily composites do not exceed 0.044 ppm in ash or CHEAF media for mercury or 0.22 ppm in ash or CHEAF media for selenium.
EPA's Mobile Incineration System (MIS).	McDowell, MO..	Kiln ash, cyclone ash, separator sludge, and filtered wastewater (except spent activated carbon) (EPA Hazardous Waste No. F027) generated during the treatment of cancelled pesticides containing 2,4,5-T and Silvex and related materials by the EPA's Mobile Incineration System at the Denney Farm Site in McDowell, Missouri after March 11, 1988, so long as: (1) the incinerator is monitored continuously and is in compliance with operating permit conditions. Should the incinerator fail to comply with the permit conditions relevant to the mechanical operation of the incinerator, RCB must test the residues generated during the run when the failure occurred according to the requirements of Conditions (2) through (5), regardless of whether or not the demonstration in Condition (6) has been made; (2) Four grab samples of wastewater must be composited from the volume of filtered wastewater collected after each eight hour run and, prior to disposal, the composite samples analyzed for the EP toxic metals, nickel, and cyanide. If arsenic, chromium, lead, and silver EP leachate test results exceed 0.44 ppm; barium levels exceed 8.8 ppm; cadmium and selenium levels exceed 0.09 ppm; mercury levels exceed 0.02 ppm; nickel levels exceed 4.4 ppm; or cyanide levels exceed 1.8 ppm, the wastewater must be retreated to achieve these levels or must be disposed in accordance with Subtitle C of RCRA. Analyses must be performed according to SW-846 methodologies.

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>(3) One grab sample must be taken from each drum of kiln ash generated during each eight hour run; all grabs collected during a given eight hour run must then be composited to form one composite sample. One grab sample must be taken from each drum of cyclone ash generated during each eight hour run; all grabs collected during a given eight hour run must then be composited to form one composite sample. A composite sample of four grab samples of the separator sludge must be collected at the end of each eight hour run. Prior to the disposal of the residues from each eight hour run, an EP leachate test must be performed on these composite samples and the leachate analyzed for the EP toxic metals, nickel, and cyanide. If arsenic, chromium, lead, and silver EP leachate test results exceed 1.6 ppm; barium levels exceed 32 ppm; cadmium and selenium levels exceed 0.3 ppm; mercury levels exceed 0.07 ppm; nickel levels exceed 16 ppm; or cyanide levels exceed 6.5 ppm, the wastes must be retreated to achieve these levels or must be disposed in accordance with Subtitle C of RCRA. Analyses must be performed according to SW-846 methodologies.</p> <p>(4) RCB must generate, prior to disposal of residues, verification data from each eight hour run for each treatment residue (<i>i.e.</i>, kiln ash, cyclone ash, separator sludge, and filtered wastewater) to demonstrate that the maximum allowable treatment residue concentrations listed below are not exceeded. Samples must be collected as specified in conditions (2) and (3). Analyses must be performed according to SW-846 methodologies. Any residues which exceed any of the levels listed below must be retreated or must be disposed as hazardous. Solid and sludge concentrations must not exceed the following levels:</p> <p>Aldrin—0.015 ppm Benzene—9.7 ppm Benzo(a)pyrene—0.43 ppm Benzo(b)fluoranthene—1.8 ppm Chlordane—0.37 ppm Chloroform—5.4 ppm Chrysene—170 ppm Dibenz(a,h)anthracene—0.083 ppm 1,2-Dichloroethane—4.1 ppm Dichloromethane—2.4 ppm 2,4-Dichlorophenol—480 ppm Dichlorvos—260 ppm Disulfaton—23 ppm Endosulfan I—310 ppm Fluorene—120 ppm Indeno(1,2,3-cd)pyrene—330 ppm Methyl parathion—210 ppm Nitrosodiphenylamine—130 ppm Phenanthrene—150 ppm Polychlorinated biphenyls—0.31 ppm Tetrachloroethylene—59 ppm 2,4,5-TP (silvex)—110 ppm 2,4,6-Trichlorophenol—3.9 ppm.</p> <p>And detected wastewater concentrations do not exceed the following levels:</p> <p>Acetone—35 ppm Aldrin—0.000018 ppm Benzene—0.044 ppm Benzo(a)pyrene—0.000027 ppm Benzo(b)fluoranthene—0.00018 ppm Biphenyl—15 ppm Bis-2-ethylhexyl phthalate—6.2 ppm Chlordane—0.00024 ppm Chlorobenzene—8.8 ppm Chloroform—0.052 ppm Chrysene—0.0018 ppm 2,4-D—3.5 ppm Dibenz(a,h)anthracene—0.000006 ppm Dichloromethane—0.042 ppm 1,3-Dichlorobenzene—34 ppm 1,4-Dichlorobenzene—0.66 ppm 1,2-Dichlorobenzene—26 ppm 1,2-Dichloroethane—0.044 ppm 2,4-Dichlorophenol—0.88 ppm Dichlorvos—0.78 ppm Diethyl phthalate—4,400 ppm Disulfaton—0.016 ppm Endosulfan I—0.020 ppm</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p> Ethyl benzene—35 ppm Fluoranthene—1.8 ppm Fluorene—0.018 ppm Indeno(1,2,3-cd)pyrene—0.0018 ppm Isophorone—62 ppm Methyl chloride—35 ppm Methyl parathion—0.099 ppm Naphthalene—80 ppm Nitrosodiphenylamine—0.063 ppm Pentachlorophenol—8.8 ppm Phenanthrene—0.018 ppm Phenol—8.8 ppm Polychlorinated biphenyls—0.000072 ppm Pyrene—35 ppm Tetrachloroethylene—0.059 ppm 2,3,4,6-Tetrachlorophenol—8.8 ppm Toluene—88 ppm 2,4,5-TP (silvex)—0.088 ppm 1,2,4-Trichlorobenzene—6.2 ppm 2,4,6-Trichlorophenol—0.018 ppm 2,4,5-Trichlorophenol—35 ppm 2,4,5-Trichlorophenoxyacetic acid—0.88 ppm Xylene—619 ppm; </p> <p> (5) RCB must generate, prior to disposal of residues, verification data from each eight hour run for each treatment residue (<i>i.e.</i>, kiln ash, cyclone ash, separator sludge, and filtered wastewater) to demonstrate that the residues do not contain tetra-, penta-, or hexachlorodibenzo-p-dioxins or furans at levels of regulatory concern. Samples must be collected as specified in conditions (2) and (3). The TCDD equivalent levels for solids must be less than 5 ppt and for wastewater the levels must be below 0.002 ppt. Any residues with detected dioxins or furans in excess of these levels must be retreated or must be disposed as acutely hazardous. Method 8290, a high resolution gas chromatography and high resolution mass spectroscopy (HRGC/HRMS) analytical method, must be used. For tetra- and penta-chlorinated dioxin and furan homologs, the maximum practical quantitation limit must not exceed 15 ppt for solids and 120 ppq for wastewaters. For hexachlorinated dioxin and furan homologs, the maximum practical quantitation limit must not exceed 37 ppt for solids and 0.3 ppt for wastewaters; </p> <p> (6) The test data from conditions (1), (2), (3), (4) and (5) must be kept on file by RCB for inspection purposes and must be compiled, summarized, and submitted to the Assistant Administrator for Solid Waste and Emergency Response by certified mail on a monthly basis and when the treatment of the cancelled pesticides and related materials is concluded. The testing requirements for conditions (2), (3), (4), and (5) will continue until RCB provides the Assistant Administrator with the results of four consecutive batch analyses for the petitioned wastes, none of which exceed the maximum allowable treatment residue concentrations listed in these conditions and the Assistant Administrator notifies RCB that the conditions have been lifted. All data submitted will be placed in the RCRA docket. </p> <p> (7) RCB must provide a signed copy of the following certification statement when submitting data in response to the conditions listed above: "Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations, I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) accuracy, I certify as the Agency official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete." </p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Enville Corporation.	Canton, Ohio; Harvey, Illinois; Thomaston, Connecticut; and York, PA.	<p>Dewatered wastewater sludges (EPA Hazardous Waste No. F006) generated from electroplating operations; spent cyanide plating solutions (EPA Hazardous Waste No. F007) generated from electroplating operations; plating bath residues from the bottom of plating baths (EPA Hazardous Waste No. F008) generated from electroplating operations where cyanides are used in the process; spent stripping and cleaning bath solutions (EPA Hazardous Waste No. F009) generated from electroplating operations where cyanides are used in the process; spent cyanide solutions from salt bath pot cleaning (EPA Hazardous Waste No. F011) generated from metal heat treating operations; quenching wastewater treatment sludges (EPA Hazardous Waste No. F012) generated from metal heat treating where cyanides are used in the process; wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after November 14, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusions to be valid:</p> <ol style="list-style-type: none"> (1) Each batch of treatment residue must be representatively sampled and tested using the EP Toxicity test for arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and nickel. If the extract concentrations for chromium, lead, arsenic, and silver exceed 0.315 ppm; barium levels exceed 6.3 ppm; cadmium and selenium exceed 0.063 ppm; mercury exceeds 0.0126 ppm; or nickel levels exceed 2.205 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270. (2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270. (3) Each batch of waste must be tested for the total content of specific organic toxicants. If the total content of anthracene exceeds 76.8 ppm, 1,2-diphenyl hydrazine exceeds 0.001 ppm, methylene chloride exceeds 8.18 ppm, methyl ethyl ketone exceeds 326 ppm, n-nitrosodiphenylamine exceeds 11.9 ppm, phenol exceeds 1,566 ppm, tetrachloroethylene exceeds 0.188 ppm, or trichloroethylene exceeds 0.592 ppm, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 and 265 and the permitting standards of 40 CFR Part 270. (4) A grab sample must be collected from each batch to form one monthly composite sample which must be tested using GC/MS analysis for the compounds listed in #3 above as well as the remaining organics on the priority pollutant list. (See 47 FR 52309 November 19, 1982, for a list of the priority pollutants.) (5) The data from conditions 1–4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail semi-annually. The Agency will review this information and if needed will propose to modify or withdraw the exclusion. <p>The organics testing described in conditions 3 and 4 above are not required until six months from the date of promulgation. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment systems at these facilities applies only to the wastewater and solids treatment systems as they presently exist as described in the delisting petition. The exclusion does not apply to the proposed process additions described in the petition as recovery including crystallization, electrolytic metals recovery, evaporative recovery, and ion exchange.</p>
Falconer Glass Indust., Inc.	Falconer, NY	Wastewater treatment sludges from the filter press and magnetic drum separator (EPA Hazardous Waste No. F006) generated from electroplating operations after July 16, 1986.
Florida Production Engineering Company.	Daytona Beach, Florida.	This is a one-time exclusion. Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations and contained in four on-site trenches on January 23, 1987.
General Cable Co.	Muncie, IN	Dewatered wastewater treatment sludges (EPA Hazardous Waste Nos. F006 and K062) generated from electroplating operations and steel finishing operations after October 24, 1986. This exclusion does not apply to sludges in any on-site impoundments as of this date.
General Electric Company.	Shreveport Louisiana.	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations and contained in four on-site treatment ponds on August 12, 1987.
General Motors Corp., Fisher Body Division.	Elyria, OH	<p>The residue generated from the use of the Chemfix® treatment process on sludge (EPA Hazardous Waste No. F006) generated from electroplating operations and contained in three on-site surface impoundments on November 14, 1986. To assure that stabilization occurs, the following conditions apply to this exclusion:</p> <ol style="list-style-type: none"> (1) Mixing ratios shall be monitored continuously to assure consistent treatment.

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Goodyear Tire and Rubber Co.	Randleman, NC.	(2) One grab sample of the treated waste shall be taken each hour as it is pumped to the holding area (cell) from each trailer unit. At the end of each production day, the grab samples from the individual trailer units will be composited and the EP toxicity test will be run on each composite sample. If lead or total chromium concentrations exceed 0.315 ppm or if nickel exceeds 2.17 ppm, in the EP extract, the waste will be removed and retreated or disposed of as a hazardous waste. (3) The treated waste shall be pumped into bermed cells which are constructed to assure that the treated waste is identifiable and retrievable (<i>i.e.</i> , the material can be removed and either disposed of as a hazardous waste or retreated if conditions 1 or 2 are not met). Failure to satisfy any of these conditions would render the exclusion void. This is a one-time exclusion, applicable only to the residue generated from the use of the Chemfix® treatment process on the sludge currently contained in the three on-site surface impoundments.
Gould, Inc.....	McConnellsville, OH.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations.
Hoechst Celanese Corporation.	Bucks, Alabama.	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations after November 27, 1985.
Hoechst Celanese Corporation.	Leeds, South Carolina.	Distillation bottoms generated (at a maximum annual rate of 31,500 cubic yards) from the production of sodium hydrosulfite (EPA Hazardous Waste No. F003). This exclusion was published on July 17, 1990. This exclusion does not include the waste contained in Hoechst Celanese's on-site surface impoundment.
Hanover Wire Cloth Division.	Hanover, Pennsylvania.	Distillation bottoms generated (at a maximum annual rate of 38,500 cubic yards) from the production of sodium hydrosulfite (EPA Hazardous Waste No. F003). This exclusion was published on July 17, 1990.
Holston Army Ammunition Plant.	Kingsport, Tennessee.	Dewatered filter cake (EPA Hazardous Waste No. F006) generated from electroplating operations after August 15, 1986.
Imperial Clevite.	Salem, IN.....	Dewatered wastewater treatment sludges (EPA Hazardous Waste Nos. F003, F005, and K044) generated from the manufacturing and processing of explosives and containing spent non-halogenated solvents after November 14, 1986.
International Minerals and Chemical Corporation.	Terre Haute, Indiana.	Solid resin cakes containing EPA Hazardous Waste No. F002 generated after August 27, 1985, from solvent recovery operations.
Kawneer Company, Incorporated.	Springdale, Arkansas.	Spent non-halogenated solvents and still bottoms (EPA Hazardous Waste No. F003) generated from the recovery of n-butyl alcohol after August 15, 1986.
Kay-Fries, Inc...	Stoney Point, NY.	Wastewater treatment filter press sludge (EPA Hazardous Waste No. F019) generated (at a maximum annual rate of 26 cubic yards) from the chemical conversion coating of aluminum. This exclusion was published on November 13, 1990.
Keymark Corp..	Fonda, NY	Biological aeration lagoon sludge and filter press sludge generated after September 21, 1984, which contain EPA Hazardous Waste Nos. F003 and F005 as well as that disposed of in a holding lagoon as of September 21, 1984.
Keymark Corp..	Fonda, New York.	Wastewater treatment sludge (EPA Hazardous Waste No. F019) generated from chemical conversion coating of aluminum after November 27, 1985.
Lederle Laboratories.	Pearl River, NY.	Wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum and contained in an on-site impoundment on August 12, 1987. This is a one-time exclusion.
Lincoln Plating Company.	Lincoln, NE.....	Spent non-halogenated solvents and still bottoms (EPA Hazardous Waste Nos. F003 and F005) generated from the recovery of the following solvents: Xylene, acetone, ethyl acetate, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, methanol, toluene, and pyridine after August 2, 1988. Exclusion applies to primary and secondary filter press sludges and compost soils generated from these sludges.
Loxreen Company, Inc.	Hayti, MO.....	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after November 17, 1986.
Marquette Electronics Incorporated.	Milwaukee, Wisconsin.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after July 16, 1986.
Martin Marietta Aerospace.	Ocala, Florida...	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations. This exclusion was published on April 20, 1989.
		Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after January 23, 1987.

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Mason Chamberlain, Incorporated.	Bay St. Louis, Mississippi.	Wastewater treatment sludge filter cake (EPA Hazardous Waste No. F019) generated (at a maximum annual rate of 1,262 cubic yards) from the chemical conversion coating of aluminum. This exclusion was published on October 27, 1989.
Merck & Company, Incorporated.	Elkton, Virginia.	One-time exclusion for fly ash (EPA Hazardous Waste No. F002) from the incineration of wastewater treatment sludge generated from pharmaceutical production processes and stored in an on-site fly ash lagoon. This exclusion was published on May 12, 1989.
Maytag Company.	Newton, IA.....	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations and wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum November 17, 1986.
Metropolitan Sewer District of Greater Cincinnati.	Cincinnati, OH..	Sluiced bottom ash sludge (approximately 25,000 cubic yards), contained in the North Lagoon, on September 21, 1984, which contains EPA Hazardous Wastes Nos. F001, F002, F003, F004, and F005.
Michelin Tire Corp.	Sandy Springs, South Carolina.	Dewatered wastewater treatment sludge (EPA Hazardous Wastes No. F006) generated from electroplating operations after November 14, 1986.
Monroe Auto Equipment.	Paragould, AR..	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations after vacuum filtration after November 27, 1985. This exclusion does not apply to the sludge contained in the on-site impoundment.
North American Philips Consumer Electronics Corporation.	Greenville, Tennessee.	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations. This exclusion was published on April 20, 1989.
Pamcor C, Inc..	Las Piedras, PR.	Dewatered Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after October 17, 1986.
Philway Products, Incorporated.	Ashland, Ohio ..	Filter press sludge generated (at a maximum annual rate of 96 cubic yards) during the treatment of electroplating wastewaters using lime (EPA Hazardous Waste No. F006). This exclusion was published on October 26, 1990.
Plastene Supply Company.	Portageville, Missouri.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after August 15, 1986.
Reynolds Metals Company.	Sheffield, AL....	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after August 15, 1986.
Reynolds Metals Company.	Sheffield, AL....	Wastewater treatment filter press sludge (EPA Hazardous Waste No. F019) generated (at a maximum annual rate of 3,840 cubic yards) from the chemical conversion coating of aluminum. This exclusion was published on July 17, 1990.
Siegel-Robert, Inc.	St. Louis, MO...	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations after November 27, 1985.
Square D Company.	Oxford, Ohio.....	Dewatered filter press sludge (EPA Hazardous Waste No. F006) generated from electroplating operations after August 15, 1986.
Syntex Agribusiness.	Springfield, MO.	Kiln ash, cyclone ash, separator sludge, and filtered wastewater (except spent activated carbon) (EPA Hazardous Waste No. F020) generated during the treatment of wastewater treatment sludge by the EPA's Mobile Incineration System at the Denney Farm Site in McDowell, Missouri after June 2, 1988, so long as: (1) The incinerator is monitored continuously and is in compliance with operating permit conditions. Should the incinerator fail to comply with the permit conditions relevant to the mechanical operation of the incinerator, Syntex must test the residues generated during the run when the failure occurred according to the requirements of Conditions (2) through (6), regardless of whether or not the demonstration in Condition (7) has been made. (2) Four grab samples of wastewater must be composited from the volume of filtered wastewater collected after each eight hour run and, prior to disposal the composite samples must be analyzed for the EP toxic metals, nickel, and cyanide. If arsenic, chromium, lead, and silver EP leachate test results exceed 0.61 ppm; barium levels exceed 12 ppm; cadmium and selenium levels exceed 0.12 ppm; mercury levels exceed 0.02 ppm; nickel levels exceed 6.1 ppm; or cyanide levels exceed 2.4 ppm, the wastewater must be retreated to achieve these levels or must be disposed in accordance with all applicable hazardous waste regulations. Analyses must be performed according to SW-846 methodologies.

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>(3) One grab sample must be taken from each drum of kiln and cyclone ash generated during each eight hour run; all grabs collected during a given eight hour run must then be composited to form one composite sample. A composite sample of four grab samples of the separator sludge must be collected at the end of each eight hour run. Prior to the disposal of the residues from each eight hour run, an EP leachate test must be performed on these composite samples and the leachate analyzed for the EP toxic metals, nickel, and cyanide (using a distilled water extraction for the cyanide extraction) to demonstrate that the following maximum allowable treatment residue concentrations listed below are not exceeded. Analyses must be performed according to SW-846 methodologies. Any residues which exceed any of the levels listed below must be retreated to achieve these levels or must be disposed in accordance with all applicable hazardous waste regulations.</p> <p>Maximum Allowable Solids Treatment Residue EP Leachate Concentrations (mg/L)</p> <p>Arsenic—1.6 Barium—32 Cadmium—0.32 Chromium—1.6 Lead—1.6 Mercury—0.065 Nickel—16 Selenium—0.32 Silver—1.6 Cyanide—6.5</p> <p>(4)—If Syntex stabilizes any of the kiln and cyclone ash or separator sludge, a Portland cement-type stabilization process must be used and Syntex must collect a composite sample of four grab samples from each batch of stabilized waste. An MEP leachate test must be performed on these composite samples and the leachate analyzed for the EP toxic metals, nickel, and cyanide (using a distilled water extraction for the cyanide leachate analysis) to demonstrate that the maximum allowable treatment residue concentrations listed in Condition (3) are not exceeded during any run of the MEP extraction. Analyses must be performed according to SW-846 methodologies. Any residues which exceed any of the levels listed in Condition (3) must be retreated to achieve these levels or must be disposed in accordance with all applicable hazardous waste regulations. (If the residues are stabilized, the analyses required in this condition supercede the analyses required in Condition (3).)</p> <p>(5) Syntex must generate, prior to disposal of residues, verification data from each eight hour run from each treatment residue (i.e., kiln and cyclone ash, separator sludge, and filtered wastewater) to demonstrate that the maximum allowable treatment residue concentrations listed below are not exceeded. Samples must be collected as specified in Conditions (2) and (3). Analyses must be performed according to SW-846 methodologies. Any solid or liquid residues which exceed any of the levels listed below must be retreated to achieve these levels or must be disposed in accordance with Subtitle C of RCRA.</p> <p>Maximum Allowable Wastewater Concentrations (ppm):</p> <p>Benz(a)anthracene—1×10^{-4} Benzo(a)pyrene—4×10^{-5} Benzo(b)fluoranthene—2×10^{-4} Chloroform—0.07 Chrysene—0.002 Dibenz(a,h)anthracene—9×10^{-6} 1,2-Dichloroethane—0.06 Dichloromethane—0.06 Indeno(1,2,3-cd)pyrene—0.002 Polychlorinated biphenyls—1×10^{-4} 1,2,4,5-Tetrachlorobenzene—0.13 2,3,4,6-Tetrachlorophenol—12 Toluene—120 Trichloroethylene—0.04 2,4,5-Trichlorophenol—49 2,4,6-Trichlorophenol—0.02</p> <p>Maximum Allowable Solid Treatment Residue Concentrations (ppm):</p> <p>Benz(a)anthracene—1.1 Benzo(a)pyrene—0.43 Benzo(b)fluoranthene—1.8 Chloroform—5.4 Chrysene—170 Dibenz(a,h)anthracene—0.083 Dichloromethane—2.4 1,2-Dichloroethane—4.1 Indeno(1,2,3-cd)pyrene—330 Polychlorinated biphenyls—0.31 1,2,4,5-Tetrachlorobenzene—720</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>Trichloroethylene—6.6</p> <p>2,4,6-Trichlorophenol—3.9</p> <p>(6) Syntex must generate, prior to disposal of residues, verification data from each eight hour run for each treatment residue (i.e., kiln and cyclone ash, separator sludge, and filtered wastewater) to demonstrate that the residues do not contain tetra-, penta-, or hexachloro-dibenzo-p-dioxins or furans at levels of regulatory concern. Samples must be collected as specified in Conditions (2) and (3). The TCDD equivalent levels for wastewaters must be less than 2 ppq and less than 5 ppt for the solid treatment residues. Any residues with detected dioxins or furans in excess of these levels must be retreated or must be disposed as acutely hazardous. Method 8290, a high resolution gas chromatography and high resolution mass spectroscopy (HRGC/HRMS) analytical method, must be used. For tetra- and pentachlorinated dioxin and furan homologs, the maximum practical quantitation limit must not exceed 15 ppt for solids and 120 ppq for wastewaters. For hexachlorinated homologs, the maximum practical quantitation limit must not exceed 37 ppt for solids and 300 ppq for wastewaters.</p> <p>(7)(A) The test data from Conditions (1), (2), (3), (4), (5) and (6) must be kept on file by Syntex for inspection purposes and must be compiled, summarized, and submitted to the Section Chief, Variances Section, PSPD/OSW (WH-563), US EPA, 401 M Street, S.W., Washington, D.C. 20460 by certified mail on a monthly basis and when the treatment of the lagoon sludge is concluded. All data submitted will be placed in the RCRA docket.</p> <p>(B) The testing requirements for Conditions (2), (3), (4), (5), and (6) will continue until Syntex provides the Section Chief, Variances Section, with the results of four consecutive batch analyses for the petitioned wastes, none of which exceed the maximum allowable treatment residue concentrations listed in these conditions and the Section Chief, Variances Section, notifies Syntex that the conditions have been lifted.</p> <p>(8) Syntex must provide a signed copy of the following certification statement when submitting data in response to the conditions listed above: "Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations, I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete."</p>
SR of Tennessee.	Ripley, TN.....	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from the copper, nickel, and chromium electroplating of plastic parts after November 17, 1986.
Tennessee Electroplating.	Ripley, Tennessee.	Dewatered wastewater treatment sludges (EPA Hazardous Waste Nos. F006) generated from electroplating operations after November 17, 1986. To ensure chromium levels do not exceed the regulatory standards there must be continuous batch testing of the filter press sludge for chromium for 45 days after the exclusion is granted. Each batch of treatment residue must be representatively sampled and tested using the EP toxicity test for chromium. This data must be kept on file at the facility for inspection purposes. If the extract levels exceed 0.922 ppm of chromium the waste must be managed and disposed of as hazardous. If these conditions are not met, the exclusion does not apply. This exclusion does not apply to sludges in any on-site impoundments as of this date.
Tennessee Electroplating.	Ripley, TN.....	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations and contained in an on-site surface impoundment (maximum volume of 6,300 cubic yards). This is a one-time exclusion. This exclusion was published on April 8, 1991.
Texas Instruments, Inc.	Dallas, TX.....	Wastewater treatment sludges (EPA Hazardous Waste Nos. F006 and F019) generated after August 27, 1985, from their electroplating operations that have been batch tested for cadmium using the EP toxicity procedure and have been found to contain less than 0.30 ppm cadmium in the EP extract. Wastewater treatment sludges that exceed this level will be considered a hazardous waste.
Tricil Environmental Systems, Inc.	Hilliard, Ohio.....	<p>Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after November 17, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the total oil and grease test and the EP Toxicity test (or the Oily Waste EP test, if the oil and grease content of the waste exceeds one percent) for arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and nickel. If the extract concentrations for chromium, lead, arsenic, and silver exceed 0.315 ppm; barium levels exceed 6.3 ppm; cadmium and selenium levels exceed 0.063 ppm; mercury levels exceed 0.013 ppm; or nickel levels exceed 2.2 ppm, the waste will be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Tricil Environmental Systems, Inc.	Nashville, Tennessee	<p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(3) Each batch of the waste must be tested for the total content of the following organic toxicants. If the total content of any of the constituents exceeds the maximum levels shown, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>Compound and Maximum Acceptable Levels (ppm)</p> <p>Acrolein, 56.8 Anthracene, 76.8 Benzene, 0.106 p-Chloro-m-cresol, 133 1,1-Dichloroethane, 0.01 Fluorene, 10.4 Methylene chloride, 8.2 Methyl ethyl ketone, 326 n-Nitrosodiphenylamine, 11.9 Phenanthrene, 14 Tetrachloroethylene, 0.188 Trichloroethylene, 0.59 Chloroform, 0.013 1,2-Dichloroethane, 0.0083 1,2-trans-Dichloroethylene, 231 2,4-Dimethylphenol, 12.5 Vinyl chloride, 0.18</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample, which must be tested using GC/MS analysis for the compounds shown above as well as the remaining organics on the priority pollutant list. (See 47 FR 52309, November 19, 1982, for a list of the priority pollutants.)</p> <p>(5) The test data from conditions 1–4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail on a semiannual basis. The Agency will review this information and if needed, will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until May 18, 1987. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment system at this facility applies only to the wastewater treatment residue as described in this petition.</p>
		<p>Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from chemical conversion coating of aluminum after November 17, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the total oil and grease test and the EP Toxicity test (or the Oily Waste EP test, if the oil and grease content of the waste exceeds one percent) for arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and nickel. If the extract concentrations for chromium, lead, arsenic, and silver exceed 1.1 ppm; barium levels exceed 22.2 ppm; cadmium and selenium levels exceed 0.22 ppm; mercury levels exceed 0.044 ppm; or nickel levels exceed 7.8 ppm, the waste will be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 4.4 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(3) Each batch of the waste must be tested for the total content of the following organic toxicants. If the total content of any of the constituents exceeds the maximum levels shown, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>Compound and Maximum Acceptable Levels (ppm)</p> <p>Acrolein, 363 Anthracene, 492 Benzene, 0.68 p-Chloro-m-cresol, 848 1,1-Dichloroethane, 0.068 Fluorene, 66.7 Methylene chloride, 52.4</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Tricil Environmental Systems, Inc.	Muskegon, Michigan.	<p>n-Nitrosodiphenylamine, 76.1 Phenanthrene, 89 Tetrachloroethylene, 1.2 Trichloroethylene, 3.78 Chloroform, 0.081 1,2-Dichloroethane, 0.053 2,4-Dimethylphenol, 79.7 Vinyl chloride, 1.16 1,2-Diphenyl hydrazine, 0.005</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample, which must be tested using GC/MS analysis for the compounds shown above as well as the remaining organics on the priority pollutant list. (See 47 FR 52309, November 19, 1982, for a list of the priority pollutants.)</p> <p>(5) The test data from conditions 1–4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail on a semiannual basis. The Agency will review this information and if needed, will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until May 18, 1987. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment system at this facility applies only to the wastewater treatment residue as described in this petition.</p> <p>Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after November 17, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the total oil and grease test and the EP Toxicity test (or the Oily Waste EP test, if the oil and grease content of the waste exceeds one percent) for arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and nickel. If the extract concentrations for chromium, lead, arsenic, and silver exceed 0.315 ppm; barium levels exceed 6.3 ppm; cadmium and selenium levels exceed 0.063 ppm; mercury levels exceed 0.013 ppm; or nickel levels exceed 2.2 ppm, the waste will be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(3) Each batch of the waste must be tested for the total content of the following organic toxicants. If the total content of any of the constituents exceeds the maximum levels shown, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p style="text-align: center;">Compound and Maximum Acceptable Levels (ppm)</p> <p>Acrolein, 56.8 Anthracene, 76.8 Benzene, 0.106 p-Chloro-m-cresol, 133 1,1-Dichloroethane, 0.01 Fluorene, 10.4 Methylene chloride, 8.2 Methyl ethyl ketone, 326 n-Nitrosodiphenylamine, 11.9 Phenanthrene, 14 Tetrachloroethylene, 0.188 Trichloroethylene, 0.59 Chloroform, 0.013 1,2-Dichloroethane, 0.0083 1,2-trans-Dichloroethylene, 231 2,4-Dimethylphenol, 12.5 Vinyl chloride, 0.18</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample, which must be tested using GC/MS analysis for the compounds shown above as well as the remaining organics on the priority pollutant list. (See 47 FR 52309, November 19, 1982, for a list of the priority pollutants.)</p>

TABLE 1—WASTES EXCLUDED FROM NON-SPECIFIC SOURCES—Continued

Facility	Address	Waste description
United Technologies Automotive, Inc.	Jeffersonville, IN.	(5) The test data from conditions 1-4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail on a semiannual basis. The Agency will review this information and if needed, will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until May 18, 1987. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment system at this facility applies only to the wastewater treatment residue as described in this petition. Dewatered wastewater treatment sludge (EPA Hazardous Waste No. F019) generated from the chemical conversion of aluminum after April 29, 1986.
Universal Oil Products.	Decatur, Alabama.	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations and contained in two on-site lagoons on August 15, 1986. This is a one-time exclusion.
U.S. EPA Combustion Research Facility.	Jefferson, Arkansas.	One-time exclusion for scrubber water (EPA Hazardous Waste No. F020) generated in 1985 from the incineration of Vertac still bottoms. This exclusion was published on June 28, 1989.
U.S. Nameplate Company, Inc.	Mount Vernon, Iowa.	Retreated wastewater treatment sludges (EPA Hazardous Waste No. F006) previously generated from electroplating operations and currently contained in an on-site surface impoundment after September 28, 1986. This is a one-time exclusion for the retreated wastes only. This exclusion does not relieve the waste unit from regulatory compliance under Subtitle C.
VAW of America Incorporated.	St. Augustine, Florida.	Wastewater treatment sludge filter cake (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum. This exclusion was published on February 1, 1989.
Vermont American, Corp.	Newark, OH.....	Wastewater treatment sludge (EPA Hazardous Waste No. F006) generated from electroplating operations after November 27, 1985.
Waterloo Industries.	Pocahontas, AR.	Wastewater treatment sludges (EPA Hazardous Waste No. F006) generated from electroplating operations after dewatering and held on-site on July 17, 1986 and any such sludge generated (after dewatering) after July 17, 1986.
Watervliet Arsenal.	Watervliet, NY..	Wastewater treatment sludges (EPA Hazardous Waste No F006) generated from electroplating operations after January 10, 1986.
William L. Bonnell Co.	Carthage, TN....	Dewatered Wastewater treatment sludges (Vacuum filter sludge) (EPA Hazardous Waste No. F019) currently generated from the chemical conversion coating of aluminum after October 17, 1986. This exclusion does not apply to sludges in the on-site surface impoundments.
William L. Bonnell Co.	Newnan, Georgia.	Dewatered wastewater treatment sludges (EPA Hazardous Waste No. F019) generated from the chemical conversion coating of aluminum after November 14, 1986. This exclusion does not include sludges contained in Bonnell's on-site surface impoundments.
Windsor Plastics, Inc.	Evansville, IN ...	Spent non-halogenated solvents and still bottoms (EPA Hazardous Waste No. F003) generated from the recovery of acetone after November 17, 1986.

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES

Facility	Address	Waste description
American Cyanamid.	Hannibal, Missouri.	Wastewater and sludge (EPA Hazardous Waste No. K038) generated from the washing and stripping of phorate production and contained in on-site lagoons on May 8, 1987, and such wastewater and sludge generated after May 8, 1987.
Amoco Oil Co...	Wood River, IL.	150 million gallons of DAF from petroleum refining contained in in four surge ponds after treatment with the Chemifix® stabilization process. This waste contains EPA Hazardous Waste No. K048. This exclusion applies to the 150 million gallons of waste after chemical stabilization as long as the mixing ratios of the reagent with the waste are monitored continuously and do not vary outside of the limits presented in the demonstration samples; one grab sample is taken each hour from each treatment unit, composited, and EP toxicity tests performed on each sample. If the levels of lead or total chromium exceed 0.5 ppm in the EP extract, then the waste that was processed during the compositing period is considered hazardous; the treatment residue shall be pumped into bermed cells to ensure that the waste is identifiable in the event that removal is necessary.

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Akzo Chemicals Inc. (formerly Stauffer Chemical Company).	Axis, AL.....	Brine purification muds generated from their chlor-alkali manufacturing operations (EPA Hazardous Waste No. K071) and disposed of in brine mud pond HWTF: 5 EP-201.
Bethlehem Steel Corp.	Steelton, PA.....	<p>Uncured and cured chemically stabilized electric arc furnace dust/sludge (CSEAFD) treatment residue (K061) generated from the primary production of steel after May 22, 1989. This exclusion is conditioned upon the data obtained from Bethlehem's full-scale CSEAFD treatment facility because Bethlehem's original data were obtained from a laboratory-scale CSEAFD treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, Bethlehem must implement a testing program for the petitioned waste. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Testing:</i></p> <p>(A) <i>Initial Testing:</i> During the first four weeks of operation of the full-scale treatment system, Bethlehem must collect representative grab samples of each treated batch of the CSEAFD and composite the grab samples daily. The daily composites, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals, nickel and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Analyses must be performed according to SW-846 methodologies. Bethlehem must report the analytical test data obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) <i>Subsequent Testing:</i> Bethlehem must collect representative grab samples from every treated batch of CSEAFD generated daily and composite all of the grab samples to produce a weekly composite sample. Bethlehem then must analyze each weekly composite sample for the EP leachate concentrations of all the EP toxic metals and nickel. Analyses must be performed according to SW-846 methodologies. The analytical data, including all quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Pennsylvania.</p> <p>(2) <i>Delisting Levels:</i> If the EP extract concentrations resulting from the testing in condition (1)(A) or (1)(B) for chromium, lead, arsenic, or silver exceed 0.315 mg/L, for barium exceeds 6.3 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l; for nickel exceeds 3.15 mg/l; or for cyanide exceeds 4.42 mg/L, or total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be re-treated or managed and disposed in accordance with subtitle C of RCRA.</p> <p>(3) <i>Data submittals:</i> Within one week of system start-up, Bethlehem must notify the Section Chief, Variances Section (see address below) when their full-scale stabilization system is on-line and waste treatment has begun. All data obtained through the initial testing condition (1)(A), must be submitted to the Section Chief, Variances Section, PSPD/OSW, (OS-343), U.S. EPA, 401 M Street, S.W., Washington, DC 20460 within the time period specified in condition (1)(A). At the Section Chief's request, Bethlehem must submit analytical data obtained through condition (1)(B) to the above address, within the time period specified by the Section Chief. Failure to submit the required data obtained from either condition (1)(A) or (1)(B) within the specified time periods will be considered by the Agency sufficient basis to revoke Bethlehem's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement:</p> <p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. 6928), I certify that the information contained in or accompanying this document is true, accurate and complete.</p> <p>"As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.</p> <p>"In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Bethlehem Steel Corp.	Johnstown, PA.	<p>Uncured and cured chemically stabilized electric arc furnace dust/sludge (CSEAFD) treatment residue (K061) generated from the primary production of steel after May 22, 1989. This exclusion is conditioned upon the data obtained from Bethlehem's full-scale CSEAFD treatment facility because Bethlehem's original data were obtained from a laboratory-scale CSEAFD treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, Bethlehem must implement a testing program for the petitioned waste. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Testing:</i></p> <p>(A) <i>Initial Testing:</i> During the first four weeks of operation of the full-scale treatment system, Bethlehem must collect representative grab samples of each treated batch of the CSEAFD and composite the grab samples daily. The daily composites, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals, nickel and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Analyses must be performed according to SW-846 methodologies. Bethlehem must report the analytical test data obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) <i>Subsequent Testing:</i> Bethlehem must collect representative grab samples from every treated batch of CSEAFD generated daily and composite all of the grab samples to produce a weekly composite sample. Bethlehem then must analyze each weekly composite sample for the EP leachate concentrations of all the EP toxic metals and nickel. Analyses must be performed according to SW-846 methodologies. The analytical data, including all quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Pennsylvania.</p> <p>(2) <i>Delisting Levels:</i> If the EP extract concentrations resulting from the testing in condition (1)(A) or (1)(B) for chromium, lead, arsenic, or silver exceed 0.315 mg/L, for barium exceeds 6.3 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l; for nickel exceeds 3.15 mg/l; or for cyanide exceeds 4.42 mg/L, or total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be re-treated or managed and disposed in accordance with subtitle C of RCRA.</p> <p>(3) <i>Data submittals:</i> Within one week of system start-up, Bethlehem must notify the Section Chief, Variances Section (see address below) when their full-scale stabilization system is on-line and waste treatment has begun. All data obtained through the initial testing condition (1)(A), must be submitted to the Section Chief, Variances Section, PSPD/OSW, (OS-343), U.S. EPA, 401 M Street, SW., Washington, DC 20406 within the time period specified in condition (1)(A). At the Section Chief's request, Bethlehem must submit analytical data obtained through condition (1)(B) to the above address, within the time period specified by the Section Chief. Failure to submit the required data obtained from either condition (1)(A) or (1)(B) within the specified time periods will be considered by the Agency sufficient basis to revoke Bethlehem's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement:</p> <p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. 6928), I certify that the information contained in or accompanying this document is true, accurate and complete.</p> <p>"As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.</p> <p>"In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p> <p>Brine purification muds and saturator insolubles (EPA Hazardous Waste No. K071) after August 18, 1989. This exclusion is conditional upon the collection and submission of data obtained from BFG's full-scale treatment system because BFG's original data was based on data presented by another petitioner using an identical treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, BFG must implement a testing program. All sampling and analyses (including quality control procedures) must be performed according to SW-846 procedures. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Initial Testing:</i> During the first four weeks of full-scale operation, BFG must do the following:</p>
BF Goodrich Intermediates Company, Inc.	Calvert City, Kentucky.	

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
CF&I Steel Corporation.	Pueblo, Colorado.	<p>(A) Collect representative grab samples from every batch of the treated mercury brine purification muds and treated saturator insolubles on a daily basis and composite the grab samples to produce two separate daily composite samples (one of the treated mercury brine purification muds and one of the treated saturator insolubles). Prior to disposal of the treated batches, two daily composite samples must be analyzed for EP leachate concentration of mercury. BFG must report the analytical test data, including all quality control data, within 90 days after the treatment of the first full-scale batch.</p> <p>(B) Collect representative grab samples from every batch of the treated mercury brine purification muds and treated saturator insolubles on a daily basis and composite the grab samples to produce two separate weekly composite samples (one of the treated mercury brine muds and one of the treated saturator insolubles). Prior to disposal of the treated batches, two weekly composite samples must be analyzed for the EP leachate concentrations of all the EP toxic metals (except mercury), nickel, and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. BFG must report the analytical test data, including all quality control data, obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(2) Subsequent Testing: After the first four weeks of full-scale operation, BFG must do the following:</p> <p>(A) Continue to sample and test as described in condition (1)(A). BFG must compile and store on-site for a minimum of three years all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Kentucky.</p> <p>(B) Continue to sample and test as described in condition (1)(B). BFG must compile and store on-site for a minimum of three years all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Kentucky. These testing requirements shall be terminated by EPA when the results of four consecutive weekly composite samples of both the treated mercury brine muds and treated saturator insolubles, obtained from either the initial testing or subsequent testing, show the maximum allowable levels in condition (3) are not exceeded and the Section Chief, Variances Section, notifies BFG that the requirements of this condition have been lifted.</p> <p>(3) If, under condition (1) or (2), the EP leachate concentrations for chromium, lead, arsenic, or silver exceed 0.316 mg/l; for barium exceeds 6.31 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l, for nickel exceeds 3.16 mg/l; for cyanide exceeds 4.42 mg/l; or for total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be retreated until it meets these levels or managed and disposed of in accordance with subtitle C of RCRA.</p> <p>(4) Within one week of system start-up, BFG must notify the Section Chief, Variances Section (see address below) when the full-scale system is on-line and waste treatment has begun. All data obtained through condition (1) must be submitted to the Section Chief, Variances Section, PSPD/OSW (OS-343), U.S. EPA, 401 M Street, SW., Washington, DC 20460 within the time period specified in condition (1). At the Section Chief's request, BFG must submit any other analytical data obtained through condition (2) to the above address, within the time period specified by the Section Chief. Failure to submit the required data will be considered by the Agency sufficient basis to revoke BFG's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement:</p> <p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. § 6928), I certify that the information contained in or accompanying this document is true, accurate and complete.</p> <p>As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.</p> <p>In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p> <p>Fully-cured chemically stabilized electric arc furnace dust/sludge (CSEAFD) treatment residue (EPA Hazardous Waste No. K061) generated from the primary production of steel after May 9, 1989. This exclusion is conditioned upon the data obtained from CF&I's full-scale CSEAFD treatment facility because CF&I's original data was obtained from a laboratory-scale CSEAFD treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, CF&I must implement a testing program for the petitioned waste. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Testing:</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Enviro Corporation.	Canton, Ohio; Harvey, Illinois; Thomaston, Connecticut; and York PA.	<p>(A) <i>Initial Testing:</i> During the first four weeks of operation of the full-scale treatment system, CF&I must collect representative grab samples of each treated batch of the CSEAFD and composite the grab samples daily. The daily composites, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals, nickel, and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Analyses must be performed according to SW-846 methodologies. CF&I must report the analytical test data obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) <i>Subsequent Testing:</i> CF&I must collect representative grab samples from every treated batch of CSEAFD generated daily and composite all of the grab samples to produce a weekly composite sample. CF&I then must analyze each weekly composite sample for the EP leachate concentrations of all of the EP toxic metals and nickel. Analyses must be performed according to SW-846 methodologies. The analytical data, including all quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Colorado.</p> <p>(2) <i>Delisting levels:</i> If the EP extract concentrations determined in conditions (1)(A) or (1)(B) for chromium, lead, arsenic, or silver exceed 0.315 mg/l; for barium exceeds 6.3 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l; for nickel exceeds 3.15 mg/l; or for cyanide exceeds 4.42 mg/l, or total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be re-treated or managed and disposed in accordance with Subtitle C of RCRA.</p> <p>(3) <i>Data submittals:</i> Within one week of system start-up, CF&I must notify the Section Chief, Variances Section (see address below) when their full-scale stabilization system is on-line and waste treatment has begun. All data obtained through the initial testing condition (1)(A), must be submitted to the Section Chief, Variances Section, PSPD/OSW, (OS-343), U.S. EPA, 401 M Street, SW., Washington, DC 20460 within the time period specified in condition (1)(A). At the Section Chief's request, CF&I must submit analytical data obtained through condition (1)(B) to the above address, within the time period specified by the Section Chief. Failure to submit the required data obtained from either condition (1)(A) or (1)(B) within the specified time periods will be considered by the Agency sufficient basis to revoke CF&I's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement: "Under civil and criminal penalty of law for the making of submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. 6928), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete. In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p> <p>Spent pickle liquor (EPA Hazardous Waste No. K062) generated from steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332); wastewater treatment sludge (EPA Hazardous Waste No. K002) generated from the production of chrome yellow and orange pigments; wastewater treatment sludge (EPA Hazardous Waste No. K003) generated from the production of molybdate orange pigments; wastewater treatment sludge (EPA Hazardous Waste No. K004) generated from the production of zinc yellow pigments; wastewater treatment sludge (EPA Hazardous Waste No. K005) generated from the production of chrome green pigments; wastewater treatment sludge (EPA Hazardous Waste No. K006) generated from the production of chrome oxide green pigments (anhydrous and hydrated); wastewater treatment sludge (EPA Hazardous Waste No. K007) generated from the production of iron blue pigments; oven residues (EPA Hazardous Waste No. K008) generated from the production of chrome oxide green pigments after November 14, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusions to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the EP Toxicity test for arsenic, barium, cadmium, chromium, lead, selenium, silver, mercury, and nickel. If the extract concentrations for chromium, lead, arsenic, and silver exceed 0.315 ppm; barium levels exceed 6.3 ppm; cadmium and selenium exceed 0.063 ppm; mercury exceeds 0.0126 ppm; or nickel levels exceed 2.205 ppm, the waste must be re-treated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm; or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be re-treated or managed and disposed as hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR 270.</p> <p>(3) Each batch of waste must be tested for the total content of specific organic toxicants. If the total content of anthracene exceeds 76.8 ppm, 1,2-diphenyl hydrazine exceeds 0.001 ppm, methylene chloride exceeds 8.18 ppm, methyl ethyl ketone exceeds 326 ppm, n-nitrosodiphenylamine exceeds 11.9 ppm, phenol exceeds 1,566 ppm, tetrachloroethylene exceeds 0.188 ppm, or trichloroethylene exceeds 0.592 ppm, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample which must be tested using GC/MS analysis for the compounds listed in #3 above as well as the remaining organics on the priority pollutant list. (See 47 FR 52309, November 19, 1982, for a list of the priority pollutants.)</p> <p>(5) The data from conditions 1–4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail semi-annually. The Agency will review this information and if needed will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until six months from the date of promulgation. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment systems at these facilities applies only to the wastewater and solids treatment systems as they presently exist as described in the delisting petition. The exclusion does not apply to the proposed process additions described in the petition as recovery, including crystallization, electrolytic metals recovery, evaporative recovery, and ion exchange.</p>
LCP Chemical ..	Orrington, ME...	Brine purification muds and wastewater treatment sludges generated after August 27, 1985 from their chlor-alkali manufacturing operations (EPA Hazardous Waste Nos. K071 and K106) that have been batch tested for mercury using the EP toxicity procedures and have been found to contain less than 0.05 ppm mercury in the EP extract. Brine purification muds and wastewater treatment sludges that exceed this level will be considered a hazardous waste.
Mearl Corp.....	Peekskill, NY	Wastewater treatment sludge (EPA Hazardous Waste Nos. K006 and K007) generated from the production of chrome oxide green and iron blue pigments after November 27, 1985.
Monsanto Industrial Chemicals Company.	Sauget, Illinois..	Brine purification muds (EPA Hazardous Waste No. K071) generated from the mercury cell process in chlorine production, where separately prepurified brine is not used after August 15, 1986.
Occidental Chemical Corp. Muscle Shoals Plant.	Sheffield, Alabama.	<p>Retorted wastewater treatment sludge from the mercury cell process in chlorine production (EPA Hazardous Waste No. K106) after September 19, 1989. This exclusion is conditional upon the submission of data obtained from Occidental's full-scale retort treatment system because Occidental's original data were based on a pilot-scale retort system. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, Occidental must implement a testing program. All sampling and analyses (including quality control procedures) must be performed according to SW-846 procedures. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Initial Testing—During the first four weeks of full-scale retort operation, Occidental must do the following:</p> <p>(A) Collect representative grab samples from every batch of retorted material and composite the grab samples to produce a weekly composite sample. The weekly composite samples, prior to disposal or recycling, must be analyzed for the EP leachate concentrations of all the EP toxic metals (except mercury), nickel, and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Occidental must report the analytical test data, including all quality control data, obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) Collect representative grab samples of every batch of retorted material prior to its disposal or recycling and analyze the sample for EP leachate concentration of mercury. Occidental must report the analytical test data, including all quality control data, within 90 days after the treatment of the first full-scale batch.</p> <p>(2) Subsequent Testing—After the first four weeks of full-scale retort operation, Occidental must do the following:</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Occidental Chemical Corporation.	Delaware City, Delaware.	<p>(A) Continue to sample and test as described in condition (1)(A). Occidental must compile and store on-site for a minimum of three years all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Alabama. These testing requirements shall be terminated by EPA when the results of four consecutive weekly composite samples of the petitioned waste, obtained from either the initial testing or subsequent testing show the maximum allowable levels in condition (3) are not exceeded and the Section Chief, Variances Section, notifies Occidental that the requirements of this condition have been lifted.</p> <p>(B) Continue to sample and test for mercury as described in condition (1)(B). Occidental must compile and store on-site for a minimum of three years all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Alabama. These testing requirements shall remain in effect until Occidental provides EPA with analytical and quality control data for thirty consecutive batches of retorted material, collected as described in condition (1)(B), demonstrating that the EP leachate levels of mercury are below the maximum allowable level in condition (3) and the Section Chief, Variances Section, notifies Occidental that the testing in condition (2)(B) may be replaced with (2)(C).</p> <p>(C) [If the conditions in (2)(B) are satisfied, the testing requirements for mercury in (2)(B) shall be replaced with the following condition]. Collect representative grab samples from every batch of retorted material on a daily basis and composite the grab samples to produce a weekly composite sample. Occidental must analyze each weekly composite sample prior to its disposal or recycling for the EP leachate concentration of mercury. Occidental must compile and store on-site for a minimum of three years all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Alabama.</p> <p>(3) If, under condition (1) or (2), the EP leachate concentrations for chromium, lead, arsenic, or silver exceed 1.616 mg/l; for barium exceeds 32.3 mg/l; for cadmium or selenium exceed 0.323 mg/l; for mercury exceeds 0.065 mg/l, for nickel exceeds 16.15 mg/l; for cyanide exceeds 22.61 mg/l; or for total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be retreated until it meets these levels or managed and disposed of in accordance with subtitle C of RCRA.</p> <p>(4) Within one week of system start-up, Occidental must notify the Section Chief, Variances Section (see address below) when the full-scale retort system is on-line and waste treatment has begun. All data obtained through condition (1) must be submitted to the Section Chief, Variances Section, PSPD/OSW (OS-343), U.S. EPA, 401 M Street SW., Washington, DC 20460 within the time period specified in condition (1). At the Section Chief's request, Occidental must submit any other analytical data obtained through condition (2) to the above address, within the time period specified by the Section Chief. Failure to submit the required data will be considered by the Agency sufficient basis to revoke Occidental's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement:</p> <p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. 6928), I certify that the information contained in or accompanying this document is true, accurate and complete.</p> <p>As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.</p> <p>In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p> <p>Sodium chloride treatment <i>muds</i> (NaCl-TM), sodium chloride saturator cleanings (NaCl-SC), and potassium chloride treatment <i>muds</i> (KCl-TM) (all classified as EPA Hazardous Waste No. K071) generated at a maximum combined rate (for all three wastes) of 1,018 tons per year. This exclusion was published on April 29, 1991 and is conditioned upon the collection of data from Occidental's full-scale brine treatment system because Occidental's request for exclusion was based on data from a laboratory-scale brine treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment system is in operation, Occidental must implement a testing program for the petitioned waste. All sampling and analyses (including quality control procedures) must be performed according to SW-846 methodologies. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Initial Testing</i>: During the first four weeks of full-scale treatment system operation, Occidental must do the following:</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>(A) Collect representative grab samples from each batch of the three treated wastestreams (sodium chloride saturator cleanings (NaCl-SC), sodium chloride treatment muds (NaCl-TM) and potassium chloride treatment muds (KCl-TM)) on an as generated basis, and composite the samples to produce three separate weekly composite samples (of each type of K071 waste). The three weekly composite samples, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals (except mercury), nickel and cyanide (using deionized water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Occidental must report the waste volumes produced and the analytical test data, including all quality control data, obtained during this initial period, no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) Collect representative grab samples of each batch of the three treated wastestreams (NaCl-SC, NaCl-TM and KCl-TM) and composite the grab samples to produce three separate daily composite samples (of each type of K071 waste) on an as generated basis. The three daily composite samples, prior to disposal, must be analyzed for the EP leachate concentration of mercury. Occidental must report the waste volumes produced and the analytical test data, including all quality control data, obtained during this initial period, no later than 90 days after the treatment of the first full-scale batch.</p> <p>(2) <i>Subsequent Testing:</i> After the first four weeks of full-scale treatment operations, Occidental must do the following (all sampling and analyses (including quality control procedures) must be performed according to SW-846 procedures):</p> <p>(A) Continue to sample and test as described in condition (1)(A). Occidental must compile and store on-site for a minimum of three years the records of waste volumes produced and all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Delaware. These testing requirements shall be terminated by EPA when the results of four consecutive weekly composite samples of the petitioned waste, obtained from either the initial testing or subsequent testing, show the maximum allowable levels in condition (3) are not exceeded and the Section Chief, Variances Section, notifies Occidental that the requirements of this condition have been lifted.</p> <p>(B) Continue to sample and test for mercury as described in condition (1)(B). Occidental must compile and store on-site for a minimum of three years the records of waste volumes produced and all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Delaware. These testing requirements shall be terminated and replaced with the requirements of condition (2)(C) if Occidental provides EPA with analytical and quality control data for thirty consecutive batches of treated material, collected as described in condition (1)(B), demonstrating that the EP leachable level of mercury in condition (3) is not exceeded (in all three treated wastes), and the Section Chief, Variances Section, notifies Occidental that the testing in condition (2)(B) may be replaced with (2)(C).</p> <p>(C) [If the conditions in (2)(B) are satisfied, the testing requirements for mercury in (2)(B) shall be replaced with the following condition.] Collect representative grab samples from each batch of the three treated wastestreams (NaCl-SC, NaCl-TM and KCl-TM) on an as generated basis and composite the grab samples to produce three separate weekly composite samples (of each type of K071 waste). The three weekly composite samples, prior to disposal, must be analyzed for the EP leachate concentration of mercury. Occidental must compile and store on-site for a minimum of three years the records of waste volumes produced and all analytical data and quality control data. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Delaware.</p> <p>(3) If under conditions (1) or (2), the EP leachate concentration for chromium, lead, arsenic, or silver exceeds 0.77 mg/L; for barium exceeds 15.5 mg/L; for cadmium or selenium exceeds 0.16 mg/L; for mercury exceeds 0.031 mg/L; for nickel or total cyanide exceeds 10.9 mg/L; or the total reactive cyanide or total reactive sulfide levels exceeds 250 mg/kg and 500 mg/kg, the waste must either be retreated or managed and disposed of in accordance with all applicable hazardous waste regulations.</p> <p>(4) Within one week of system start-up, Occidental must notify the Section Chief, Variances Section (see address below) when the full-scale system is on-line and waste treatment has begun. All data obtained through condition (1) must be submitted to the Section Chief, Variances Section, PSPD/OSW, (OS-333), U.S. EPA, 401 M Street, SW., Washington, DC 20460 within the time period required in condition (1). At the Section Chief's request, Occidental must submit any other analytical data obtained through conditions (1) and (2) to the above address within the time period specified by the Section Chief. Failure to submit the required data will be considered by the Agency sufficient basis to revoke Occidental's exclusion to the extent directed by EPA. All data (either submitted to EPA or maintained at the site) must be accompanied by the following statement:</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
		<p>"Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code, which include, but may not be limited to 18 U.S.C. 1001 and 42 U.S.C. 6926), I certify that the information contained in or accompanying this document is true, accurate and complete.</p> <p>As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete.</p> <p>In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p>
Perox, Incorporated.	Sharon, Pennsylvania.	Iron oxide (EPA Hazardous Waste No. K062) generated (at a maximum annual rate of 4800 cubic yards) from a spent hydrochloric acid pickle liquor regeneration plant for spent pickle liquor generated from steel finishing operations. This exclusion was published on, November 13, 1990.
Pioneer Chlor Alkali Company, Inc. (formerly Stauffer Chemical Company).	St. Gabriel, LA.	Brine purification muds, which have been washed and vacuum filtered, generated after August 27, 1985 from their chlor-alkali manufacturing operations (EPA Hazardous Waste No. K071) that have been batch tested for mercury using the EP toxicity procedure and have been found to contain less than 0.05 ppm in mercury in the EP extract. Brine purification muds that exceed this level will be considered a hazardous waste.

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Roanoke Electric Steel Corp.	Roanoke, VA....	<p>Fully-cured chemically stabilized electric arc furnace dust/sludge (CSEAFD) treatment residue (EPA Hazardous Waste No. K061) generated from the primary production of steel after March 22, 1989. This exclusion is conditioned upon the data obtained from Roanoke's full-scale CSEAFD treatment facility because Roanoke's original data were obtained from a laboratory-scale CSEAFD treatment process. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, Roanoke must implement a testing program for the petitioned waste.</p> <p>This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Testing:</i></p> <p>(A) <i>Initial testing:</i> During the first four weeks of operation of the full-scale treatment system, Roanoke must collect representative grab samples of each treated batch of the CSEAFD and composite the grab samples daily. The daily composites, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals, nickel and cyanide (using distilled water in the cyanide extractions), and the total constituent concentrations of reactive sulfide and reactive cyanide. Analyses must be performed according to SW-846 methodologies. Roanoke must report the analytical test data obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) <i>Subsequent testing:</i> Roanoke must collect representative grab samples from every treated batch of CSEAFD generated daily and composite all of the grab samples to produce a weekly composite sample. Roanoke then must analyze each weekly composite sample for all of the EP toxic metals and nickel. Analyses must be performed according to SW-846 methodologies. The analytical data, including all quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Virginia.</p> <p>(2) <i>Delisting levels:</i> If the EP extract concentrations for chromium, lead, arsenic, or silver exceed 0.315 mg/l; for barium exceeds 6.3 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l; for nickel exceeds 3.15 mg/l; or for cyanide exceeds 1.26 mg/l, or total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be re-treated or managed and disposed in accordance with Subtitle C of RCRA.</p> <p>(3) <i>Data submittals:</i> Within one week of system start-up, Roanoke must notify the Section Chief, Variances Section (see address below) when their full-scale stabilization system is on-line and waste treatment has begun. All data obtained through the initial testing condition (1)(A), must be submitted to the Section Chief, Variances Section, PSPD/OSW, (OS-343), U.S. EPA, 401 M Street, SW., Washington, DC 20460 within the time period specified in condition (1)(A). Failure to submit the required data or keep the required records will be considered by the Agency, at its discretion, sufficient basis to revoke Roanoke's exclusion. All data must be accompanied by the following certification statement: "Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 USC 6928), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete. In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p>
Tricel Environmental Systems, Inc.	Hilliard, Ohio....	<p>Spent pickle liquor (EPA Hazardous Waste No. K062) generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332) after November 17, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusions to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the total oil and grease test and the EP Toxicity test (or the Oily Waste EP test, if the oil and grease content of the waste exceeds one percent) for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and nickel. If the extract concentrations for chromium, lead, arsenic, barium, and silver exceed 6.3 ppm; cadmium and selenium exceed 0.063 ppm; mercury levels exceed 0.013 ppm; or nickel levels exceed 2.2 ppm, the waste will be retreated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR 270.</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Tricil Environmental System, Inc.	Muskegon, Michigan.	<p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm; or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be retreated or managed and disposed as hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(3) Each batch of waste must be tested for the total content of the following organic toxicants. If the total content of any of the constituents exceeds the maximum levels shown, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 and 265 and the permitting standards of 40 CFR Part 270.</p> <p style="text-align: center;">Compound and Maximum Acceptable Levels (ppm)</p> <p>Acrolein, 56.8 Anthracene, 76.8 Benzene, 0.106 p-Chloro-m-cresol, 133 1,1-Dichloroethane, 0.01 Fluorene, 10.4 Methylenechloride, 8.2 Methyl ethyl ketone, 326 n-Nitrosodiphenylamine, 11.9 Phenanthrene, 14 Tetrachloroethylene, 0.188 Trichloroethylene, 0.59 Chloroform, 0.013 1,2-Dichloroethane, 0.0083 1,2-trans-Dichloroethylene, 231 2,4-Dimethylphenol, 12.5 Vinyl chloride, 0.18 1,2-Diphenyl hydrazine, 0.001</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample, which must be tested using GC/MS analysis for the organic compounds shown above, as well as the remaining organics on the priority pollutant list (see 47 FR 52309, November 19, 1982, Appendix A-126 Priority Pollutants).</p> <p>(5) The test data from conditions 1-4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail on a semiannual basis. The Agency will review this information and if needed, will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until May 18, 1987. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment system at this facility applies only to the wastewater treatment residue described in this petition.</p> <p>Spent pickle liquor (EPA Hazardous Waste No. K062) generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332); after November 17, 1986. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern, the facility must implement a contingency testing program for the petitioned wastes. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) Each batch of treatment residue must be representatively sampled and tested using the total oil and grease test and the EP Toxicity test (or the Oily Waste EP test, if the oil and grease content of the waste exceeds one percent) for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and nickel. If the extract concentrations for chromium, lead, arsenic, barium, and silver exceed 6.3 ppm, cadmium and selenium exceed 0.063 ppm; mercury levels exceed 0.013 ppm; or nickel levels exceed 2.2 ppm, the waste will be retreated or managed and disposed as a hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(2) Each batch of treatment residue must be tested for reactive and leachable cyanide. If the reactive cyanide levels exceed 250 ppm; or leachable cyanide levels (using the EP Toxicity test without acetic acid adjustment) exceed 1.26 ppm, the waste must be retreated or managed and disposed as hazardous waste under 40 CFR Parts 262 to 265 and the permitting standards of 40 CFR Part 270.</p> <p>(3) Each batch of waste must be tested for the total content of the following organic toxicants. If the total content of any of the constituents exceeds the maximum levels shown, the waste must be managed and disposed as a hazardous waste under 40 CFR Parts 262 and 265 and the permitting standards of 40 CFR Part 270:</p> <p style="text-align: center;">Compound and Maximum Acceptable Levels (ppm)</p> <p>Acrolein, 56.8 Anthracene, 76.8 Benzene, 0.106 p-Chloro-m-cresol, 133 1,1-Dichloroethane, 0.01</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
USX Steel Corporation, USS Division, Southworks Plant, Gary Works.	Chicago, Illinois.	<p>Fluorene, 10.4 Methylenechloride, 8.2 Methyl ethyl ketone, 326 n-Nitrosodiphenylamine, 11.9 Phenanthrene, 14 Tetrachloroethylene, 0.188 Trichloroethylene, 0.59 Chloroform, 0.013 1,2-Dichloroethane, 0.0083 1,2-trans-Dichloroethylene, 231 2,4-Dimethylphenol, 12.5 Vinyl chloride, 0.18 1,2-Diphenyl hydrazine, 0.001</p> <p>(4) A grab sample must be collected from each batch to form one monthly composite sample, which must be tested using GC/MS analysis for the organic compounds shown above, as well as the remaining organics on the priority pollutant list (see 47 FR 52308, November 19, 1982, Appendix A-126 Priority Pollutants).</p> <p>(5) The test data from conditions 1-4 must be kept on file at the facility for inspection purposes and must be compiled, summarized, and submitted to the Administrator by certified mail on a semiannual basis. The Agency will review this information and if needed, will propose to modify or withdraw the exclusion. The organics testing described in conditions 3 and 4 above is not required until May 18, 1987. The Agency's decision to conditionally exclude the treatment residue generated from the wastewater treatment system at this facility applies only to the wastewater treatment residue described in this petition.</p> <p>Fully-cured chemically stabilized electric arc furnace dust/sludge (CSEAFD) treatment residue (EPA Hazardous Waste No. K061) generated from the primary production of steel after April 29, 1991. This exclusion (for 35,000 tons of CSEAFD per year) is conditioned upon the data obtained from USX's full-scale CSEAFD treatment facility. To ensure that hazardous constituents are not present in the waste at levels of regulatory concern once the full-scale treatment facility is in operation, USX must implement a testing program for the petitioned waste. This testing program must meet the following conditions for the exclusion to be valid:</p> <p>(1) <i>Testing:</i> Sample collection and analyses (including quality control (QC) procedures) must be performed according to SW-846 methodologies.</p> <p>(A) <i>Initial Testing:</i> During the first four weeks of operation of the full-scale treatment system, USX must collect representative grab samples of each treated batch of the CSEAFD and composite the grab samples daily. The daily composites, prior to disposal, must be analyzed for the EP leachate concentrations of all the EP toxic metals, nickel, and cyanide (using distilled water in the cyanide extractions), and the total concentrations of reactive sulfide and reactive cyanide. USX must report the analytical test data, including quality control information, obtained during this initial period no later than 90 days after the treatment of the first full-scale batch.</p> <p>(B) <i>Subsequent Testing:</i> USX must collect representative grab samples from every treated batch of CSEAFD generated daily and composite all of the grab samples to produce a weekly composite sample. USX then must analyze each weekly composite sample for all of the EP toxic metals, and nickel. The analytical data, including quality control information, must be compiled and maintained on site for a minimum of three years. These data must be furnished upon request and made available for inspection by any employee or representative of EPA or the State of Illinois.</p> <p>(2) <i>Delisting levels:</i> If the EP extract concentrations for chromium, lead, arsenic, or silver exceed 0.315 mg/l; for barium exceeds 6.3 mg/l; for cadmium or selenium exceed 0.063 mg/l; for mercury exceeds 0.0126 mg/l; for nickel exceeds 3.15 mg/l; or for cyanide exceeds 4.42 mg/l, total reactive cyanide or total reactive sulfide levels exceed 250 mg/kg and 500 mg/kg, respectively, the waste must either be re-treated until it meets these levels or managed and disposed of in accordance with Subtitle C of RCRA.</p>

TABLE 2—WASTES EXCLUDED FROM SPECIFIC SOURCES—Continued

Facility	Address	Waste description
Vulcan Materials Company.	Port Edwards, WI.	<p>(3) <i>Data submittals:</i> Within one week of system start-up USX must notify the Section Chief, Delisting Section (see address below) when their full-scale stabilization system is on-line and waste treatment has begun. The data obtained through condition (1)(A) must be submitted to the Section Chief, Delisting Section, CAD/OSW (OS-333), U.S. EPA, 401 M Street, S.W., Washington, DC 20460 within the time period specified. At the Section Chief's request, USX must submit any other analytical data obtained through conditions (1)(A) or (1)(B) within the time period specified by the Section Chief. Failure to submit the required data obtained from conditions (1)(A) or (1)(B) within the specified time period or maintain the required records for the specified time will be considered by the Agency, at its discretion, sufficient basis to revoke USX's exclusion to the extent directed by EPA. All data must be accompanied by the following certification statement: "Under civil and criminal penalty of law for the making or submission of false or fraudulent statements or representations (pursuant to the applicable provisions of the Federal Code which include, but may not be limited to, 18 U.S.C. § 6928), I certify that the information contained in or accompanying this document is true, accurate and complete. As to the (those) identified section(s) of this document for which I cannot personally verify its (their) truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate and complete. In the event that any of this information is determined by EPA in its sole discretion to be false, inaccurate or incomplete, and upon conveyance of this fact to the company, I recognize and agree that this exclusion of wastes will be void as if it never had effect or to the extent directed by EPA and that the company will be liable for any actions taken in contravention of the company's RCRA and CERCLA obligations premised upon the company's reliance on the void exclusion."</p> <p>Brine purification muds (EPA Hazardous Waste No. K071) generated from the mercury cell process in chlorine production, where separately prepurified brine is not used after November 17, 1986. To assure that mercury levels in this waste are maintained at acceptable levels, the following conditions apply to this exclusion: Each batch of treated brine clarifier muds and saturator insolubles must be tested (by the extraction procedure) prior to disposal and the leachate concentration of mercury must be less than or equal to 0.0129 ppm. If the waste does not meet this requirement, then it must be re-treated or disposed of as hazardous. This exclusion does not apply to wastes for which either of these conditions is not satisfied.</p>

TABLE 3—WASTES EXCLUDED FROM COMMERCIAL CHEMICAL PRODUCTS, OFF-SPECIFICATION SPECIES, CONTAINER RESIDUES, AND SOIL RESIDUES THEREOF

Facility	Address	Waste description
Union Carbide Corp.	Taft, LA.....	Contaminated soil (approximately 11,000 cubic yards), which contains acrolein in concentrations of less than 9 ppm.

[49 FR 37070, Sept. 21, 1984]

EDITORIAL NOTE: For FEDERAL REGISTER citations affecting Appendix IX of Part 261, see the List of CFR Sections Affected in the Finding Aids section of this volume.

APPENDIX X—METHOD OF ANALYSIS FOR CHLORINATED DIBENZO-P-DIOXINS AND -DIBENZOFURANS^{1, 2, 3, 4}

Method 8280

1. Scope and Application

¹This method is appropriate for the analysis of tetra-, penta-, and hexachlorinated dibenzo-*p*-dioxins and -dibenzofurans.

²Analytical protocol for determination of TCDDs in phenolic chemical wastes and soil samples obtained from the proximity of chemical dumps. T.O. Tiernan and M. Taylor. Brehm Laboratory, Wright State University, Dayton, OH 45435.

³Analytical protocol for determination of chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans in river water. T.O. Tiernan and M. Taylor. Brehm Laboratory, Wright State University, Dayton, OH 45435.

⁴In general, the techniques that should be used to handle these materials are those which are followed for radioactive or infectious laboratory materials. Assistance in evaluating laboratory practices may be obtained from industrial hygienists and per-

Continued

1.1 This method measures the concentration of chlorinated dibenzo-*p*-dioxins and chlorinated dibenzofurans in chemical wastes including still bottoms, filter aids, sludges, spent carbon, and reactor residues, and in soils.

1.2 The sensitivity of this method is dependent upon the level of interferences.

1.3 This method is recommended for use only by analysts experienced with residue analysis and skilled in mass spectral analytical techniques.

1.4 Because of the extreme toxicity of these compounds, the analyst must take necessary precautions to prevent exposure to himself, or to others, of materials known or believed to contain CDDs or CDFs.

2. Summary of the Method

2.1 This method is an analytical extraction cleanup procedure, and capillary column gas chromatograph-low resolution mass spectrometry method, using capillary column GC/MS conditions and internal standard techniques, which allow for the measurement of PCDDs and PCDFs in the extract.

2.2 If interferences are encountered, the method provides selected general purpose cleanup procedures to aid the analyst in their elimination.

3. Interferences

3.1 Solvents, reagents, glassware, and other sample processing hardware may yield discrete artifacts and/or elevated baselines causing misinterpretation of gas chromatograms. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by running method blanks. Specific selection of reagents and purification of solvents by distillation in all-glass systems may be required.

3.2 Interferences co-extracted from the samples will vary considerably from source to source, depending upon the diversity of the industry being sampled. PCDD is often associated with other interfering chlorinated compounds such as PCB's which may be

sons specializing in safe laboratory practices. Typical infectious waste incinerators are probably not satisfactory devices for disposal of materials highly contaminated with CDDs or CDFs. Safety instructions are outlined in EPA Test Method 613(4.0)

See also: (1) "Program for monitoring potential contamination in the laboratory following the handling and analyses of chlorinated dibenzo-*p*-dioxins and dibenzofurans" by F. D. Hileman et al., *In: Human and Environmental Risks of Chlorinated Dioxins and Related Compounds*, R.E. Tucker, et al, eds., Plenum Publishing Corp., 1983. 2) Safety procedures outlined in EPA Method 613, Federal Register volume 44, No. 233, December 3, 1979.

at concentrations several orders of magnitude higher than that of PCDD. While general cleanup techniques are provided as part of this method, unique samples may require additional cleanup approaches to achieve the sensitivity stated in Table 1.

TABLE 1—GAS CHROMATOGRAPHY OF TCDD

Column	Retention time (min.)	Detection limit (μg/kg) ¹
Glass capillary	9.5	0.003

¹ Detection limit for liquid samples is 0.003 μg/l. This is calculated from the minimum detectable GC response being equal to five times the GC background noise assuming a 1 ml effective final volume of the 1 liter sample extract, and a GC injection of 5 microliters. Detection levels apply to both electron capture and GC/MS detection. For further details see 44 FR 69526 (December 3, 1979).

3.3 The other isomers of tetrachlorodibenzo-*p*-dioxin may interfere with the measurement of 2,3,7,8-TCDD. Capillary column gas chromatography is required to resolve those isomers that yield virtually identical mass fragmentation patterns.

4. Apparatus and Materials

4.1. Sampling equipment for discrete or composite sampling.

4.1.1 Grab sample bottle—amber glass, 1-liter or 1-quart volume. French or Boston Round design is recommended. The container must be washed and solvent rinsed before use to minimize interferences.

4.1.2. Bottle caps—threaded to screw on to the sample bottles. Caps must be lined with Teflon. Solvent washed foil, used with the shiny side towards the sample, may be substituted for the Teflon if sample is not corrosive.

4.1.3. Compositing equipment—automatic or manual compositing system. No tygon or rubber tubing may be used, and the system must incorporate glass sample containers for the collection of a minimum of 250 ml. Sample containers must be kept refrigerated after sampling.

4.2 Water bath—heated, with concentric ring cover, capable of temperature control ($\pm 2^\circ\text{C}$). The bath should be used in a hood.

4.3 Gas chromatograph/mass spectrometer data system.

4.3.1 Gas chromatograph: An analytical system with a temperature-programmable gas chromatograph and all required accessories including syringes, analytical columns, and gases.

4.3.2 Column: SP-2250 coated on a 30 m long \times 0.25 mm I.D. glass column (Supelco No. 2-3714 or equivalent). Glass capillary column conditions: Helium carrier gas at 30 cm/sec linear velocity run splitless. Column temperature is 210°C .

4.3.3 Mass spectrometer: Capable of scanning from 35 to 450 amu every 1 sec or less,

utilizing 70 volts (nominal) electron energy in the electron impact ionization mode and producing a mass spectrum which meets all the criteria in Table 2 when 50 ng of decafluorotriphenyl-phosphine (DFTPP) is injected through the GC inlet. The system must also be capable of selected ion monitoring (SIM) for at least 4 ions simultaneously, with a cycle time of 1 sec or less. Minimum integration time for SIM is 100 ms. Selected ion monitoring is verified by injecting .015 ng of TCDD ^{37}Cl to give a minimum signal to noise ratio of 5 to 1 at mass 328.

TABLE 2—DFTPP KEY IONS AND ION ABUNDANCE CRITERIA¹

Mass	Ion abundance criteria
51	30–60% of mass 198.
68	Less than 2% of mass 69.
70	Less than 2% of mass 69.
127	40–60% of mass 198.
197	Less than 1% of mass 198.
198	Base peak, 100% relative abundance.
199	5–9% of mass 198.
275	10–30% of mass 198.
365	Greater than 1% of mass 198.
441	Present but less than mass 443.
442	Greater than 40% of mass 198.
443	17–23% of mass 442.

¹ J. W. Eichelberger, L.E. Harris, and W.L. Budde. 1975. Reference compound to calibrate ion abundance measurement in gas chromatography-mass spectrometry. *Analytical Chemistry* 47:995.

4.3.4 GC/MS interface: Any GC-to-MS interface that gives acceptable calibration points at 50 ng per injection for each compound of interest and achieves acceptable tuning performance criteria (see Sections 6.1 through 6.3) may be used. GC-to-MS interfaces constructed of all glass or glass-lined materials are recommended. Glass can be deactivated by silanizing with dichlorodimethylsilane. The interface must be capable of transporting at least 10 ng of the components of interest from the GC to the MS.

4.3.5 Data system: A computer system must be interfaced to the mass spectrometer. The system must allow the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program. The computer must have software that can search any GC/MS data file for ions of a specific mass and that can plot such ion abundances versus time or scan number. This type of plot is defined as an Extracted Ion Current Profile (EICP). Software must also be able to integrate the abundance, in any EICP, between specified time or scan number limits.

4.4 Pipettes: Disposable, Pasteur, 150 mm long × 5 mm ID (Fisher Scientific Co., No. 13-678-6A or equivalent).

4.5 Flint glass bottle (Teflon-lined screw cap).

4.6 Reacti-vial (silanized) (Pierce Chemical Co.).

5. Reagents

5.1 Potassium hydroxide-(ACS), 2% in distilled water.

5.2 Sulfuric acid-(ACS), concentrated.

5.3 Methylene chloride, hexane, benzene, petroleum ether, methanol, tetradecane-pesticide quality or equivalent.

5.4 Prepare stock standard solutions of TCDD and ^{37}Cl -TCDD (molecular weight 328) in a glove box. The stock solutions are stored in a glovebox, and checked frequently for signs of degradation or evaporation, especially just prior to the preparation of working standards.

5.5 Alumina-basic, Woelm; 80/200 mesh. Before use activate overnight at 600°C, cool to room temperature in a desiccator.

5.6 Prepurified nitrogen gas

6.0 Calibration

6.1 Before using any cleanup procedure, the analyst must process a series of calibration standards through the procedure to validate elution patterns and the absence of interferences from reagents.

6.2 Prepare GC/MS calibration standards for the internal standard technique that will allow for measurement of relative response factors of at least three CDD/ ^{37}Cl -CDD ratios. Thus, for TCDDs, at least three TCDD/ ^{37}Cl -TCDD and TCDF/ ^{37}Cl -TCDF must be determined.⁵ The ^{37}Cl -TCDD/F concentration in the standard should be fixed and selected to yield a reproducible response at the most sensitive setting of the mass spectrometer. Response factors for PCDD and HxCDD may be determined by measuring the response of the tetrachloro-labelled compounds relative to that of the unlabelled 1,2,3,4- or 2,3,7,8-TCDD, 1,2,3,4,7-PCDD or 1,2,3,4,7,8-HxCDD, which are commercially available.⁶

⁵ ^{37}Cl -labelled 2,3,7,8-TCDD and 2,3,7,8-TCDF are available from K.O.R. Isotopes, and Cambridge Isotopes, Inc., Cambridge, MA. Proper standardization requires the use of a specific labelled isomer for each congener to be determined. However, the only labelled isomers readily available are ^{37}Cl -2,3,7,8-TCDD and ^{37}Cl -2,3,7,8-TCDF. This method therefore uses these isomers as surrogates for the CDDs and CDFs. When other labelled CDDs and CDFs are available, their use will be required.

⁶ This procedure is adopted because standards are not available for most of the CDDs and CDFs, and assumes that all the congeners will show the same response as the unlabelled congener used as a standard. Although this assumption may not be true in all cases, the error will be small.

6.3 Assemble the necessary GC/MS apparatus and establish operating parameters equivalent to those indicated in Section 11.1 of this method. Calibrate the GC/MS system according to Eichelberger, et al. (1975) by the use of decafluorotriphenyl phosphine (DFTPP). By injecting calibration standards, establish the response factors for CDDs vs. ^{35}Cl -TCDD, and for CDFs vs. ^{35}Cl -TCDF. The detection limit provided in Table 1 should be verified by injecting .015 ng of ^{35}Cl -TCDD which should give a minimum signal to noise ratio of 5 to 1 at mass 328.

7. Quality Control

7.1 Before processing any samples, the analyst should demonstrate through the analysis of a distilled water method blank, that all glassware and reagents are interference-free. Each time a set of samples is extracted, or there is a change in reagents, a method blank should be processed as a safeguard against laboratory contamination.

7.2 Standard quality assurance practices must be used with this method. Field replicates must be collected to measure the precision of the sampling technique. Laboratory replicates must be analyzed to establish the precision of the analysis. Fortified samples must be analyzed to establish the accuracy of the analysis.

8. Sample Collection, Preservation, and Handling

8.1 Grab and composite samples must be collected in glass containers. Conventional sampling practices should be followed, except that the bottle must not be prewashed with sample before collection. Composite samples should be collected in glass containers in accordance with the requirements of the RCRA program. Sampling equipment must be free of tygon and other potential sources of contamination.

8.2 The samples must be iced or refrigerated from the time of collection until extraction. Chemical preservatives should not be used in the field unless more than 24 hours will elapse before delivery to the laboratory. If an aqueous sample is taken and the sample will not be extracted within 48 hours of collection, the sample should be adjusted to a pH range of 6.0-8.0 with sodium hydroxide or sulfuric acid.

8.3 All samples must be extracted within 7 days and completely analyzed within 30 days of collection.

9. Extraction and Cleanup Procedures

9.1 Use an aliquot of 1-10 g sample of the chemical waste or soil to be analyzed. Soils should be dried using a stream of prepurified nitrogen and pulverized in a ball-mill or similar device. Perform this operation in a clear area with proper hood space. Transfer the sample to a tared 125 ml flint glass bottle (Teflon-lined screw cap) and determine the weight of the sample. Add an appropriate quantity of ^{35}Cl -labelled 2,3,7,8-

TCDD (adjust the quantity according to the required minimum detectable concentration), which is employed as an internal standard.

9.2 Extraction

9.2.1 Extract chemical waste samples by adding 10 ml methanol, 40 ml petroleum ether, 50 ml doubly distilled water, and then shaking the mixture for 2 minutes. Tars should be completely dissolved in any of the recommended neat solvents. Activated carbon samples must be extracted with benzene using method 3540 in SW-846 (Test Methods for Evaluating Solid Waste—Physical/Chemical Methods, available from G.P.O. Stock #055-022-81001-2). Quantitatively transfer the organic extract or dissolved sample to a clean 250 ml flint glass bottle (Teflon lined screw cap), add 50 ml doubly distilled water and shake for 2 minutes. Discard the aqueous layer and proceed with Step 9.3.

9.2.2 Extract soil samples by adding 40 ml of petroleum ether to the sample, and then shaking for 20 minutes. Quantitatively transfer the organic extract to a clean 250 ml flint glass bottle (Teflon-lined screw cap), add 50 ml doubly distilled water and shake for 2 minutes. Discard the aqueous layer and proceed with Step 9.3.

9.3 Wash the organic layer with 50 ml of 20% aqueous potassium hydroxide by shaking for 10 minutes and then remove and discard the aqueous layer.

9.4 Wash the organic layer with 50 ml of doubly distilled water by shaking for 2 minutes, and discard the aqueous layer.

9.5 Cautiously add 50 ml concentrated sulfuric acid and shake for 10 minutes. Allow the mixture to stand until layers separate (approximately 10 minutes), and remove and discard the acid layer. Repeat acid washing until no color is visible in the acid layer.

9.6 Add 50 ml of doubly distilled water to the organic extract and shake for 2 minutes. Remove and discard the aqueous layer and dry the organic layer by adding 10g of anhydrous sodium sulfate.

9.7 Concentrate the extract to incipient dryness by heating in a 55° C water bath and simultaneously flowing a stream of prepurified nitrogen over the extract. Quantitatively transfer the residue to an alumina microcolumn fabricated as follows:

9.7.1 Cut off the top section of a 10 ml disposable Pyrex pipette at the 4.0 ml mark and insert a plug of silanized glass wool into the tip of the lower portion of the pipette.

9.7.2 Add 2.8g of Woelm basic alumina (previously activated at 600° C overnight and then cooled to room temperature in a desiccator just prior to use).

9.7.3 Transfer sample extract with a small volume of methylene chloride.

9.8 Elute the microcolumn with 10 ml of 3% methylene chloride-in-hexane followed by 15 ml of 20% methylene chloride-in-hexane and discard these effluents. Elute the column with 15 ml of 50% methylene chloride-in-hexane and concentrate this effluent (55° C water bath, stream of prepurified nitrogen) to about 0.3–0.5 ml.

9.9 Quantitatively transfer the residue (using methylene chloride to rinse the container) to a silanized Reacti-Vial (Pierce Chemical Co.). Evaporate, using a stream of prepurified nitrogen, almost to dryness, rinse the walls of the vessel with approximately 0.5 ml methylene chloride, evaporate just to dryness, and tightly cap the vial. Store the vial at 5° C until analysis, at which time the sample is reconstituted by the addition of tridecane.

9.10 Approximately 1 hour before GC-MS (HRGC-LRMS) analysis, dilute the residue in the micro-reaction vessel with an appropriate quantity of tridecane. Gently swirl the tridecane on the lower portion of the vessel to ensure dissolution of the CDDs and CDFs. Analyze a sample by GC/EC to provide insight into the complexity of the problem, and to determine the manner in which the mass spectrometer should be used. Inject an appropriate aliquot of the sample into the GC-MS instrument, using a syringe.

9.11 If, upon preliminary GC-MS analysis, the sample appears to contain interfering substances which obscure the analyses for CDDs and CDFs, high performance liquid chromatographic (HPLC) cleanup of the extract is accomplished, prior to further GC-MS analysis.

10. HPLC Cleanup Procedure⁷

10.1 Place approximately 2 ml of hexane in a 50 ml flint glass sample bottle fitted with a Teflon-lined cap.

10.2 At the appropriate retention time, position sample bottle to collect the required fraction.

10.3 Add 2 ml of 5% (w/v) sodium carbonate to the sample fraction collected and shake for one minute.

10.4 Quantitatively remove the hexane layer (top layer) and transfer to a micro-reaction vessel.

10.5 Concentrate the fraction to dryness and retain for further analysis.

11. GC/MS Analysis

11.1 The following column conditions are recommended: Glass capillary column conditions: SP-2250 coated on a 30 m long x 0.25 mm I.D. glass column (Supelco No. 2-3714, or equivalent) with helium carrier gas at 30 cm/sec linear velocity, run splitless. Column temperature is 210°C. Under these conditions the retention time for TCDDs is about 9.5 minutes. Calibrate the system daily with, a minimum, three injections of standard mixtures.

11.2 Calculate response factors for standards relative to ³⁷Cl-TCDD/F (see Section 12).

11.3 Analyze samples with selected ion monitoring of at least two ions from Table 3. Proof of the presence of CDD or CDF exists if the following conditions are met:

11.3.1 The retention time of the peak in the sample must match that in the standard, within the performance specifications of the analytical system.

11.3.2 The ratio of ions must agree within 10% with that of the standard.

11.3.3 The retention time of the peak maximum for the ions of interest must exactly match that of the peak.

TABLE 3—LIST OF ACCURATE MASSES MONITORED USING GC SELECTED-ION MONITORING, LOW RESOLUTION, MASS SPECTROMETRY FOR SIMULTANEOUS DETERMINATION OF TETRA-, PENTA-, AND HEXACHLORINATED DIBENZO-*p*-DIOXINS AND DIBENZOFURANS

Class of chlorinated dibenzodioxin or dibenzofuran	Number of chlorine substituents (x)	Monitored m/z for dibenzodioxins C ₁₂ H _{8-x} O ₂ Cl _x	Monitored m/z for dibenzofurans C ₁₂ H _{8-x} OCl _x	Approximate theoretical ratio expected on basis of isotopic abundance
Tetra.....	4	¹ 319.897 321.894 ² 327.885	¹ 303.902 305.903 ² 311.894	0.74 1.00
		³ 256.933 ³ 258.930	.....	0.21 0.20
Penta.....	5	¹ 353.858 355.855	¹ 337.863 339.860	0.57 1.00
Hexa.....	6	388.816	373.821	1.00

⁷ For cleanup see also method #8320 or #8330, SW-846, Test Methods for Evaluat-

ing Solid Waste, Physical/Chemical Methods (1982).

TABLE 3—LIST OF ACCURATE MASSES MONITORED USING GC SELECTED-ION MONITORING, LOW RESOLUTION, MASS SPECTROMETRY FOR SIMULTANEOUS DETERMINATION OF TETRA-, PENTA-, AND HEXACHLORINATED DIBENZO-*p*-DIOXINS AND DIBENZOFURANS—Continued

Class of chlorinated dibenzodioxin or dibenzofuran	Number of chlorine substituents (x)	Monitored m/z for dibenzodioxins C ₁₂ H _{8-x} O ₂ Cl _x	Monitored m/z for dibenzofurans C ₁₂ H _{8-x} OCl _x	Approximate theoretical ratio expected on basis of isotopic abundance
		391.813	375.818	0.87

¹ Molecular ion peak.² Cl₃₇-labelled standard peaks.³ Ions which can be monitored in TCDD analyses for confirmation purposes.

11.4 Quantitate the CDD and CDF peaks from the response relative to the ³⁷Cl-TCDD/F internal standards. Recovery of the internal standard should be greater than 50 percent.

11.5 If a response is obtained for the appropriate set of ions, but is outside the expected ratio, a co-eluting impurity may be suspected. In this case, another set of ions characteristic of the CDD/CDF molecules should be analyzed. For TCDD a good choice of ions is m/e 257 and m/e 259. For TCDF a good choice of ions is m/e 241 and 243. These ions are useful in characterizing the molecular structure to TCDD or TCDF. For analysis of TCDD good analytical technique would require using all four ions, m/e 257, 320, 322, and 328, to verify detection and signal to noise ratio of 5 to 1. Suspected impurities such as DDE, DDD, or PCB residues can be confirmed by checking for their major fragments. These materials can be removed by the cleanup columns. Failure to meet criteria should be explained in the report, or the sample reanalyzed.

11.6 If broad background interference restricts the sensitivity of the GC/MS analysis, the analyst should employ cleanup procedures and reanalyze by GC/MS. See section 10.0.

11.7 In those circumstances where these procedures do not yield a definitive conclusion, the use of high resolution mass spectrometry is suggested.

12. Calculations

12.1 Determine the concentration of individual compounds according to the formula:

$$\text{Concentration, } \mu\text{g/gm} = \frac{A \times A_s}{G \times A_{is} \times R_f}$$

where:

A = μg of internal standard added to the sample ⁸

G = gm of sample extracted

A_s = area of characteristic ion of the compound being quantified.

A_{is} = area of characteristic ion of the internal standard

R_f = response factor ⁹

Response factors are calculated using data obtained from the analysis of standards according to the formula:

$$R_f = \frac{A_s \times C_{is}}{A_{is} \times C_s}$$

where:

C_{is} = concentration of the internal standard

C_s = concentration of the standard compound

12.2 Report results in micrograms per gram without correction for recovery data. When duplicate and spiked samples are analyzed, all data obtained should be reported.

12.3 Accuracy and Precision. No data are available at this time.

[50 FR 2001, Jan. 14, 1985]

⁸The proper amount of standard to be used is determined from the calibration curve (See Section 6.0).

⁹If standards for PCDDs/Fs and HxCDDs/Fs are not available, response factors for ions derived from these congeners are calculated relative to ³⁷Cl-TCDD/F. The analyst may use response factors for 1,2,3,4- or 2,3,7,8-TCDD, 1,2,3,4,7-PeCDD, or 1,2,3,4,7,8-HxCDD for quantitation of TCDDs/Fs, PeCDDs/Fs and HxCDDs/Fs, respectively. Implicit in this requirement is the assumption that the same response is obtained from PCDDs/Fs containing the same numbers of chlorine atoms.

Please refer to the *Instructions for Filing Notification* before completing this form. The information requested here is required by law (Section 3010 of the Resource Conservation and Recovery Act).



EPA

Notification of Regulated Waste Activity

United States Environmental Protection Agency

Date Received
(For Official Use Only)

I. Installation's EPA ID Number (Mark 'X' in the appropriate box)

☐

A. First Notification

☐

B. Subsequent Notification
(complete item C)

C. Installation's EPA ID Number

II. Name of Installation (Include company and specific site name)

III. Location of Installation (Physical address not P.O. Box or Route Number)

Street

Street (continued)

City or Town

State

ZIP Code

County Code

County Name

IV. Installation Mailing Address (See Instructions)

Street or P.O. Box

City or Town

State

ZIP Code

V. Installation Contact (Person to be contacted regarding waste activities at site)

Name (last)

(first)

Job Title

Phone Number (area code and number)

VI. Installation Contact Address (See Instructions)

A. Contact Address
Location Mailing

B. Street or P.O. Box

City or Town

State

ZIP Code

VII. Ownership (See Instructions)

A. Name of Installation's Legal Owner

Street, P.O. Box, or Route Number

City or Town

State

ZIP Code

Phone Number (area code and number)

B. Land Type

C. Owner Type

D. Change of Owner
Indicator

(Date Changed)

Month Day Year

Yes

No

ID - For Official Use Only

VIII. Type of Regulated Waste Activity (Mark 'X' in the appropriate boxes. Refer to instructions.)

A. Hazardous Waste Activity

B. Used Oil Fuel Activities

1. Generator (See instructions) ☐ 3. Treater, Storer, Disposer (at installation) Note: A permit is required for this activity; see instructions.
- ☐ a. Greater than 1000kg/mo (2,200 lbs.)
- ☐ b. 100 to 1000 kg/mo (220 - 2,200 lbs.)
- ☐ c. Less than 100 kg/mo (220 lbs.)
2. Transporter (Indicate Mode in boxes 1-5 below)
- ☐ a. For own waste only
- ☐ b. For commercial purposes
- Mode of Transportation
- ☐ 1. Air
- ☐ 2. Rail
- ☐ 3. Highway
- ☐ 4. Water
- ☐ 5. Other - specify _____
- ☐ 4. Hazardous Waste Fuel
- ☐ a. Generator Marketing to Burner
- ☐ b. Other Marketers
- ☐ c. Boiler and/or Industrial Furnace
- ☐ 1. Smelter Deferral
- ☐ 2. Small Quantity Exemption
- Indicate Type of Combustion Device(s)
- ☐ 1. Utility Boiler
- ☐ 2. Industrial Boiler
- ☐ 3. Industrial Furnace
- ☐ 5. Underground Injection Control

1. Off-Specification Used Oil Fuel
- ☐ a. Generator Marketing to Burner
- ☐ b. Other Marketer
- ☐ c. Burner - indicate device(s) - Type of Combustion Device
- ☐ 1. Utility Boiler
- ☐ 2. Industrial Boiler
- ☐ 3. Industrial Furnace
- ☐ 2. Specification Used Oil Fuel Marketer (or On-site Burner) Who First Claims the Oil Meets the Specification

IX. Description of Regulated Wastes (Use additional sheets if necessary)

A. Characteristics of Nonlisted Hazardous Wastes. Mark 'X' in the boxes corresponding to the characteristics of nonlisted hazardous wastes your installation handles. (See 40 CFR Parts 261.20 - 261.24)

1. Ignitable (D001) ☐ 2. Corrosive (D002) ☐ 3. Reactive (D003) ☐ 4. Toxicity Characteristic (D000) ☐
- (List specific EPA hazardous waste number(s) for the Toxicity characteristic contaminant(s))
- _____

B. Listed Hazardous Wastes. (See 40 CFR 261.31 - 33. See instructions if you need to list more than 12 waste codes.)

1	2	3	4	5	6
7	8	9	10	11	12

C. Other Wastes. (State or other wastes requiring a handler to have an I.D. number. See instructions.)

1	2	3	4	5	6

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Name and Official Title (type or print)

Date Signed

XI. Comments

Note: Mail completed form to the appropriate EPA Regional or State Office. (See Section III of the booklet for addresses.)

ID - For Official Use Only

IX. Description of Regulated Wastes Continued (Additional sheet)

B. Listed Hazardous Wastes. (See 40 CFR 261.31 - 33. Use this page only if you need to list more than 12 waste codes.)

13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36
37	38	39	40	41	42
43	44	45	46	47	48
49	50	51	52	53	54
55	56	57	58	59	60
61	62	63	64	65	66
67	68	69	70	71	72
73	74	75	76	77	78
79	80	81	82	83	84
85	86	87	88	89	90
91	92	93	94	95	96
97	98	99	100	101	102
103	104	105	106	107	108
109	110	111	112	113	114
115	116	117	118	119	120