APPENDIX K
Flow Chart of the Regulatory Process

THE REGULATORY REVIEW PROCESS FOR REGULATIONS

ADOPTED BY THE ENVIRONMENTAL QUALITY BOARD

Proposed Rulemaking Stage

1. DEP drafts proposed regulations and meets with advisory committee.

2. EQB adopts proposed regulation.

3. Review by Attorney General (30 days).

4. DEP submits proposed regulation to the Standing Committees, the Independent Regulatory Review Commission (IRRC) and the *Pennsylvania Bulletin.*

5. The proposed regulation is published in the *Pennsylvania Bulletin* for public comment commencing the official public comment period. Public meetings and/or hearings may be held.

6. Commentators may submit comments to the EQB.

7. The public comment period closes.

8. Within 20 days following the close of the public comment period, the Standing Committees may submit comments.

9. Within 30 days following the close of the public comment period, IRRC may submit comments.

10. DEP reviews comments and prepares a comment and response document.

Final Rulemaking Stage

1. DEP drafts final regulation and meets with advisory committee.

2. EQB adopts final regulation.

3. DEP submits final regulation to the Standing Committees, IRRC and public

commentators.

4. Standing Committees may approve or disapprove within 20 days.

5. IRRC may approve or disapprove within 30 days. (If either the Standing Committees or IRRC disapprove the regulation, it is reconsidered by the Standing Committee and IRRC after the agency responds to the issues raised.)

6. If IRRC approves the regulation, it is submitted to the Attorney General for a 30 day review.

7. The final regulation is published in the *Pennsylvania Bulletin.*

Contact the Webmaster
Last Modified on 02/05/1997 13:23:17.

APPENDIX L
Hazardous Waste Transporter Application Form

APPLYING FOR A PENNSYLVANIA HAZARDOUS WASTE TRANSPORTER LICENSE

In order to apply for a Pennsylvania Hazardous Waste Transporter License, you must submit a completed license application to:
Pennsylvania Department of Environmental Protection
Bureau of Land Recycling and Waste Management
Division of Hazardous Waste Management
P.O. Box 8471
Harrisburg, PA 17105-8471.

A check for $500, plus a fee of $5 for each vehicle identification (license) card requested **in excess of ten cards**, made payable to the "Commonwealth of Pennsylvania" must accompany the license application. The application fee is non-refundable.

The following documents must be completed and submitted to the Department along with the application fee. The forms and instructions are available as individual Portable Document Format (PDF) files. Alternatively, you may download a zipped set of all these files as Haz_Trans.zip (135 KB). Help is available on using these types of files.

1. Hazardous Waste Transporter License Application

- Please complete the application as per the instruction form.
- Download: (updated forms posted 3-2-98)
  Lrwm052.PDF - Instructions (6 KB)
  Lrwm052A.PDF - License Application (21 KB)
  Lrwm052B.PDF - Terminal Location Form (22 KB)

2. Contingency Plan

- Please follow the "Sample" Contingency Plan in the guidelines and include all items in bold print verbatim. Include other information as appropriate for your company.
- Download:
  Lrwm0318.PDF - Guidelines for Developing a Contingency Plan (16 KB)

3. Form HW-C, Compliance History

- Completion of Form HW-C is required for the Department to access the applicant's history of compliance with laws, rules, and regulations relating to environmental protection within Pennsylvania as well as out of state. Respond to each item. If an item does not apply, enter "None" or "N/A". Please pay particular attention to the instructions for the Certification of this document (see Instructions, No. 9 and Page 5 of 5).
- Download:
  Lrwm0058.PDF - Compliance History, form and instructions (134 KB)

Complete information regarding these requirements is cited within the Department's regulations, 25 PA Code, Chapter 263a (copies available upon request) and 40 CFR Part 263 incorporated at 25 PA Code, §263a.10.

Please be advised that you will be licensed to transport **all** the hazard codes and physical states of hazardous waste. **You cannot legally transport hazardous waste to or from locations in Pennsylvania until you receive a hazardous waste transporter license from the Department.**

Review of the complete application should take 60 days or less.

In addition to applying for a license with this Department, you should contact the following Pennsylvania agencies to learn how their requirements may apply to you.

- PA Department of Transportation 717-787-7445
- PA Public Utility Commission 717-787-3834

If you need further information, please contact the Bureau of Land Recycling and Waste Management, Division of Hazardous Waste Management at 717&SHY;787&SHY;6239 or via e-mail: Baker.James@dep.state.pa.us

James W. Baker
Solid Waste Program Specialist
Division of Hazardous Waste Management

Hazardous Waste Homepage

Contact the Webmaster
Last Modified on 06/14/99 19:23:21.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

HAZARDOUS WASTE TRANSPORTER LICENSE APPLICATION

INSTRUCTIONS

Only transporters who pick up and/or deliver hazardous wastes within the Commonwealth are required to be licensed by the Department. Transporters who only haul hazardous wastes through the Commonwealth are not required to be licensed but may be subject to certain PA Department of Transportation, PA Turnpike Commission, and PA Public Utility Commission requirements.

After reviewing the completed license application, the Department will notify the applicant of any deficiencies in the application. Upon approval by the Department of all the required documents, a license may be issued.

All applications for a hazardous waste transporter license must be accompanied by a check for the required fee amounts made payable to the **"Commonwealth of Pennsylvania"**. If you have any questions about the license application, please contact the Division of Hazardous Waste Management at (717) 787-6239. The instructions below correspond to the license application.

1. Enter your EPA ID Number. If you have not received an EPA ID Number, please contact the EPA for further information.

2. Enter the legal name of your company. If the principal place of business location is the same as the mailing address, enter "same", if not, list its address.

3. Self-explanatory.

4. Indicate the total number of copies of the vehicle identification (license) cards you will need. A copy of the license is required to be carried on the transport vehicle while transporting hazardous waste which is picked up or delivered within PA.

5. If the applicant is not a corporation, list the names, titles, and addresses of officials as follows: if the applicant is a Limited Partnership, list all general partners; for all other Partnerships, list all partners; for Sole Proprietorships, list the proprietor; for Municipal, State, Federal, or other Public Agencies, list all executive officers or ranking elected officials.

6. See Form 2510-FM-LRWM0052B, Pennsylvania Terminal Location form.

7. Self-explanatory.

8. If the applicant is not a corporation, see Item No. 5 above. Only one signature is required on the application. Corporations must submit a copy of the company's **ARTICLES OF INCORPORATION**.

Send the completed application and the required application fee, $500 for a new or $250 for a renewal, plus a fee of $5 for each vehicle identification (license) card in excess of ten cards.

PA Department of Environmental Protection
Bureau of Land Recycling and Waste Management
Division of Hazardous Waste Management
Rachel Carson State Office Building
P.O. Box 8471
Harrisburg, PA 17105-8471

2510-FM-LRWM0052A: Rev. 11/97

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

HAZARDOUS WASTE TRANSPORTER LICENSE APPLICATION

(CHECK ONE) ❑ New License $500 Fee ❑ Renewal $250 Fee HWT License No. PA-AH _____ (If renewal)

Make checks payable to the **"COMMONWEALTH OF PENNSYLVANIA"**

1. EPA I.D. No. _____

2. Name of Company _____

   Mailing and License Address _____

   _____

   Location: Principal Place of Business _____

   _____

   If within PA, Municipality _____ PA, County _____

   Bus. Phone No. _____ (Area Code) 24 hr. Emergency Phone No. _____ (Area Code)

   Fax No. _____

3. If a subsidiary or division, name of parent company _____

4. Number of copies of license requested ___, plus an additional fee of $5 is for each vehicle identification (license) card requested in **excess of ten cards**.

5. On a separate 8½" x 11" sheet of paper list the names, titles, and addresses of ***ALL*** corporate officers. If applicant is not a corporation, see Instruction #5 on form 2510-FM-LRWM0052.

6. If there are terminal locations, including the address given in answer to Question No. 2 above, that will store hazardous waste in-transit or be used for consolidation of hazardous waste shipments in PA, please complete the Terminal Location Form 2510-FM-LRWM0052B, listing each such location. If there are none, please check this box ❑.

7. Name of Contact Person _____ Telephone No. _____ (Area Code)

   Title of Contact Person _____

8. Certification. This is to certify that the information contained and attached to this application is true, correct, and complete to the best of my knowledge. Corporations must submit a copy of the company's ARTICLES OF INCORPORATION.

_____ Print or Type Name of Corporate Officer

_____ Title

_____ Signature of Corporate Officer

_____ Date Signed

APPLICATION FEE PLUS ADDITIONAL CARD FEE

(SEE INSTRUCTIONS ON 2510-FM-LRWM0052)

2510-FM-LRWM0052B 11/97

Recycled Paper

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

PA TERMINAL LOCATION FORM

EPA Identification No. (if applicable) ______________________________
Terminal Name ______________________________
Address ______________________________
Terminal Telephone Number ______ (Area Code) - ______ - ______

County ______________ Municipality ______________
Are manifested wastes stored in-transit? ☐ Yes ☐ No If yes, how long? ______ Days
Name of Terminal Manager ______________________________ Print or Type Name

EPA Identification No. (if applicable) ______________________________
Terminal Name ______________________________
Address ______________________________
Terminal Telephone Number ______ (Area Code) - ______ - ______

County ______________ Municipality ______________
Are manifested wastes stored in-transit? ☐ Yes ☐ No If yes, how long? ______ Days
Name of Terminal Manager ______________________________ Print or Type Name

EPA Identification No. (if applicable) ______________________________
Terminal Name ______________________________
Address ______________________________
Terminal Telephone Number ______ (Area Code) - ______ - ______

County ______________ Municipality ______________
Are manifested wastes stored in-transit? ☐ Yes ☐ No If yes, how long? ______ Days
Name of Terminal Manager ______________________________ Print or Type Name

EPA Identification No. (if applicable) ______________________________
Terminal Name ______________________________
Address ______________________________
Terminal Telephone Number ______ (Area Code) - ______ - ______

County ______________ Municipality ______________
Are manifested wastes stored in-transit? ☐ Yes ☐ No If yes, how long? ______ Days
Name of Terminal Manager ______________________________ Print or Type Name

EPA Identification No. (if applicable) ______________________________
Terminal Name ______________________________
Address ______________________________
Terminal Telephone Number ______ (Area Code) - ______ - ______

County ______________ Municipality ______________
Are manifested wastes stored in-transit? ☐ Yes ☐ No If yes, how long? ______ Days
Name of Terminal Manager ______________________________ Print or Type Name

If additional copies of this form are required, please photocopy

APPENDIX M
Hazardous Waste Transporter Compliance History Form

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

INSTRUCTIONS FOR FORM HW-C COMPLIANCE HISTORY

General Reference(s): Section 265.442(5), 271.124, 271.125, 287.124, 287.125

INSTRUCTIONS:

1. Information shall be submitted for the **10 year period** prior to the date on which the form is completed.

2. This form applies to compliance history in regard to all current and future Pennsylvania and other State and Federal statutes relating to environmental protection, or the protection of public health including, but not limited to air or water quality, solid waste management or surface mining statutes, and including environmental statutes adopted or amended after development of this form, including, but not limited to the following statutes, and rules and regulations promulgated thereunder, referred to as the **"Environmental Protection Acts"**.

   a. Pennsylvania Solid Waste Management Act of July 7, 1980, (35 P.S. §§6018.101-6018.1003).

   b. The Low Level Radioactive Waste Disposal Act of February 9, 1988 (35 P.S. §§7110.1 et seq.).

   c. The Infectious and Chemotherapeutic Waste Act of July 13, 1988, (35 P.S. §§6019.1 et seq.).

   d. Municipal Waste Planning, Recycling and Waste Reduction Act of July 28, 1988, (53 P.S. §§4000.100 et seq.).

   e. Hazardous Sites Cleanup Act of October 18, 1988, (35 P.S. §§6020.101 et seq.).

   f. Clean Streams Law of June 22, 1937, (35 P.S. §§691.1-691.1001).

   g. The Air Pollution Control Act of January 8, 1960, (35 P.S. §§4001-40159).

   h. The Surface Mining Conservation & Reclamation Act of May 31, 1945, (52 P.S. §§1396.1-1396.31).

   i. The Noncoal Surface Mining Conservation & Reclamation Act, (52 P.S. §§3301-3326).

   j. Dam Safety and Encroachments Act of November 26, 1978, (32 P.S. §§693.1-693.27).

   k. All other Pennsylvania and other state and federal statutes relating to environmental protection, or the protection of public health.

3. Throughout this form, **"the Department"** shall mean the Pennsylvania Department of Environmental Protection.

4. For the purposes of completing this form, the term **"related party"** shall mean a person or municipality that is a partner, associate, officer, parent corporation, subsidiary corporation, division, contractor, subcontractor, agent or principal shareholder of another person or municipality, or a person or municipality that owns land on which another person or municipality conducts municipal, residual, or hazardous waste activities.

5. The term **"person"** shall be as defined by the Pennsylvania Solid Waste Management Act of July 7, 1980 as follows: "Any individual, partnership, corporation, association, institution, cooperative enterprise, municipal authority, Federal Government or agency, State institution and agency (including, but not limited to, the Department of General Services and the State Public School Buildings Authority), or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. In any provisions of this act prescribing a fine, imprisonment or penalty, or any combination of the foregoing, the term "person" shall include the officers and directors of any corporation or other legal entity having officers and directors."

6. The term **"violation"** includes all activities not in compliance with the Environmental Protection Acts, regulations, permits, or licenses, including but not limited to those activities which have resulted in issuance of a Notice of Violation; administrative order; civil penalty assessment; or other monetary settlement (settlement agreement, settlement letter, letter agreement, or consent assessment); permit/license denial, suspension or revocation; bond forfeiture; summary, misdemeanor or felony conviction; plea of guilty or no contest; or any consent agreement, consent order, consent adjudication, consent or settlement decree, or any court actions whether pending or settled.

7. The term **"Solid Waste"** shall be as defined by the Pennsylvania Solid Waste Management Act of July 7, 1980 as follows: "Any waste, including but not limited to, municipal, residual or hazardous waste, including solid, liquid, semisolid or contained gaseous materials. The term does not include coal ash or drill cuttings."

8. Sections A and B - **For corporations**, enter the corporate name exactly as it appears in the Articles of Incorporation. For other entities enter the exact legal name(s), and provide documentation.

9. **If the applicant, permittee or licensee ("applicant") is a corporation,** this form must be signed by two corporate officers (a president or vice-president **and** a secretary or treasurer) authorized to execute this form or by one corporate officer and one corporate employee in Pennsylvania with sufficient authority over the solid waste management activity being licensed or permitted to be authorized to execute this form on behalf of the corporation. **ATTACH A COPY OF THE ARTICLES OF INCORPORATION OF THE APPLICANT.** Publicly traded corporations must submit a copy of the most recent SEC 10-K report.

10. Submission of a large volume of information in response to the inquiries in this form must be formatted as outlined in the form, with tabs placed for each section, pages numbered sequentially and a table of contents.

11. To be complete, all inquiries on the form must have a response and the form must be certified with original signatures. Enter "None" or "Not Applicable" as appropriate for inquiries to which no other response is proper. Additional information and/or documentation may be required during the Department's review to fully evaluate the compliance status or history.

    The information requested by this form is part of a solid waste permit or license application, modification, renewal, ownership change, annual report or as otherwise required by the Department or the rules and regulations of the Department, to enable the Department to evaluate the applicant's, permittee's, or licensee's history of compliance with the Environmental Protection Acts, and to verify current compliance status of the applicant and all related parties as required by the Pennsylvania Solid Waste Management Act of July 7, 1980, §6018.503(c), (d), and/or (e). Upon review of the information provided the Department may require additional information or copies of documents listed in the form.

    Any information or circumstances as reported on this form which change between the time following a Phase I application and a Phase II application must be submitted with the Phase II application. If no information changes, the Phase II application must include a Form C1 "Compliance History Certification." Any new violations that occur prior to permit or license issuance or renewal must be reported to the Department.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

FORM HW-C
COMPLIANCE HISTORY

Fully and accurately provide the following information, as specified. Attach additional sheets as necessary.

Type of Form HW-C Submittal (check all that apply):

☐ **Original Filing** ☐ **Amended Filing** **Date of Last Filing** _____

Type of Permit or License Submittal:

☐ **New Application** ☐ **Renewal** ☐ **Annual Update** ☐ **Other** _____ (specify)

A. General Applicant Information:

1. NAME OF PERMIT OR LICENSE APPLICANT/PERMITTEE/LICENSEE ("applicant") (non-corporations attach documentation of legal name):

_____

ADDRESS: _____

_____

_____

TELEPHONE NUMBER: _____

SOCIAL SECURITY OR TAXPAYER ID#: _____

PERMIT, LICENSE OR APPLICATION ID#: _____

2. Identify the form of management under which the applicant conducts its business (check appropriate box) and describe the type(s) of business activities performed:

☐ Individual
☐ Municipality
☐ Proprietorship
☐ Public Corporation
☐ Private Corporation
☐ Syndicate
☐ Municipal Authority
☐ Fictitious Name
☐ Partnership
☐ Limited Partnership
☐ Government Agency
☐ Joint Venture
☐ Association
☐ Other Type of Business _____ (specify)

3. Type of permit, license or application (check all that apply):

☐ Hazardous Waste Permit
☐ Hazardous Waste Transporter License
☐ Municipal Waste Permit
☐ Infectious, Chemotherapeutic Waste Transporter License
☐ Residual Waste Permit
☐ Other _____ (specify)

B. **General Information Regarding "Related Parties"**

1. **Applicants which are a corporation or a division of a corporation,** provide the following information:

   a. The principal shareholders or stockholders who own, hold, or control stock of five percent (5%) or more of a publicly held corporation or ten percent (10%) or more of a privately held corporation.

   b. State the names, principal places of business and taxpayer ID numbers of all domestic and foreign parent corporations (including ultimate parent corporations), and all domestic and foreign subsidiary corporations of the applicant, as well as the subsidiary corporations of the ultimate parent corporation. Include unincorporated divisions and private corporations. A diagram of corporate structure may be provided to illustrate corporate relationships.

   c. List all principals of the corporation that have also been principals of other corporations which have committed any violation of the Environmental Protection Acts. (See Instructions, Items 2 and 6).

2. Provide the names, addresses and social security numbers[1] of all principals, corporate officers, general and limited partners, directors, other persons performing a function similar to a director, and other persons or related parties of the applicant (see Instructions, Items 4 and 5). The relationship to the applicant must be clearly described.

3. Provide the names, addresses and social security numbers[1], or IRS tax identification numbers and affiliation of other persons or related parties having or exercising control over any aspect of the proposed facility or activity that is regulated by the Department, including but not limited to, associates, agents, contractors, subcontractors, and property owners.

4. Provide the names and addresses of all owners of record of surface and subsurface areas within and contiguous to the proposed permit area. (Not applicable to transporter license applicants).

5. Provide the names and addresses of all holders of record to a leasehold interest of surface and subsurface areas within and contiguous to the proposed permit area.

6. If the applicant, or other related party to the applicant, has as a beneficial interest in, or otherwise manages or controls any other person, municipality or other related party (as described in Sections A and B) engaged in the business of solid waste collection, transportation, storage, processing, treatment, or disposal, provide the following information:

   a. The name, address, and tax identification number or employer identification number of the corporation, other person, municipality, or other entity, in which the applicant or other related party has a beneficial interest, manages, or controls as described above.

   b. The nature of the relationship or participation with the corporation, other person, municipality, or other related party.

[1]Supplying individual social security numbers is optional; failure to provide all applicable numbers may delay processing of the application.

C. **Specific Information Regarding the Applicant and Its Related Parties**

1. List the name and location of all of the **applicant's and related party's places of business and terminals** where municipal, residual and/or hazardous waste activities are conducted. Such activities include, but are not limited to generation, processing, collection, transportation and storage, treatment or disposal of solid waste, except that locations that generate only municipal waste need not be listed..

2. List all **permits or licenses issued** by the Department or any other state or federal agency under the Environmental Protection Acts to the applicant or any other persons or related parties identified in Sections A or B, that are currently in effect or have been in effect at any time in the ten years previous to the date on which this form is notarized. This list is to include the type of permit or license, permit or license number, location, address, issuance date and expiration date.

3. List all **permit or license denials** issued by the Department or any other state or federal agency under the Environmental Protection Acts to the applicant or any other person or related party identified in Section A or B, within ten years previous to the date on which this form is notarized. Include the type of permit or license, permit or license number, location, denial date and reason for denial.

4. List all persons or related parties identified in Sections A or B which have filed for or been discharged from **bankruptcy** within 10 years previous to the date on which this form is notarized. Specify the circumstances of bankruptcy including those for which the debtor sought to abandon property or to be discharged from any environmental liability subject to the Environmental Protection Acts. Include the name of the bankruptcy court, docket number and description and location of any property involved.

D. **Compliance Background:**
(Note: Copies of specific documents must be made available to the Department upon its request)

Compliance History:

List all **"Enforcement Actions"** issued by the Department or any other state or federal or county agency to the applicant or those persons or related parties identified anywhere in response to Sections A, B or C using the following format grouped by state and location in chronological order.

Date	Location	Permit/ License/ EPA ID #	Issuing Agency	Type of Action	Nature of Violation	Disposition	Dollar Amount of Penalty

Enforcement actions include but are not limited to:

All **notices of violation (NOVs),** issued by any regulatory agency to the applicant or those persons or related parties identified anywhere in Sections A, B or C concerning the Environmental Protection Acts, or any other environmental statute, regulation or ordinance.

All **administrative orders, civil penalties, permit or license suspensions/revocations, bond forfeiture actions,** and **civil penalty** actions adjudicated by any judicial body against the applicant or those persons or related parties identified anywhere in Sections A, B or C concerning the Environmental Protection Acts, or a regulation or order or a condition of a permit or license.

All **consent orders, consent adjudications, consent decrees or monetary settlements (settlement agreements, letter agreements, settlement letters or consent assessments)** between the applicant or those persons or related parties identified anywhere in Sections A, B or C and any state, federal or county agency regarding the Environmental Protection Acts, or any other environmental statute, regulations or ordinance.

All **court proceedings** in which those persons or related parties identified anywhere in Sections A, B or C have been involved in relation to the Environmental Protection Acts.

All **summary, misdemeanor, or felony convictions,** or **pleas of guilty or no contest** that have been obtained against the applicant or those persons or related parties identified anywhere in Sections A, B or C, pursuant to the Environmental Protection Acts, or for any acts involving the generation, storage, treatment, transportation, processing, or disposal of municipal, residual or hazardous waste.

For all persons and municipalities identified in Section A, B or C, indicate all violations committed and any subsequent enforcement actions taken regarding the facility or activity not previously listed in this section, concerning the Environmental Protection Acts.

State the reasons for suspension, revocation, or denial of any permit/permit application or license/license application filed by the applicant or any related party concerning the Environmental Protection Acts. Provide the date, location and nature of the violations, type of action, issuing agency, dollar amount of any monetary penalty associated with the action and permit, license, EPA ID# or other identifying number if applicable.

FORM HW-C

I hereby certify that I have the authority to respond to the above questions on behalf of the applicant, and that the information provided herein is true and correct to the best of my knowledge, information and belief.

_____
(Signature)

Name: _____
(Print or Type Name)

Title: _____
(Print or Type Title)

Social Security No.: _____

Sworn to and subscribed before me this

_____ day of _____,

19 ___.

_____
Notary Public

_____
(Signature)

Name: _____
(Print or Type Name)

Title: _____
(Print or Type Title)

Social Security No.: _____

Sworn to and subscribed before me this

_____ day of _____,

19 ___.

_____
Notary Public

_____
Attach copy
of Articles of Incorporation

(For Corporations, see the Instructions, Item 9, regarding signatures and submission of Articles of Incorporation.)

APPENDIX N
Hazardous Waste Transporter Contingency Plan

2510-FM-LRWM0318 Rev. 6/97

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

GUIDELINES FOR THE DEVELOPMENT AND IMPLEMENTATION OF A CONTINGENCY PLAN FOR THE TRANSPORTATION OF HAZARDOUS WASTE

BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT
RACHAEL CARSON STATE OFFICE BUILDING
POST OFFICE BOX 8471
HARRISBURG, PENNSYLVANIA 17105-8471
717-787-6239

TRANSPORTER CONTINGENCY PLAN

INTRODUCTION

Act 97, the Solid Waste Management Act of 1980 and Title 25, Chapter 260-270 of the Department's Rules and Regulations require transporters of hazardous waste to develop and implement a contingency plan to deal with emergencies affecting the environment, public health and safety resulting from an incident while transporting hazardous waste.

APPLICABILITY

These guidelines apply to transportation of hazardous waste, not generation, storage, treatment or disposal of hazardous waste. Transporters who generate, store, treat, or dispose of hazardous wastes must also prepare a Preparedness, Prevention, and Contingency Plan in accordance with the Department's "Guidelines for the Development and Implementation of Preparedness, Prevention, and Contingency Plans" when requested.

Pollution Incident Prevention (PIP) Plans prepared in conjunction with the Department's Water Quality Management program or other previously prepared emergency and prevention plans may already encompass some of the basic Contingency Plan elements, but are not acceptable as a Transporter's Contingency Plan.

SUBMISSION OF CONTINGENCY PLANS FOR REVIEW AND APPROVAL

azardous waste transporters are required to submit to the Department one copy of the Contingency Plan for review and approval when required during the license application process. If the Contingency Plan needs to be revised, prior to approval, one copy of the revisions shall be submitted to the Department for review and approval.

IMPLEMENTATION OF THE CONTINGENCY PLAN

The provisions of the Contingency Plan shall be implemented whenever emergency situations arise which endanger public health and safety or the environment as required by Section 263.30(f).

REVISIONS TO THE CONTINGENCY PLAN

The Contingency Plan shall be periodically reviewed and updated if necessary. As a minimum, this shall occur when:

1. Applicable regulations are revised;

2. The plan fails in an emergency;

3. The mode of operation changes in a manner that materially increases the potential for fires, explosions or releases of hazardous constituents, or changes the response necessary in an emergency;

4. The list of emergency coordinator changes;

5. The list of emergency equipment changes;

6. As required by the Department.

PREPARATION OF THE CONTINGENCY PLAN

Contingency Plans shall be prepared in accordance with good engineering practice by someone who is familiar with day-to-day operations of the applicant. If an outside consultant is employed for this purpose, he must be authorized to conduct a thorough study of waste handling and transportation practices.

PURPOSE OF THE CONTINGENCY PLAN

The purpose of a Contingency Plan is two-fold. First, it is a a document which must be carried in the transport vehicle to provide information and direction to the driver during an emergency. Second, it is accepted by the Department as the transporter's written assurance that certain activities will be conduced in an acceptable manner. Therefore, it will be necessary for you to repeat some sections of the "Sample Contingency Plan" verbatim to indicate that your company agrees to do these things.

FORMAT OF THE CONTINGENCY PLAN

Attached is a "Sample Contingency Plan." All items in bold type must be included in the plans as they are in the "Sample." Instructions are provided in regular type.

SAMPLE CONTINGENCY PLAN

EMERGENCY REPORTING

In the event of an emergency or a hazardous waste spill during transportation, the transporter will immediately notify the Department of Environmental Protection and the National Response Center with the following information required by 263.30(a):

1. Name of the person reporting the incident.
2. Name, address, and the EPA identification number of the transporter.
3. Phone number where the person reporting the incident can be reached.
4. Date, time and location of the incident.
5. Mode of transportation and type of transport vehicle.
6. A brief description of the incident, including the type of incident.
7. For each waste involved in the spill:
    a. The name and EPA identification number of the generator of the waste.
    b. Shipping name, hazard class and UN or NA number of the waste.
    c. Estimated quantity of the material or the waste spilled.
    d. The extent of the contamination of land, water, or air.
8. Shipping name, hazard class, and the UN or NA number of any other material carried.

In the event of an emergency or hazardous waste spill during transportation, the transporter will immediately notify the affected municipality of the occurrence and the nature of the spill required by 263.30(b).

The transporter will submit a report of the incident in writing as required by 490 CFR 171.16 to the Chief, Information System Division, Transportation Programs Bureau, Department of Transportation, Washington, DC 20590, and send copies of the report to the Department of Environmental Protection, and generator as required by 263.30(e).

LIST OF EMERGENCY RESPONSE AGENCIES

The following are the minimum agencies and phone numbers to be listed:

Pennsylvania Department of Environmental Protection
717-787-4343 (24 hours)

Pennsylvania Emergency Management Agency
IN PA 800-424-7362 (24 hours)
OUTSIDE PA 717-651-2001

National Response Center
800-424-8802 (24 hours)

Pennsylvania Local Police and Fire Departments
911 or 0 (Operator)

LIST OF EMERGENCY COORDINATORS

A minimum of two Emergency Coordinators must be listed. Provide name, address and home and office telephone numbers. Indicate who is the primary coordinator and who is the secondary coordinator.

At all times, there shall be at least one employee either on the installation's premises or on-call with the responsibility for coordinating all emergency response measures. The emergency coordinator shall be thoroughly familiar with all aspects of the Contingency Plan, all operations and activities, the characteristics of all materials handled and the location of all records. In addition, this individual shall have the authority to commit the resources necessary to carry out the Contingency Plan.

LIST OF EMERGENCY RESPONSE CONTRACTORS

If you list yourself, briefly describe the emergency response actions you will take. Also include a detailed list of your emergency response equipment under "Emergency Equipment." If you are not listing yourself, a minimum of two emergency response contractors must be listed (Including address and phone number) as required by 263.30(d) and a short description of their services provided.

The services of the emergency response contractors should be investigated and arrangements made for the prompt performance of contractual services on short notice. Equipment suppliers should be contacted to determine the availability and rapid delivery of equipment for removing pollution hazards by rapid clean-up.

EMERGENCY EQUIPMENT

Provide an up-to-date list of available emergency equipment. The list shall include the location, a physical description, and a brief description of the capabilities of each item on the list. Protective clothing including a filter mask or a gas mask and a first aid kit with eyewash apparatus must be carried on a transport vehicle as required by 263.31(b). Absorbent material or mats must also be carried on the transport vehicle when liquids are transported in containers of 110 gallons or less as required by 263.31(d).

A brief statement must be made concerning the maintenance and decontamination procedures of the emergency equipment listed above. An acceptable example is "All equipment shall be tested and maintained as necessary to assure its proper operation in time of an emergency. After an emergency , all equipment shall be decontaminated, cleaned, and fit for its intended use before normal operations resume."

EXTERNAL COMMUNICATIONS

Describe the communication system the driver will use to contact the emergency coordinator and/or notify the emergency response agencies as required by 263.31(b)(4) (public phone, CB radio, 2-way radio). CB or 2 way radios are required if you are applying for licensure to carry acute hazardous wastes.

ROUTINE DECONTAMINATION PROCEDURES

Describe the routine decontamination procedures of the equipment used to handle hazardous waste. Equipment used to handle hazardous waste including but not limited to storage containers, processing equipment trucks, and loaders that are contaminated with hazardous waste must be decontaminated prior to being serviced or used for any purpose other than transportation of compatible hazardous waste and prior to being serviced or used for transportation of nonhazardous waste, unless such wastes are compatible and are transported to a hazardous waste storage, treatment or disposal facility.

Where does routine decontamination occur? How? Describe the frequency. How is the rinsate or residual disposed as required by 263.31(c)?

EMPLOYEE TRAINING PROGRAM

Summarize your employee training program which must include the following:

1. Knowledge of the materials being transported.

2. Safety and health hazards associated with materials being transported.

3. Practices for preventing spills.

4. Procedures for responding properly and rapidly to spills.

5. Emergency procedures (i.e.,use of contingency plan, first aid).

6. Use of emergency equipment.

Describe the ongoing training given to employees as required by 263.31(a) (i.e., monthly review, yearly training course).

IMPLEMENTATION SCHEDULE

List any incomplete aspects of the contingency plan and a time schedule when they will be completed.

APPENDIX O
Source Reduction Strategy Manual

SOURCE REDUCTION STRATEGY MANUAL

COMMONWEALTH OF PENNSYLVANIA

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

http://www.dep.state.pa.us

July 1, 1992
Revised May 1993, July 1994
and August 1997

Commonwealth of Pennsylvania
Tom Ridge, Governor

Department of Environmental Protection
James M. Seif, Secretary

An Equal Opportunity Employer

Table of Contents

Introduction

The Department of Environmental Protection designed this manual to help generators of residual and hazardous waste develop a source reduction strategy. State regulations require generators of residual (§287.53) and hazardous (§262.80) waste to prepare and implement a source reduction strategy (SRS). A copy of the applicable regulations can be found in Appendix A. Generally, the SRS must include:

1. A description of the source reduction achieved during the past five years, including a quantification of the results. This is intended to provide recognition for past achievements and provide a background for the activities planned for the future.

2. A statement that a source reduction program has been established. This may include a statement of corporate source reduction goals or of top management's commitment to implementing the program.

3. A description of what will be done to reduce waste, when the action will be done, and what amount of reduction is anticipated. This is intended to be a simple and direct representation of the results of the assessments made within the facility and the decisions reached regarding source reduction actions that will be taken.

If no source reduction action is proposed, the facility is required to submit detailed justification. This must demonstrate that a thorough internal investigation of source reduction opportunities has been completed. This information must include an extensive waste stream characterization, potential source reduction options considered, how each option was evaluated, and why each option was not selected. Sufficient detail must be provided to demonstrate the technical or economic barriers that prohibit reductions. The level of detail required to justify not participating in source reduction is substantially greater than preparing and implementing a source reduction plan.

Questions and Answers

Who must prepare the source reduction strategy?

The state residual waste regulations require that anyone who generated more than 2,200 pounds of residual waste in any calendar month must prepare a source reduction strategy. The department has waived the SRS requirements for individual types of waste that are generated in quantities of less than 2,200 pounds per month per generating locations (See §287.51). The department reserves the right to eliminate this waiver in the future.

The hazardous waste regulations exempt those who generate less than 1,000 kilograms (2,200!pounds) of hazardous waste in each month of the year (See §262.80(e)). There is no waiver for small, individual waste streams.

When must the strategy be submitted to the department?

The SRS must be available for inspection at any time and must be submitted to the department upon request. The SRS must be submitted to the appropriate DEP regional office with any Form U (request to process or dispose of an industrial waste at a permitted facility), Form S (request to process or dispose of municipal-like residual waste at a permitted site), or Module 1 (request to process or dispose of hazardous waste). The SRS must also be submitted with any application for a permit to treat, process, or dispose of either residual or hazardous waste.

How often must the strategy be updated?

The SRS must be updated every five years unless an alternate schedule is established in writing by the department. The SRS must also be updated any time there is a significant change in the type of waste generated or in the manufacturing process. The update should include the progress achieved during the past five years as well as plans for the next five years.

Who can I contact if I have questions filling out Form 25R or desire additional information about source reduction for my industry?

Each regional office has two contact people:

1. For questions on filling out Form 25R, call your regional *Source Reduction Strategy contact person.*

2. For source reduction and pollution prevention technical assistance, call your Regional Chief of the Office of Pollution Prevention and Compliance Assistance (OPPCA).

OPPCA has available to firms a clearinghouse of case studies and technical information for developing and implementing source reduction strategies. Regional Office Chiefs can arrange for a pollution prevention/energy efficiency (P2/E2) site visit at your facility. A P2/E2 site visit is a free, nonregulatory visit to help identify potential cost saving source reduction strategies for your waste streams. Also, Appendix B of this document provides additional sources of pollution prevention information.

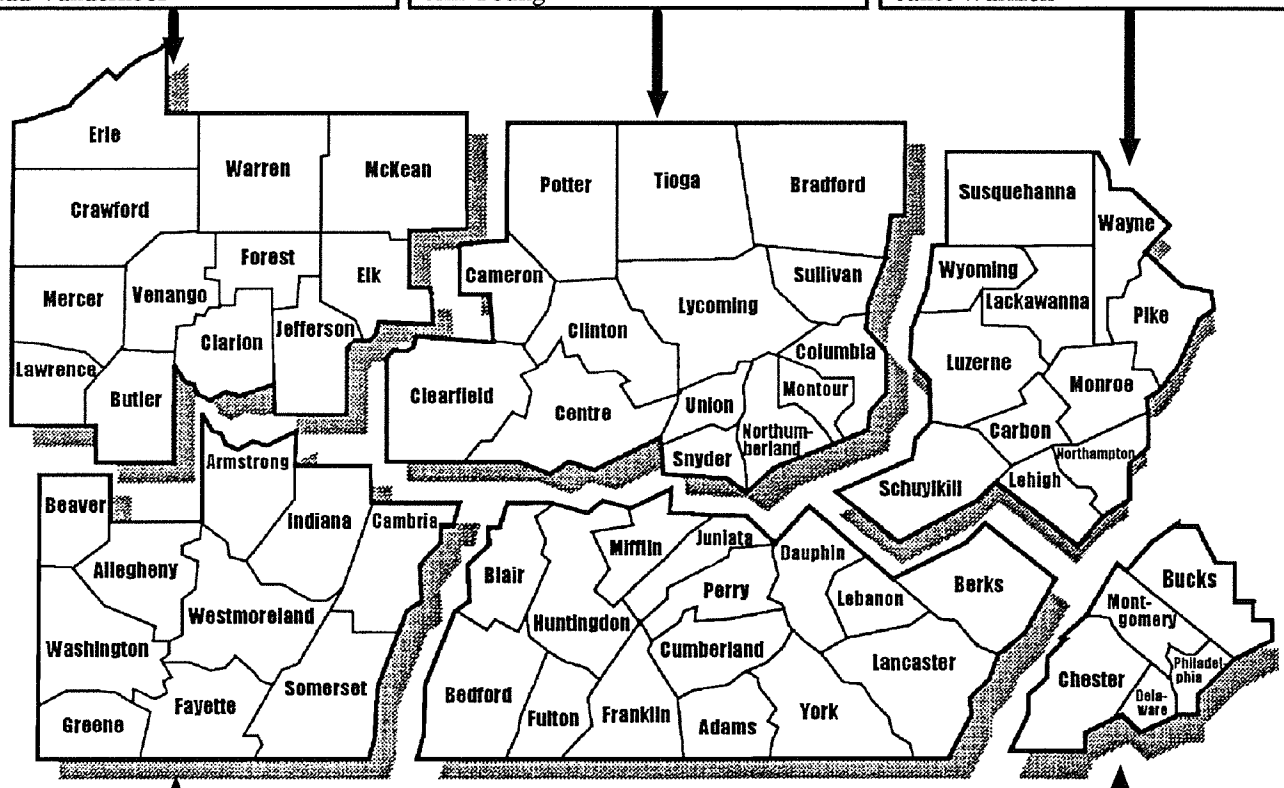
A list of names and phone numbers for reaching your Source Reduction Strategy contact person or your OPPCA Regional Chief is provided in Table #1.

Table #1
Regional Source Reduction and Strategy Contacts
and
OPPCA Regional Chiefs

NORTHWEST REGION
230 Chestnut Street
Meadville, PA 16335-3481
814 332-6945
Source Reduction Strategy Contact
Brian Mummert and Donald Zimmer
OPPCA Chief
Brad Vanderhoof

NORTHCENTRAL REGION
208 West Third Street, Suite 101
Williamsport, PA 17701-6448
717 327-3636
Source Reduction Strategy Contact
Thomas Hanlon
OPPCA Chief
Jim Young

NORTHEAST REGION
2 Public Square
Wilkes-Barre, PA 18711-0790
717 826-2511
Source Reduction Strategy Contact
Charles Scheidler
OPPCA Chief
Janet Warnick



SOUTHWEST REGION
400 Waterfront Drive
Pittsburgh, PA 15222-4745
412 442-4000
Source Reduction Strategy Contact
Bob Popichak
OPPCA Chief
Fred DeNorscia

SOUTHCENTRAL REGION
1 Ararat Boulevard
Harrisburg, PA 17110-9714
717 657-4585
Source Reduction Strategy Contact
Glenn Mitzel
OPPCA Chief
Bob Zaccano

SOUTHEAST REGION
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428-2233
610 832-6000
Source Reduction Strategy Contact
Calvin Ligons
OPPCA Chief
Suzanne Simoni

Are regular progress reports required?

Progress in achieving source reduction will be described as part of the biennial report for residual waste generators. Additionally, the SRS itself includes a description of past achievements.

Is an SRS required for each waste stream?

Generally, a separate SRS is needed for each waste stream. In some cases, it is acceptable to combine several related waste streams which are generated through the same process where the source reduction actions are the same. For example, one SRS could include plating sludge, spent plating bath solutions, and plating rinse water because they come from the same industrial process line and can be reduced by common means. Another example is in the generation of waste laboratory reagents removed via lab packs. Although there may be 200 different waste reagents, they can all be reduced through common means such as inventory control and a reagent exchange program. Therefore one SRS may be adequate for all 200 waste streams.

I have form 25R for preparing the residual waste SRS, but what form should I use for the hazardous waste SRS?

Form 25R should also be used for the hazardous waste SRS. Be sure to indicate whether the waste is hazardous or residual by checking the appropriate box in Item 1 on the first page (waste stream name and description).

Are research and development facilities exempt from the SRS requirement?

Under residual waste regulations, the department may waive requirements for the SRS at R&D facilities. This would be done on a case-by-case basis if the facility can demonstrate why the SRS does not make sense. There may be many opportunities for SRS at these facilities. There is no such waiver available for hazardous waste generated at R&D facilities.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND RECYCLING AND WASTE MANAGEMENT

FORM 25R
SOURCE REDUCTION STRATEGY

For Information contact 717-787-7381. Related environmental information is available electronically via Internet. Access the DEP Web Site at http://www.dep.state.pa.us (choose: Information by Subject/Land Recycling and Waste Management/Municipal and Residual Waste or Hazardous Waste)

This form provides guidance on the content and format of the written source reduction strategy (SRS). Supplemental guidance on the comprehensive process of analyzing the processes by which waste is generated and developing and evaluating source reduction options is available from the Department in a separate document, the "Source Reduction Strategy Manual." The written SRS is intended to summarize the results of a comprehensive internal process of source reduction assessments and decisions. Generally, a separate SRS should be prepared for each type of waste stream generated. The strategy may be prepared on this form or prepared on separate paper using this format.

Source reduction is the reduction or elimination of the quantity or toxicity of residual waste before it is generated. Source reduction may be achieved through changes within the production process, including process modifications, feedstock substitutions, improvements in feedstock purity, shipping and packing modifications, housekeeping and management practices, increases in the efficiency of machinery, and recycling within a process. Please note that source reduction does not include dewatering, compaction, waste reclamation, or the use or reuse of waste. These activities, although they can result in environmental benefit, are of lower priority in the waste management hierarchy and should not be included in the SRS. These processing, use, and reclamation activities are encouraged through the permit-by-rule and beneficial use provisions of the residual waste regulations.

Residual Waste Requirements

Small quantity generators, who generated less than average 2,200 pounds of all residual waste per generating location per month of the previous year, are not required to prepare an SRS.

A residual waste SRS was to be completed by July 4, 1993.

Hazardous Waste Requirements

Small quantity generators, who generate a total of less than 1,000 kilograms of hazardous waste in each month of the previous year, are exempt from the SRS requirements.

The hazardous waste SRS was to be completed by January 17, 1994.

The SRS must be available on-site for inspection and must be submitted:
- with a Form U or Module 1 (for the disposal or processing of waste at a permitted site),
- with a Form S (for the disposal or processing of municipal-like residual waste at a permitted site),
- with a permit application, or
- upon request by the department.

Regulatory References:

Hazardous Waste Regulations
§260.2 (definition of "source reduction")
§262.80 (source reduction strategy)
§264.13(a)(7) (General Requirements)

Municipal Waste Regulations
§271.1 (definition of "source reduction")
§271.612 (Additional Application Requirements)

Residual Waste Regulations
§287.53 (duties of generators: source reduction strategy)
§287.1 (definition of "source reduction")
§287.52(b)(6) (biennial reports)
§287.133 (waste analysis: source reduction strategy)

SRS Options:

1. If you have established a source reduction program and know what action you will take to reduce this waste stream then the general information and Sections A, B, and C should be completed.
2. If you are proposing to do nothing to reduce the quantity or toxicity of waste, then the general information and Sections A, B, and D should be completed.
3. If you have established a program but are still evaluating what you will do, you should complete the general information plus the applicable sections of A, B, C and D You should present the ongoing source reduction evaluations which will lead to a completed strategy.

FORM 25R

SECTION A. APPLICANT IDENTIFIER

Applicant Name: _____

SECTION B. GENERAL INFORMATION

This section must be completed.

Generator: _____

Contact Person: _____

Phone Number: _____

Mailing Address: _____

_____

_____

_____

_____

Facility Address: _____

(if different from mailing address) _____

Facility SIC Code(s): _____

The information contained in this form is true and correct to the best of my knowledge and belief.

_____

Name of Responsible Official

_____

Signature of Responsible Official

_____

Date

1. Waste stream name and description: ☐ Residual waste ☐ Hazardous waste

2. Describe source reduction actions taken during the paste five years. You should quantify any reduction in the weight or toxicity or waste and maintain records to document this reduction. This question is intended to give recognition for past source reduction achievements.

3. State whether you have established a source reduction program. You may include a statement of top management's support or corporate source reduction goals.

FORM 25R

SECTION C.

Complete this section if you have established a source reduction program and are proposing to take action to reduce the quantity or toxicity of this waste.

1. Describe the methods and procedures that you will use to achieve source reduction for this waste.

2. Quantify the projected reduction by weight or toxicity for each technique described in #1. You may use the method of measurement most appropriate for the waste and the generating process. Discussion of several measurement options is contained in the "Source Reduction Strategy Manual."

3. Specify when each method or procedure described in #1 will be implemented.

Summary of Section C

Method or procedure	expected reduction	implementation

FORM 25R

Section D.

Complete this section if you have established a source reduction program for this waste stream, that is, if you are not proposing to take any action to reduce the quantity or toxicity of the waste.

1. Characterize the wastestream, including source, hazards, properties, generation rate, and current management techniques and costs. Attach chemical analyses or other documentation as needed to fully describe the identity and identify and source of waste.

2. Describe all the potential source reduction options that you considered.

3. Describe in detail how each option was evaluated. Include the specific technical, economic, or other criteria that were used.

FORM 25R

Section D.

4. Explain why each option was not selected.

Summary of Section D

method or procedure	why not selected

APPENDIX A

Table of Contents

ARTICLE IX

CHAPTER 287. RESIDUAL WASTE MANAGEMENT—
GENERAL PROVISIONS

Subchapter A. GENERAL

Sec.

§ 287.1. Definitions.

The following words and terms, when used in this article, have the following meanings, unless the context clearly indicate otherwise:

* * * * *

Source reduction—The reduction or elimination of the quantity or toxicity of residual waste generated source reduction may be achieved through changes within the production process, including process modifications, feedstock substitutions, improvements in feedstock purity, shipping and packing modifications, housekeeping and management practices, increases in the efficiency of machinery and recycling within a process. The term does not include dewatering, compaction, waste reclamation, or the use or reuse of waste.

* * * * *

SUBCHAPTER B.
DUTIES OF GENERATORS

§ 287.51. Scope.

This subchapter contains requirements that are directly applicable to persons or municipalities that generate more than 2,200 pounds of residual waste per generating location in any single month of the previous year. The Department may waive or modify the requirements of this section for individual types of waste that are generated in quantities of less than 2,200 pounds per month per generating location.

§ 287.52. Biennial report.

(a) By January 4, 1993, and by March 1 of each odd numbered year thereafter, a person or municipality subject to this subchapter shall file a report with the Department.

(b) The report, which shall be submitted on a form prepared by the Department, shall include the following:

* * * * *

(6) A description of the generator's efforts to implement its source reduction strategy under §287.53 (relating to source reduction strategy) and, to the extent such information is available for years before 1991, a description of changes in the weight or toxicity of waste achieved during the year compared to previous years.

* * * * *

§ 287.53. Source reduction strategy.

(a) A person or municipality subject to this subchapter shall prepare a source reduction strategy in accordance with this section. Except as otherwise provided in this Article, the strategy shall be maintained on the premises where the waste is generated, shall be available on the premises for inspection by any representative of the Department and shall be submitted to the Department upon request.

(b) For each type of waste generated, the strategy shall include:

(1) A description of the source reduction activities conducted by the person or municipality in the five years prior to the date that the strategy is required to be prepared. The description shall quantify any reductions in the weight or toxicity of waste generated on the premises. The first strategy prepared by a person or municipality under this section shall describe source reduction activities conducted by the person or municipality in the five years prior to the effective date of these regulations, if the generator has sufficient records to accurately document these activities.

(2) A statement of whether the person or municipality has established a source reduction program.

(3) If the person or municipality has established a source reduction program as described in paragraph (2), the strategy shall identify the methods and procedures that the person or municipality will implement to achieve a reduction in the weight or toxicity of waste generated on the premises, shall quantify the projected reduction in weight or toxicity of waste to be achieved by each method or procedure, and shall specify when each method or procedure will be implemented.

(4) If the person or municipality has not established a source reduction program as described in paragraph (2), the strategy shall include the following:

(i) A waste stream characterization, including source, hazards, chemical analyses, properties, generation rate, management techniques and management costs.

(ii) A description of potential source reduction options.

(iii) A description of how the options were evaluated.

(iv) An explanation of why each option was not selected.

(c) The strategy required by this section shall be updated when any of the following occur:

(1) There is a significant change in a type of waste generated on the premises or in the manufacturing process, other than a change described in the strategy as a source reduction method.

(2) Every five years, unless the Department establishes, in writing, a different period for the person or municipality that generated the waste.

(d) If residual waste generated by a person or municipality will be processed or disposed of at a solid waste management facility which has applied to the Department for approval to process or dispose of such waste, the person or municipality that generated such residual waste shall submit the source reduction strategy required by this section to the facility upon the request of the facility. If residual waste generated by a person or municipality is processed or disposed of at a solid waste management facility which has received written approval from the Department to process or dispose of such waste, the person or municipality shall submit the source reduction strategy required by this section to the facility whenever the Department requires the person or municipality to update the strategy.

(e) The strategy shall be signed by a responsible official for the person or municipality that generated the waste. If the person or municipality is a corporation or partnership, the report shall be signed by an officer of the corporation or a partner in the partnership, whichever is applicable.

(f) The Department may in writing waive or modify the requirements of this section for research and development activities.

WASTE ANALYSIS

§ 287.131. Scope.

(a) Sections 287.132-.134 apply to residual waste management facilities that apply to receive residual waste for processing or disposal. Sections 287.132-.134 do not apply to:

(1) Transfer facilities, except as otherwise required in writing by the Department.

(2) The disposal at permitted Class I or Class II residual waste landfills of residual waste from a person or municipality that generates a total quantity of 2,200 pounds or less of residual waste per generating location in each month, if the applicant demonstrates to the Department's satisfaction that the waste is not hazardous.

(3) The disposal at permitted Class I or Class II residual waste landfills of an individual type of residual waste from a person or municipality that generates a total of 2,200 pounds or less of that type of residual waste per generating location in each month, if approved by the Department in writing.

(b) The requirements of these sections are in addition to the application and operating requirements in this article.

* * * * *

§ 287.133. Source reduction strategy.

An application for the processing or disposal of residual waste shall contain a copy of the source reduction strategy required by Section 287.53, for each residual waste to be disposed of or processed at the facility.

Subpart D. ENVIRONMENTAL HEALTH AND SAFETY
ARTICLE VIII. MUNICIPAL WASTE
CHAPTER 271. MUNICIPAL WASTE MANAGEMENT--GENERAL PROVISIONS
Subchapter A: GENERAL

§271.1. Definitions.

The following words and terms, when used in this article, have the following meanings, unless the context clearly indicates otherwise:

* * * * *

Source reduction - The reduction or elimination of the quantity or toxicity of residual waste generated. Source reduction may be achieved through changes within the production process, including process modifications, feedstock substitutions, improvements in feedstock purity, shipping and packing modifications, housekeeping and management practices, increases in the efficiency of machinery and recycling within a process. The term does not include dewatering, compaction, reclamation, or the use or reuse of waste.

* * * * *

§271.612. Source reduction strategy.

An application for the processing or disposal of residual waste shall contain a copy of the source reduction strategy required by Section 287.53, for each residual waste to be disposed of or processed at the facility.

TITLE 25 ENVIRONMENTAL RESOURCES
PART I. DEPARTMENT OF ENVIRONMENTAL RESOURCES
SUBPART C. PROTECTION OF NATURAL RESOURCES
ARTICLE VII. HAZARDOUS WASTE MANAGEMENT

Chapter 260. DEFINITIONS AND REQUESTS FOR DETERMINATION

§260.2. Definitions.

The following words and terms, when used in this article, have the following meanings, unless the context clearly indicates otherwise:

* * * * *

Source reduction—The reduction or elimination of the quantity or toxicity of hazardous waste generated. Source reduction may be achieved through changes within the production process, including process modifications, feedstock substitutions, improvements in feedstock purity, shipping and packing modifications, housekeeping and management practices, increases in the efficiency of machinery, and recycling within a process. The term does not include dewatering, compaction, reclamation, treatment, or the use or reuse of waste.

* * * * *

Subchapter H. Source Reduction Strategy

§262.80. Source reduction strategy.

(a) By January 17, 1994, a person or municipality that generates hazardous waste shall prepare a source reduction strategy in accordance with this section. Except as otherwise provided in this article, the strategy shall be signed by the person or municipality that generated the waste, shall be maintained on the premises where the waste is generated, shall be available on the premises for inspection by any representative of the Department and shall be submitted to the Department upon request. The strategy may designate certain production processes as confidential and this confidential information may not be made public without the expressed written consent of the generator. Unauthorized disclosure is subject to appropriate penalties as provided by law.

(b) For each type of waste generated, the strategy shall include:

(1) A description of the source reduction activities conducted by the person or municipality in the 5 years prior to the date that the strategy is required to be prepared. The description shall quantify reductions in the weight or toxicity of waste generated on the premises.

(2) A statement of whether the person or municipality has established a source reduction program.

(3) If the person or municipality has established a source reduction program as described in paragraph (2), the strategy shall identify the methods and procedures that the person or municipality will implement to achieve a reduction in the weight or toxicity of waste generated on the premises, shall quantify the projected reduction in weight or toxicity of waste to be achieved by each method or procedure, and shall specify when each method or procedure will be implemented.

(4) If the person or municipality has not established a source reduction program as described in paragraph (2), the strategy shall include the following:

(i) A waste stream characterization, including source, hazards, chemical analyses, properties, generation rate, management techniques and management costs.

(ii) A description of potential source reduction options.

(iii) A description of how the options were evaluated.

(iv) An explanation of why each option was not selected.

(c) The strategy required by this section shall be updated when any of the following occur:

(1) There is a significant change in a type of waste generated on the premises or in the manufacturing process, other than a change described in the strategy as a source reduction method.

(2) Every 5 years, unless the Department establishes, in writing, a different period for the person or municipality that generated the waste.

(d) If hazardous waste generated by a person or municipality will be treated, stored or disposed of at a solid waste management facility which has applied to the Department for approval to treat, store or dispose of the waste, the person or municipality that generated the hazardous waste shall submit the source reduction strategy required by this section to the facility upon the request of the facility.

(e) This section does not apply to persons or municipalities that generate a total of less than 1,000 kilograms of hazardous waste in each month of the year.

(f) A person or municipality that generates hazardous waste may reference existing documents it has prepared to meet other waste minimization requirements to comply with this section, including those proposed to comply with 40 CFR 261.41(a)(5)—(7) (relating to biennial report).

* * * * *

§264.13. General requirements for hazardous waste management approvals and analysis.

(a) Except as provided in subsections (e) and (f), before an owner or operator treats, stores or disposes of a specific hazardous waste from a specific generator for the first time, the operator shall submit to the Department for approval, on a form provided by the Department, a report which the owner or operator shall retain for 20 years. The report shall include the following information:

* * * * *

(7) A copy of the generator's source reduction strategy.

APPENDIX B

Table of Contents

NOTE: This information contained herein is provided in good faith. The above list is far from complete and will be updated as further data becomes available. The Department of Environmental Protection cannot endorse any particular services, but rather is offering the information as a resource tool.

LOCAL AND STATE RESOURCES

- **Municipal and county governments should be contacted directly for information about local zoning, sewage, water treatment, planning, subdivision/land development and related ordinances.**

- State regulations are administered by the Pennsylvania Department of Environmental Protection. Any questions regarding general information, checklists provided or permits, please contact your regional office.

- For information about mining operators and requirements, contact DEP at 717 783-3517 or 717 783-5338.

DEP "800" Numbers and Electronic Access

Information		*Electronic Access to DEP*	
Emergency Response	800 541-2050	DEP World Wide Web Site	http://www.dep.state.pa.us
AIRHELP Business Assistance	800 722-4743	To Request Publications	DEPINFO@al.dep.state.pa.us
Low-Level Radioactive Waste	800 232-2786	Ask Questions About DEP	ASKDEP@al.dep.state.pa.us
On-Lot Sewage	800 282-9254	Environmental Protection Update	DEPUDATE@al.dep.state.pa.us
Radon	800 237-2366		
Recycling	800 346-4242	Land Recycliiag Program	LancIRecycling@al.dep.state.pa.us
Storage Tanks	800 428-2657	Clean Air Information	CleanAIR@al.dep.state.pa.us
AT&T Relay Service	800 654-5984		

Other State Agencies

Underground Storage Tank Indemnification Fund
(USTIF)
901 North 7th Street
Harrisburg, PA 17102
717 787-0763

Small Business First Fund (Incorporates Storage Tank Loan Fund)
Division of Business Loans
PA Department of Community and Economic Development
486 Forum Building
Harrisburg, PA 17120

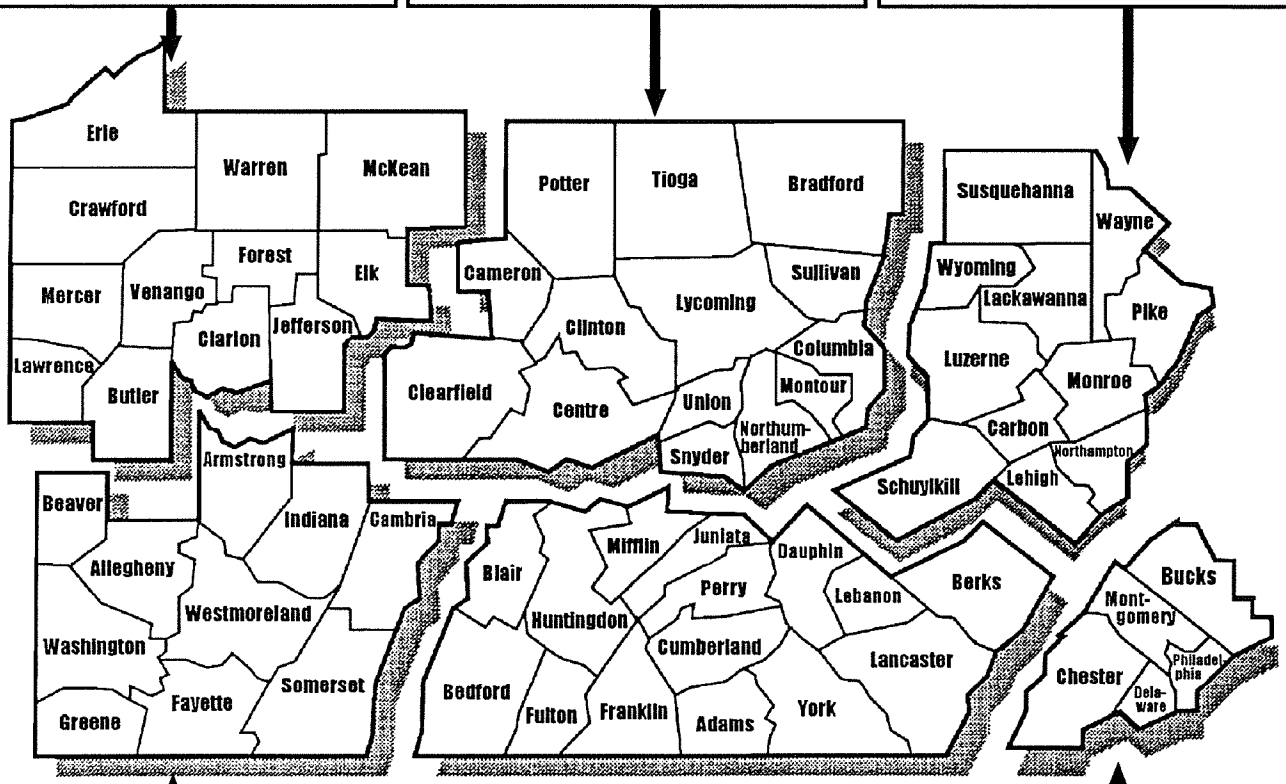
Pennsylvania Department of Environmental Protection's Regional Offices

Each Regional Office has the following:
Air Program
Water Program
Storage Tank Program
Waste Program
Pollution Prevention Program

NORTHWEST REGION
230 Chestnut Street
Meadville, PA 16335-3481
General Information: 814 332-6945

NORTHCENTRAL REGION
208 West Third Street, Suite 101
Williamsport, PA 17701-6448
General Information: 717 327-3636

NORTHEAST REGION
2 Public Square
Wilkes-Barre, PA 18711-0790
General Information: 717 826-2511



SOUTHWEST REGION
400 Waterfront Drive
Pittsburgh, PA 15222-4745
General Information: 412 442-4000

SOUTHCENTRAL REGION
1 Ararat Boulevard
Harrisburg, PA 17110-9714
General Information: 717 657-4585

SOUTHEAST REGION
Lee Park, Suite 6010
555 North Lane
Conshohocken, PA 19428-2233
General Information: 610 832-6000

Office of Pollution Prevention and Compliance Assistance
Publications

- Environmental Protection UPDATE
  (DEP's Weekly Periodical - Call DEP's Press Office at 717 783-1323 to request a hard copy or access via our www page.)

To order the following and the most recent list of publications, call DEP's Office of Pollution Prevention and Compliance Assistance at 717 783-9981 or check the web at www.dep.state.pa.us. Choose Pollution Prevention and Compliance Assistance.

Creating a Partnership - DEP's Approach to Pollution Prevention	0130-FS-DEP1980
Would You Like to Save Time and Money?	0130-FS-DEP1979
Commonwealth Technical Assistance Providers	0130-FS-DEP1986
1996 Governor's Awards for Environment Excellence Application Form	published annually
The Governor's Awards for Environmental Excellence	
The Governor's Waste Minimization Award Winners/Case Studies	0130-FS-DEP1981
The Governor's Waste Minimization Awards - 1995 Winners	2520-PA-DEP1908
The Governor's Awards for Environmental Excellence - 1996 Winners	7000-BK-DEP2045
The Governor's Awards for Environmental Excellence - 1997 Winners	7000-BK-DEP2174

Pollution Prevention $uccess $tories

Company	Waste	Reduction Method	Industry
Berg Electronics Inc. 7000-FS-DEP1569	Freon 1,1,1-trichloroethane 1,4-dioxane	Process change Raw materials substitution	Electronic
Carpenter Technology 7000-FS-DEP1578	Acid 1,1,1-trichloroethane Coolant	Process change Raw materials substitution	Stainless Steel
Leff-Marvins Cleaners Inc. 7000-FS-DEP1579	Perchloroethylene	Process modification	Dry Cleaning
Merck & Company Inc. 0200-FS-DEP1580	Methylene chloride	Process modification Raw materials substitution	Pharmaceutical
R. H. Sheppard Co., Inc. 0200-FS-DEP1581	Foundry sand Coolant water	Process modification Direct recycle	Foundry
The Knoll Group 0200-FS-DEP1582	Organic solvents	Two process changes Raw materials substitution	Office Furnishings
AMP, Inc. 7000-FS-DEP2033	Alkaline cleaners Sulfuric Acid-Based Etch Solution Cyanide Plating Solution	Process change In-process recycle	Electronics
Kinney Shoe Corporation 7000-FS-DEP2032	Solvent-based adhesive	Process change Product substitution	Women's Non-Rubber Footwear
GE Transportation Systems 7000-FS-DEP2034	Methylene chloride 1,1,1-trichloroethane Freon 113	Process change Raw materials substitution Chemical management	Locomotive Parts
ICI Fluoropolymers 7000-FS-DEP2043	Alcohol-based solvent	Process change Materials substitution Green technology	Seals, Gaskets and Parts
Dopaco, Inc. 7000-FS-DEP2064	Isopropyl acetate and toluene	Process change Materials substitution Green technology	Printed Cartons and Cups

Technical Assistance Providers

AIRHELP/PA Small Business Assistance Program (SBA)
AIRHELP HOTLINE - 800 PA AIRHELP
c/o Tetra Tech EM, Inc.
1800 JFK Boulevard, Sixth Floor
Philadelphia, PA 19103
www.pa-airhelp.org
The SBA Program:

- helps small business owners understand and comply with air pollution regulations
- keeps all inquiries confidential
- offers free environmental audits and permit application reviews
- administers the Air Quality Improvement Fund, a source of low interest loans

Ben Franklin Partnership Centers

Central and Northern PA	814 863-4558
Northeastern PA	610 758-5206
Southeastern PA	215 382-0320
Western PA	412 681-1520

- develop strategic relationships between private sector, universities and government for the research and development of new or improved products or processes

Concurrent Technologies Corporation
Pittsburgh Office
Harry Pavone, Business Development Rep. email: HarryP@clmr.org
University of Pittsburgh
Applied Research Center
320 William Pitt Way
Pittsburgh, PA 15238
412 826-5320

- provides environmental technology and educational services related to environmental protection and pollution prevention and compliance assistance

Concurrent Technologies Corporation
Mark Funyak, Facility Engineering Manager email: funyak@CTC.com 1450 Scalp Avenue
Johnstown, PA 15904
800 282-4392

- assists the industrial base through research, development, deployment, training and education activities in the solution of manufacturing problems

Electrotechnology Applications Center (ETAC)
Thomas Shaughnessy, Director
3835 Green Pond Road
Bethlehem, PA 18017-7599
610 861-5081

- allows manufacturers to test new technologies to apply coatings and to dry parts and products
- the 9,100 square foot ETAC houses equipment that demonstrates new, high-efficiency electric technologies

Industrial Resource Centers

Bethlehem	1-800 343-6732 or 610 758-5599
Pittsburgh	412 687-0200
Erie	814 456-6299
Montoursville	717 368-8361
Philadelphia	215 464-8550
University Park	814 863-8433
Wilkes-Barre	717 819-8966
York	717 843-5054

- provide technical and financial assistance for implementing projects to improve productivity and quality

Pennsylvania Technical Assistance Program (PENNTAP)

Central	jab15@psu.edu	814 865-0427
Eastcentral	sharath@net.bfp.org	610 758-4565
Northeast	mdt4@psu.edu	717 819-8973
Northwest	djs20@psu.edu	814 898-6046
Southcentral	wjw5@psu.edu	717 848-6669
Southeast	dbtz@psu.edu	610 648-3298

- provides technical assistance and information to specific questions or problems

Pennsylvania Small Business Development Centers

- the following network of colleges across the state provide free management consulting, education and seminars, along with working with small businesses to locate sources of funding

Pennsylvania Small Business Development Centers

STATE DIRECTOR'S OFFICE
UNIVERSITY OF PENNSYLVANIA
Gregory Higgins, State Director
423 Vance Hall
3733 Spruce Street
Philadelphia, PA 19104-6374
215 898-1219

BUCKNELL UNIVERSITY
Professor Charles Knisely, Director
Small Business Development Center
126 Dana Engineering Building
Lewisburg, PA 17837
717 525-1249 - Telephone
717 524-1768 - FAX

CLARION UNIVERSITY OF PA
Dr. Woodrow Yeaney, Director
Small Business Development Center
Dana Still Building
Clarion, PA 16214
814 226-2060 - Telephone
814 226-2636 - FAX

DUQUESNE UNIVERSITY
Dr. Mary T. McKinney, Director
Small Business Development Center
Rockwell Hall, Room 10 Concourse
600 Forbes Avenue
Pittsburgh, PA 15282
412 396-6233 - Telephone
412 396-5884 - FAX

GANNON UNIVERSITY
Ernie Post, Director
Small Business Development Center
A. J. Palumbo Academic Center
University Square
Erie, PA 16541
814 871-7714 - Telephone
814 871-7383 - FAX

INDIANA UNIVERSITY
Director
208 Eberly College of Business
Indiana, PA 15705-1071
412 357-7915 - Telephone
412 357-5985 - FAX

KUTZTOWN UNIVERSITY CAPITAL REGION
Small Business Development Center
2986 N. Second Street
Harrisburg, PA 17110
717 720-4230 - Telephone
717 720-4262 - FAX

LEHIGH UNIVERSITY
Small Business Development Center
Rauch Business Center #37
621 Taylor St.
Bethlehem, PA 18015
610 758-3980 - Telephone
610 758-5205 - FAX

PENNSYLVANIA STATE UNIVERSITY
Donna Holmes
117 Technology Center
University Park, PA 16802
814 865-0427
814 865-5909 - FAX

ST. FRANCIS COLLEGE
Edward Huttenhower, Director
Small Business Development Center
Business Resource Center
P.O. Box 600
Loretto, PA 15940
814 472-3200 - Telephone
814 472-3202 - FAX

ST. VINCENT COLLEGE
Jack Fabean, Director
Small Business Development Center
Alfred Hall - 4th Floor
300 Fraser Purchase Road
Latrobe, PA 15650
412 537-4572 - Telephone
412 537-0919 - FAX

TEMPLE UNIVERSITY
Geraldine Perkins, Director
Small Business Development Center
1510 Cecil B. Moore Ave.
Philadelphia, PA 19121
215 204-7282 - Telephone
215 204-4554 - FAX

UNIVERSITY OF PENNSYLVANIA
Paul Morin, Director
Small Business Development Center
The Wharton School
409 Vance Hall
3733 Spruce Street
Philadelphia, PA 19104-6357
215 898-4861 - Telephone
215 898-1063 - FAX

UNIVERSITY OF PITTSBURGH
Ann Dugan, Director
Small Business Development Center
208 Bellefield Hall
315 S. Bellefield Avenue
Pittsburgh, PA 15213
412 648-1544 - Telephone
412 648-1636 - FAX

UNIVERSITY OF SCRANTON
Elaine Tweedy, Director
Small Business Development Center
St. Thomas Hall - Room 588
Scranton, PA 18510-4639
717 941-7588 - Telephone
717 941-4053 - FAX

WEST CHESTER UNIVERSITY
Robert Scanlon
Wharton Small Business Development Center
211 Carter Drive
West Chester, PA 19383
610 436-2162 - Telephone
610 436-2577 - FAX

WILKES UNIVERSITY
Jeffrey Ross Alves, Director
Small Business Development Center
Hollenback Hall
192 S. Franklin Street
Wilkes-Barre, PA 18766
717 408-4340 - Telephone
717 824-2245 - FAX

FEDERAL GOVERNMENT CONTACTS

Important Telephone and Hotline Numbers

There are a number of private and public organizations offering technical assistance to businesses and the community via telephone, often through toll-free hotlines. Such services can often provide quick and easy answers to questions related to hazardous materials. Below are telephone numbers for hotlines and information services covering a variety of hazardous materials topics.

EPA Hotlines

EPA Chemical Emergency Preparedness/SARA TITLE III Hotline	For information on proper procedures for handling chemical emergencies	800 535-0202
EPA RCRA/CERCLA Hotline	For help with hazardous waste and/or Federal Superfund related problems	800 424-9346
TSCA Hotline	For problems related to TSCA toxic substances	202 554-1404
EPA Small Business Ombudsman	For help with environmental problems specific to small business	800 368-5888
Safe Drinking Water	Provides information on Safe Drinking Water Act regulations	800 426-4791
Air help Hotline	For PA small business looking for Clean Air Act requirements	800 PA-AIRHELP 800 772-4743

EPA Waste Reduction Programs/Research

Office of Research and Development Waste Minimization Div. Cincinnati, OH	Technical information on waste reduction	513 569-7529

Emergency Response

Bureau of Explosives, Association of American Railroads, Emergency Number	Assistance for hazardous materials problems involving railroads (8:00-4:30 PM Eastern Time) After hours contact: (CHEMTREC)	202-639-2222
CHEMTREC - Chemical Transporters Emergency Center	To report major chemical spills (Operates 24 hours per day)	800 424-9300
Hazardous Materials Newsletter Information Line	For response teams (public or industrial) requiring information on tools, materials, emergency planning, etc.	802 479-2307
Federal National Response Center Hazardous Spills Hotline	To report a chemical spill on navigable waterways	800 424-8802

Transportation of Hazardous Materials

Department of Transportation Hotline	To receive assistance on federal hazardous Substance transportation regulations	800 832-5660

Occupations Safety and Health

OSHA Hotline	Emergency information on occupational exposure to hazardous substances (Operates 24 hours per day)	800 321-6742
Regional OSHA Offices in PA	(Operates during 8:-4:30 PM Eastern Time)	
Allentown Area Office		215 776-0592
Erie Area Office		814 833-5758
Harrisburg Area Office		717 782-3902
Philadelphia Area Office		215 597-4955
Pittsburgh Area Office		412 644-2903
Wilkes-Barre Area Office		717 826-6538
National Institute for Occupational Safety and Health	Federal agency repsonsible for conducting research and making recommendations for the prevention of work-related illness and injuries. (operates 24 hours for emergencies)	800 356-6742

Pesticides and Toxic Substances Information

Oregon State University Pesticide Hotline	Contact to reach the National Pesticide Telecommunication Network, providing health, toxicology and cleanup information	800 858-7378
TSCA Hotline	For problems related to TSCA toxic substances	202 554-1404

Miscellaneous Hazardous Materials Information

Radon Technical Assistance	For technical information on Radon	800 23-RADON (in PA)
CMA National Chemical Resource Information Center	For technical information on hazardous chemicals	800 262-8200
Asbestos Technical Information and Referral	For information on handling asbestos	202 554-1404

Household Hazardous Materials Information

Consumer Product Safety Commission	For information on safety of consumer goods	800 638-2772
Environmental Hazards Management Institute		800 446-5256

Cancer Causing (Carcinogenic) Substance Information

National Institute of Health - Cancer Information Service	For information on carcinogenic qualities of certain chemicals	800 422-6237
National Cancer Institute		301 496-5583

OTHER FEDERAL RESOURCES

U.S. Environmental Protection Agency
Region III
Business Assistance Center
841 Chestnut Building
Philadelphia, PA 19107
800 228-8711

U.S. Small Business Administration
475 Allendale Rd.
King of Prussia, PA 19406
610 962-3700

RCRA (Hazardous Waste) Hotline
800 424-9346

Mailing Lists

The following mailing lists are available to help businesses keep up to date with changes and information on specific regulatory and source reduction topics. Some of these include the following:

"Information For Small Businesses"
Small Business Ombudsman
U.S. Environmental Protection Agency
401 M Street, SW (1230C)
Washington, DC 20460
800 368-5888
FAX 703 305-6464

U.S. Environmental Protection Agency
Emergency Planning and Community Right-to-Know
Document Distribution Center
P.O. Box 12505
Cincinnati, OH 45212
800 535-0202

Center for Environmental Research Information (CERI)
Technology Transfer
U.S. Environmental Protection Agency
26 West Martin Luther King Drive
Cincinnati, OH 45268
513 569-7562

U.S. Environmental Protection Agency
Office of Underground Storage Tanks
401 M Street, SW (5401W)
Washington, DC 20460
703 308-8875

Waste Wise Packaging
800 EPA WISE

Federal & State Contacts for Financial Assistance

Federal and state contacts for financial assistance which are potentially useful to small business owners include:

U.S. Small Business Administration (SBA)

Venture Capital

Venture capital financing involves direct investment of capital in a business by a private group. The investment is generally structured to allow the group to convert their equity position into cash or other liquid assets within a few years. There are private sources of venture capital, as well as capital firms licensed by the U.S. Small Business Administration (SBA), called the Small Business Investment Companies (SBIC). Your district SBA office can refer you to the SBIC in your area.

Pollution Control Loans

The SBA is authorized to provide assistance to eligible small businesses to finance the planning, design or installation of a pollution control facility. The word 'Facility' means real or personal property which is likely to help prevent, reduce, abate or control noise, air or water pollution. It may also include handling, treating and disposing of solid or liquid waste.

A resource recovery (recycling) project may also be eligible when it is stated to be useful by federal, state or local environmental authority.

The maximum amount SBA may guarantee is $1 million and the interest rates charged are the same as for other SBA guaranty loans.

Some businesses should find the program valuable in accessing capital when faced with compliance requirements. Others may want to use the program to purchase newer, environmentally compatible equipment or recycling processes that reduce operating costs while recycling waste products.

For more information on this SBA Program, you may contact any local SBA Office or Ms. Karen V. Brown, EPA Small Business Ombudsman at 703 305-5938 or 800 368-5888.

U.S. Small Business Administration
Philadelphia District Office
475 Allendale Road
King of Prussia, PA 19406
610 962-3830
FAX 610 962-3795

U.S. Small Business Administration
Pittsburgh District Office
Convention Towers
906 Penn Avenue
Pittsburgh, PA 15222
412 644-2780
FAX 412 644-5446

U.S. Small Business Administration
Harrisburg District Office
100 Chestnut Street, Suite 10
Harrisburg, PA 17101
717 782-3840
FAX 717 782-4839

EPA Business Assistance Center
Richard Seagrave-Daly
841 Chestnut Street
Philadelphia, PA 19107-4431
215 566-5535

U.S. Small Business Administration
Wilkes-Barre Office
20 North Pennsylvania Avenue, Room 2327
Wilkes-Barre, PA 18701-3589
717 826-6497
FAX 717 826-6287

U.S. EPA
Further Information on Pollution Prevention

Additional information on source reduction, reuse and recycling approaches to pollution prevention is available in EPA reports listed in this section, and through state programs and regional EPA offices (listed below) that offer technical and/or financial assistance in the areas of pollution prevention and treatment.

Waste exchanges have been established in some areas of the U.S. to put waste generators in contact with potential users of the waste. Twenty-four exchanges operating in the U.S. and Canada are listed.

U.S. EPA Reports on Waste Minimization

Waste Minimization Audit Report: Case Studies of Corrosive and Heavy Metal Waste Minimization Audit at a Specialty Steel Manufacturing Complex. Executive Summary.* NTIS No. PB *8 - 107180

Waste Minimization Audit Report: Case Studies of Minimization of Solvent waste for Parts Cleaning and from Electronic Capacitor Manufacturing Operation. Executive Summary.* NTIS NO. PB87 - 227013

Waste Minimization Audit Report: Case Studies of Minimization of Cyanide Wastes from Electroplating Operations. Executive Summary.* EPA No. PB8 - 229662.

Waste minimization: Environmental Quality with Economic Benefits. USEPA, EPA/50-SW-90-044, April 1990. (Booklet provides a general introduction to waste minimization and its benefits.)

Report to Congress: Waste Minimization, Vols. I and II. EPA/530-SW-86-033 and -034 (Washington, D.C.: U.S.EPA,1986).**

Waste.minimization - Issues and Options, Vols. I-III EPA/530-SW-86-041 through -043. (Washing-ton, D.C.: U.S.EPA,1986.**

Facility Pollution Prevention Guide. USEPA, EPA/600/R-92/088, May 1992. (Contains information on developing, implementing, and maintaining a multi-media pollution prevention program. Included are chapters on measuring progress and conducting an economic analysis. NTIS No. PB92213206)***

Guides, Manuals and Notebooks

- Achievements in Source Reduction & Recycling for Ten Industries In the US (EPA/600/2-91/051)
- Industrial P2 Opportunities for 1990s (EPA/600/8-91/052)
- Background Document on Clean Products Research & Implementation (EPA/600/2-90/048)
- P2 Case Studies Compendium (EPA/600/R-92/046)
- Opportunities for P2 Research to Support the 33/50 Program (EPA/600/R-92/175)
- Life Cycle Design Manual (EPA/600/r-92/226)
- LCA: Inventory Guidelines/Principles (EPA/600/R-92/245)
- Primer/Financial Analysis/P2 Projects (EPA/600/R-93/059)
- Measuring P2 Progress Proceedings (EPA/600/R-93/151)
- WM Practices/2 C CA Wood-Treat Plts (EPA/600/R-93/168)
- Innov Clean Technologies Case STDS (EPA/600/R-93/175)
- Dupont Chambers Works WM Project (EPA/600/R-93/203)

GUIDES TO POLLUTION PREVENTION:

Pesticide Formulating Industry	(EPA/625/7-90/004)
Paint Manufacturing Industry	(EPA/625/7-90/005)
Fabricated .Metal Products Industry	(EPA/625/7-90/006)
Printed Circuit Board Industry	(EPA/625/7-90/007)
Commercial Printing Industry	(EPA/625/7-90/008)
Selected Hospital Waste Streams	(EPA/625/7-90/009)
Research and Education Institutions	(EPAJ62517-90/010)
Photoprocessing Industry	(EPA/625/7-91/012)
Auto Repair Industry	(EPA/625/7-91/013)
Fiberglass Reinforced/Composite Plastic Ind.	(EPA/625/7-91/014)
Marine Maintenance/Repair Industry	(EPA/625/7-91/015)
Automotive Refinishing Industry	(EPA/625/7-91/016)
Pharmaceutical Industry	(EPA/625/7-91/017)
Mechanical Equipment Repair	(EPA/625/R-92/008)
Metal Casting/Heat Treating Industry	(EPA/625/R-92/009)
Metal Finishing Industry	(EPA/625/R-92/011)
Non-Agricultural Pesticide User-,	(EPA/625/R-93/009)
Wood Preserving Industry	(EPA/625/R-93/014)

*Executive Summary available from EPA, CERI Publications Unit, 26 West Martin Luther King Drive, Cincinnati, OH, 45268; full report available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, 800 553-6847.

* Available from the National Technical Information Service as a five-volume set, NTIS No. PB87-114328.

*** Available from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, 800 553-6847.

GUIDES TO CLEANER TECHNOLOGIES:

Organic Coating Removal	(EPA]625/R-93/015)
Altrntiv/Chlrntd Sol/Clng & Degrsg	(EPAJ625/R-93/016)
Cleaning & Degreasing Process Chngs	(EPA/625iR-93/017)
Organic Coating Replacement	(EPA/625/R-94/006)

Available from EPA 800 424-9346

Currently, these notebooks are available on Internet. Access to Sector Notebooks is available through the following World Wide Web address: http:/wastenot.inel.gov/envirosense/

Dry Cleaning	EPA/310-R-95-001
Electronics and Computer	EPA/310-R-95-002
Wood Furniture & Fixtures	EPA/310-R-95-003
Inorganic Chemical	EPA/310-R-95-004
Iron and Steel	EPA/310-R-95-005
Lumber & Wood Products	EPA/310-R-95-006
Fabricated Metal Products	EPA/310-R-95-007
Metal Mining	EPA/310-R-95-008
Motor Vehicle Assembly	EPA/310-R-95-009
Nonferrous Metal	EPA/310-R-95-010
Non-Fuel, Non-Metal Mining	EPA-310-R-95-011
Organic Chemical	EPA/310-R-95-012
Petroleum Refining	EPA/310-R-95-013
Printing and Publishing	EPA/310-R-95-014
Pulp and Paper	EPA/310-R-95-015
Rubber and Plastic	EPA/310-R-95-016
Stone, Clay, Glass & Concrete	EPA/310-R-95-017
Transportation Eqpmnt. Cleaning	EPA/310-R-95-018

Available from the Superintendent of Document, P.O. Box 73195, Pittsburgh, PA 17250-7954,202 512-1800.

This is not a complete list of pollution prevention publications available through EPA, state agencies and private organizations.

Waste Reduction Technical/Financial Assistance Programs

The EPA Pollution Prevention Information Clearinghouse (PPIC) was established to help reduce industrial pollutants through technology transfer, education, and public awareness. PPIC collects and disseminates technical and other information on pollution prevention through a telephone hotline and an electronic information exchange network. Indexed bibliographies and abstracts of reports, publications, and case studies about pollution prevention are available. PPIC also lists a calendar of pertinent conferences and seminars; information about activities abroad and a directory of waste exchanges. EPA's Enviroene can be accessed electronically 24 hours a day without fees at http://es.epa.gov.

For more information contact:

U.S. Environmental Protection Agency
401 M Street S.W.
Washington, DC 20460

Myles E. Morse
Office of Environmental Engineering and Technology Demonstration
202 475-7161

Lena Ferris
State Grants Program
Pollution Prevention Office
202 260-2237

The EPA's Office of Solid Waste and Emergency Response has a telephone call-in service to answer questions regarding RCRA and Superfund(CERCLA). The telephone numbers are:

800 424-9346 (outside the District of Columbia)

202 382-3000 (in the District of Columbia)

PPIC
401 M Street, SW
Mail Code: 3404
Washington, DC 20460
202 260-1023 - Telephone
202 260-0178 - FAX

ADDITIONAL RESOURCES

Waste Exchanges

The Northeast Industrial Waste Exchange, Inc. (NIWE) is a service to Pennsylvania business and industry made possible through partial support by the Pennsylvania Department of Environmental Protection. NIWE assists buyer-seller matches for potential waste material trades. These businesses then contact each other to discuss and negotiate their exchange. Typically, exchanges occur between firms that generate and others that use process residues, surplus chemicals, processing scrap, obsolete products, and various other materials. NIWE clients eliminate or reduce waste disposal, procure lower cost raw materials, and protect the environment. According to NIWE reports, the average exchange is worth about $42,000. NIWE encourages eliminating waste at the source prior to materials exchange.

NIWE services include: computer assisted buyer-seller matching, monthly reports on raw materials, providing firms with an interstate market, and information delivery by fax and internet.

For more information contact:

Northeast Industrial Waste Exchange
P.O. Box 2171
Annapolis, MD 21404-2171
410 280-2080
FAX 410 280-0025
email: niwe@pop.erols.com

NIWE is a not-for-profit corporation 50 l(c)(3) corporation supported by grants and revenues for services.

Directory of Commercial Hazardous Waste Recovery, Treatment, and Disposal Facilities

The following publication provides a comprehensive listing of environmental service firms:

EI Environmental Services Directory
Environmental Information, Ltd.
4801 West 81st Street
Suite 119
Minneapolis, MN 55437
612 831-2473
FAX 612 831-6550

Environmental Information Ltd. research firm focuses on the environmental protection industry including detailed descriptions and provides telephone listin-s of environmental services firms. EI also sponsors the Envirobiz website at http://www.envirobiz.com.

Provides telephone listing of environmental services firms on web site.

Equipment Buyers' Guides

Numerous equipment buyers' guides are available which provide the names of manufacturers and vendors of Equipment for waste reduction and/or recycling. Subscriptions to equipment buyers' guides are usually free. Some useful guides and subscriptions include the following:

Pollution Equipment News
Rimbach Publishing Inc.
8650 Babcock Boulevard
Pittsburgh, PA 15237
412 364-5366
412 369-9720 FAX

Water and Wastes Digest
Scranton Gillette Communications, Inc.
380 Northwest Highway
Des Plaines, IL 60016
312 298-6622

Chemical Equipment
Gordon Publications, Inc.
Box 1952,
Dover, NJ 07801
201 361-9060

Other references:

Hazardous Waste Minimization Handbook. Thomas E. Higgins, Lewis Publishers. (Includes chapters on machining, solvent degreasing, metal plating, painting and paint removal.)

Industrial Waste Audit and Reduction Manual. Ontario Waste Management Corporation, 1987.

APPENDIX P
Hazardous Waste Training Courses

TREATMENT TECHNOLOGIES FOR SUPERFUND SITES

165.3

Course Description

This introductory-level course provides participants with an overview of the treatment technologies most frequently used for cleanups at uncontrolled waste sites. The emphasis of the course is on the technology, description, applicability, and limitations of appropriate treatment technologies, rather than on the design of such systems.

Topics that are discussed include chemical & physical characteristics, general response actions, technology screening, bulking, groundwater treatment, separation techniques, soil vapor extraction, air and steam stripping, carbon adsorption, inorganic treatment, biological treatment units, thermal treatment units, immobilization, and emerging treatment technologies.

Upon completion, participants will be able to:

- Describe the purpose of the Comprehensive Environmental Response, Compensation & Liability Act of 1980(CERCLA).
- Identify the processes and explain the limitations of the most frequently used treatment technologies.
- Identify references that describe emerging treatment technologies

Course Length - 4 days

Target Audience

- New on-scene coordinators
- Remedial project managers
- Waste site managers
- Other personnel interested in treatment technologies

Nomination Information

- After course is announced - contact your Bureau/Office/Region Training Coordinator to be nominated.
- Questions may be referred to the Training and ADR Services Division at 717-783-2020.

Return to Training and ADR

Return to BOP Home Page

Last Modified on 07/23/1999 11:14:54.

AIR MONITORING FOR HAZARDOUS MATERIALS

165.4

This course instructs participants in the practices and procedures for monitoring and sampling airborne hazardous materials. It is designed for personnel who evaluate releases of airborne hazardous materials at hazardous waste sites or accidental hazardous material releases. evaluation of worker exposure to these releases is emphasized.

Topics that are discussed include air monitoring and sampling programs, air monitoring and sampling techniques, air monitoring and sampling equipment, instrument calibration, exposure guidelines, air dispersion modeling, and health and safety considerations. the course will include operating procedures for specific air monitoring and sampling equipment, as well as strategies for air monitoring and sampling at abandoned hazardous waste sites and for accidental releases of hazardous chemicals.

Upon completion, participants will be able to:

- Properly use the following types of air monitoring and sampling equipment: Combustible gas indicators; Oxygen monitor; Detector tubes; toxic gas monitor; Photoionization detectors; Flame ionization dectors; Gas chromatographs; Sampling pumps and collection media; Direct-reading aerosol monitors.
- Identify the operational parameters, limitations, and data interpretation requirements for the instruments listed above.
- Identify the factors to be considered in the development of air monitoring and sampling plans.
- Discuss the use of air monitoring data for the establishment of personnel and operations health and safety requirements.

Course Length - 5 days

Target Audience

- Personnel who evaluate releases of airborne hazardous materials at hazardous waste sites or accidental hazardous materials releases.

Nomination Information

- After announcement, contact your Bureau/Office/Region Training Coordinator to be nominated.
- Questions may be referred to the Training and ADR Services Division at 717-783-2020.

Return to Training and ADR

Return to BOP Home Page

HAZARDOUS MATERIALS INCIDENT RESPONSE OPERATIONS

165.5

Course Description

This course is designed for personnel involved with the investigation and remediation of uncontrolled hazardous waste sites and, to a lesser extent, response to an accident involving hazardous materials. It provides basic information needed to meet the requirements of 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response).

After completing the course, participants will be able to:

- Identify methods and procedures for recognizing, evaluating, and controlling hazardous substances.
- Identify concepts, principles, and guidelines to properly protect site or response personnel
- Discuss regulations and action levels to ensure health and safety of the workers
- discuss fundamentals needed to develop organizational structure and standard operating procedures.
- Select and use dermal and respiratory protective equipment.
- Demonstrate the use, calibration, and limitations of direct-reading air monitoring instruments.

After completing this course, participants will be more knowledgeable in hazardous waste operations, team functions, personnel health and safety procedures, and operation of field monitoring equipment.

In some segments of the course, participants are required to wear respiratory equipment, which precludes wearing eyeglasses. Individuals who are severely restricted without their glasses should be aware ther their participation may be limited unless they have their own spectacle kit or spectacle-equipped respirator facepiece. During some exercises, participants are required to wear chemical protective clothing, which may be stressful to certain individuals. Participation in these exercises is not required, but attendance is required. Individuals who are not currently participating in a medical surveillance program should consult their physician before attending this course.

NOTE: *This course meets the U.S. Occupational Safety and Health Administration's requirement (29 CFR 1910.120) of a minimum of 40 hours classroom safety training for hazardous waste site workers.*

Nomination Information

- **After course announcement, contact your Bureau/Office/Region Training Coordinator to be nominated.**
- **Questions may be referred to the Training & ADR Services Division at 717-783-2020.**

Return to Training and ADR

RISK ASSESSMENT GUIDANCE FOR SUPERFUND

165.6

Course Description

This course provides participants with the fundamentals of human health and ecological risk assessment as applied to the Superfund cleanup process. the course, as stated in the U.S. Environmental Protection Agency's(EPA) Superfund Risk Assessment Guidance Manual, is specificaly designed for Superfund risk assessors, risk assessment review, remedial project managers, and risk managers. The course is based on the following EPA docments: *Risk Assessment Guidance for Superfund: Volume I - Human Health Evaluation Manual (Parts A,B, and C), Risk Assessment Guidance for Superfund: Volume II - Environmental Evaluation Manual, Guidelines for Ecological Assessment, and Ecological Risk Assessment Guidance for Superfund: Process for Designing and conducting Ecological Risk Assessments.*

The risk assessment process is presented in three stages: baseline risk assessment, development of preliminary remediation goals, and evaluation of cleanup alternatives. In addition, the following topics are discussed: applicalbe statutes, regulations, and guidance; data collection and evalluation; exposure assessment; toxicity assessment; risk characterization; principles of ecological assessment; d*Guidelines for Ecoogical Assessment; Ecological Risk Assessment Guidance for Superfund;* and ecological assessment methods. Current technical and information resources will also be discussed.

Instructional methods include lectures, class discussions, and group exercises. In addition, a case study will be used throughout the courseto demonstrate the practical applications of the risk assessment guidance.

After completing this course, participants will be able to:

- Identify the applicable statutes, regulations, and guidance pertinent to human health and eological risk assessments under Superfund.
- Describe each of the four steps of the baseline risk assessment process.
- Identify and describe ecological assessment methods used to evaluate the effects of contaminants on the ecosystem.
- Perform a baseline risk assessment and an ecological assessment using EPA's risk assessment guidance documents.

NOTE: Calculators are highly recommended.

Nomination Information

- **After announcement, contact your Bureau/Office/Region Training Coordinator to be nominated.**

- **Questions may be referred to the Training and ADR Services Division at 717-783-2020.**

Return to Training and ADR

Return to BOP Home Page

INTRODUCTION TO GROUNDWATER INVESTIGATION

165.7

This introductory course is designed to provide participants with information concerning hydrogeological processes and the necessary elements of a sound groundwater site investigation. It is intended for personnel who are involved in groundwater contamination investigations buthave **little prior hydrogeological experience.** This course is **not** designed for geologists or hydrogeologists.

The topics that are discussed include hydrogeological definitions and concepts; rock cycle; soil formation; depositional environments; geochemistry; geophysics; drilling, construction, and placement of monitoring wells; groundwater sampling considerations; and groundwater modeling.

Instaructional methods include lectures, group discussions, case studies, and class problem-solving exercises.

After completing the course, participants will be able to:

- Identify the components of a groundwater system.
- List the primary hydrogeological parameters to be considered in a site investigation.
- Construct a groundwater flow net and calculate hydraulic gradient at a site.
- Discuss common geophysical survey methods.
- Identify geochemical profiles in contaminated groundwater.
- Identify commonaquifer stress tests and the information obtained from each
- Describe monitoring well drilling and construction techniques

NOTE: ***Scientific calaculators are required.***

Nomination Information

- **After announcement, contact your Bureau/Office/Region Training Coordinator to be nominated**
- **Questions may be referred to the Training and ADR Services Division at 717-783-2020.**

Return to Training and ADR

Return to BOP Home Page

SAMPLING FOR HAZARDOUS MATERIALS

165.9

Course Description

This 3 day course provides individuals who have little or no sampling experience with practical information effectively sampling hazardous materials at Superfund sites. the course focuses on sampling plan development, types of equipment suitable for hazardous materials sampling, and procedures for safely collecting samples. It is intended for personnel responsible for inspections, investigations, and remedial actions at Superfund sites. Air sampling is specifically addressed in Air Monitoring for Hazardous materials (164.4) and is not discussed in this course.

The course is designed to be consistent with the EPA protocol and guidance documents entitled *A Compendium of Superfund Field Operations Methods and Data Quality Objectives for Remedial Response Activities.*

Topics that are discussed include sample plan development; procedures for sampling containerized materials, surface water/lagoons, sediments/sludges, and soil; soil gas sampling; field screening techniques; documentation; and quality assurance considerations.

instructional methods include lectures, group discussions, demonstrations, classroom exercises, and outdoor field exercises with emphasis on the hands-on use of multimedia sampling equipment.

Instructional methods include lectures, group discussion, demonstrations, classroom exercises, and outdoor field exercises with emphasis on the hands-on use of multimedia sampling equipment.

After completing the course, participants will be able to:

- Select the appropriate field screening method for a given contaminant and geologic environment.
- Select the appropriate sampling container and sample preservation method based on the sample media and analysis required.
- Select the appropriate sampling implements and methods for sampling various containerized wastes.
- Select the appropriate tools and methods for sampling surface water and sediments.
- Describe the basic methods of soil sampling in the unsaturated zone.
- Demonstrate the proper method for obtaining a groundwater sample from a monitoring well.
- Complete the required documentation, including chain of custody and sample labels, for shipment of environmental samples to an analytical laboratory.
- Complete fundamental tasks in a sampling event from initial site investigation through field data collection.

CEU: 2.0

Return to Training and ADR

RADIATION SAFETY AT SUPERFUND SITES

165.11

Course Description

This basic radiation safety course is designed for individuals who may encounter radioactive materials in the course of their work or become involved with the regulatory oversight of a location contaminated with radioactive materials. The course provides participants with an understanding of the fundamental principles of radiation safety, with emphasis placed on radiation detection instrumentation and contamination control work practices.

Topics that are discussed include types of radiation and methods of interaction, biological effects, radiation detection and instrumentation, methods of contamination control and decontamination, transportation regulations, and remedial and disposal options.

Instructional methods include lectures, class problem-solving sessions, and exercises that emphasize the hands-on use of equipment and the practical application of lecture material.

After completing the course, participants will be able to:

- Detect the presence of radioactive materials while performing investigations at hazardous waste sites.
- Implement methods of radiation exposure reduction and contamination control under the guidance of health physics personnel.
- Identify regulations concerning area posting, exposure limits and reporting, transportation requirements, and release limits.
- Propose options for remediation and disposal of radioactive materials.

CEU: 2.95

ABIH Certification Maintenance points: 4.0

Course Length: 5 days

Target Audience:

- Individuals who may encounter radioactive materials in the course of their work
- Individuals who may become involved with the regulatory oversight of a location contaminated with radioactive materials

Nomination Information

- After announcement, contact you Bureau/Office/Region Training Coordinator to be nominated
- Questions may be referred to the Training and ADR Services Division at 717-783-2020

HEALTH AND SAFETY PLAN WORKSHOP

165.12

Course Description

This one-day course provides participants with guidance in using the U.S. Environmental Protection Agency's (EPA) Health and Safety Plan (HASP) software to develop site-specific health and safety plans in compliance with 29 CFR 1910.120 and 40 CFR 311.

The course is intended for personnel responsible for developing site-specific health and safety plans at uncontrolled hazardous waste sites and for extended emergency response operations.

Instructional methods include lectures interspersed with hands-on use of computers to input information needed for the decision-making process that is required for developing health and safety plans. Exercises include developing a site-specific plan for a composite site.

Topics that are discussed include an overview of the Occupational Safety and Health Administration (OSHA) and EPA Hazardous Waste Operations and Emergency Response (HAZWOPER) standard and the requirements of a health and safety plan; HASP development, system requirements, and installation; creating and consulting site files; accessing data from EPA's Environmental Response Team's (EPA-ERT) Bulletin Board System; and creating, editing, and auditing a site-specific health and safety plan.

NOTE: This course is only given upon request of EPA's Regional office or by specific arrangement with other organizations

CEU: 0.5

ABIH Certification Maintenance Points: 1.0

Course Length: 1 day

Target Audience:

- Individuals responsible for developing site specific health and safety plans at uncontrolled hazardous waste sites
- Individuals responsible for developing site specific health and safety plans for extended emergency response operations

Nomination Information

- After announcement, contact you Bureau/Office/Region Training Coordinator to be nominated
- Questions may be referred to the Training and ADR Services Division at 717-783-2020

EMERGENCY RESPONSE TO HAZARDOUS MATERIAL INCIDENTS

165.15

Course Description

This five-day course provides emergency response personnel, primarily firefighters, police officers and emergency medical services personnel, with information and skills needed to recognize, evaluate and control an incident involving the release or potential release of hazardous materials. It is intended for members of hazardous materials response teams.

The focus of the course is on recognizing and evaluating a hazardous materials incident, organizing the response team, protecting response personnel, identifying and using response resources, implementing basic control measures, refining decision-making skills, and protecting the public. Firefighting techniques are not part of the course.

Topics that are discussed include chemical and physical properties of hazardous materials, toxicology, recognition and identification of hazardous materials, direct-reading instruments, standard operating procedures, personal protection and safety, and sources of information.

Instructional methods used are lectures, class problem-solving sessions, and exercises. Emphasis is on the hands-on use of equipment to practically apply lecture information. Class members will participate in two simulations designed to apply and test the lessons learned during the week. Participants will wear fully encapsulating suits and chemical splash gear. Individuals who are not participating in a medical surveillance program should consult their physician prior to attending this course.

After completing the course, participants will be able to:

- Select the appropriate personal protective equipment for responding to an incident involving hazardous materials
- Use combustible gas detectors, oxygen meters, and detector tubes to evaluate the hazards present at a hazardous materials incident
- Use confinement and containment techniques to control the release of a hazardous material.
- Identify the importance of an incident command system for effectively managing an incident involving hazardous materials.
- Develop procedures for the decontamination of emergency response personnel.
- Use size-up techniques to develop strategies and select the appropriate tactics for mitigating hazardous material incidents.

Individuals who have attended *Hazardous Materials Incident Response Operations (165.5)* should consult with the EPA Training Registrar before applying for this course.

NOTE: This course meets and exceeds the Occupational Safety & Health Administration's requirement (29 CFR 1910.120 paragraph q) of a minimum of 24 hours of training for a hazardous

materials technician.

CEU: 3.6

ABIH Certification Maintenance points: 4.5

Course Length: 5 days

Target Audience:

- Emergency response personnel

Nomination Information:

- After announcement, contact you Bureau/Office/Region Training Coordinator to be nominated
- Questions may be referred to the Training and ADR Services Division at 717-783-2020

Return to Training and ADR

Return to BOP Home Page

Last Modified on 07/23/1999 11:08:04.

DESIGNS FOR AIR IMPACT ASSESSMENTS AT HAZARDOUS WASTE SITES

165.16

Course Description

This 3.5 day course is intended for management-level site personnel and U.S. Environmental Protection Agency (EPA) work plan and air review staff who are responsible for assessing and coordinating air sampling, air monitoring, and air modeling strategies as a basis for evaluating risk to onsite and offsite receptors.

Case studies, demonstrations, group discussions, and lectures will help prepare participants to:

- Define air impact assessment objectives.
- Evaluate air monitoring, air sampling, and air modeling data to develop an air impact assessment.
- Define air impact assessment assumptions given specific site conditions and operations.
- Implement appropriate quality assurance and quality control when developing an air impact assessment.
- Develop air impact assessment work plans for hazardous waste sites.
- Implement air impact assessment work plans for hazardous waste sites.

Prerequisites for this course are on Occupational Safety and Health Administration (29 CFR 1910.120) 40 hour health and safety course **AND** either *Air Monitoring for Hazardous Materials (165.4)* or the Air and Waste Management Association's *Air Pathway Assessment Workshop.*

CEU: 2.8

ABIH Certification Maintenance points: 3.5

Course Length: 3.5 days

Target Audience: Management-level personnel who are responsible for assessing and coordinating air sampling, air monitoring, and air modeling strategies as a basis for evaluating risk to onsite and offsite receptors.

Nomination Information

- After announcement, contact you Bureau/Office/Region Training Coordinator to be nominated
- Questions may be referred to the Training and ADR Services Division at 717-783-2020

Return to Training and ADR

Return to BOP Home Page

CHEMISTRY OF HAZARDOUS MATERIALS

Course Description

The PA State Fire Academy offers this two week course. It provides instruction in the basics of chemistry as it deals with hazardous materials. Other DEP employees have taken the course and rate it excellent.

Topics include:

- Solids
- Non-Solids
- Bonding
- Hydrocarbons
- Hydrocarbon Derivatives
- General hazards of various chemicals
- The physics of chemistry as it effects hazardous materials
- Discussions of the nine hazardous materials classes

This is a very intensive course and participants should be prepared to study within a very rigorous schedule.

Course Length: 2 weeks

Target Audience:

- DEP employees who work with hazardous materials

Nomination Information

- After course is announced - contact your Bureau/Office/Region Training Coordinator to be nominated.
- This course requires two application forms which must be submitted in order for consideration to be given for attendance.
- Questions may be referred to the Training and ADR Services Division at 717-783-2020.

Return to Training and ADR

Return to BOP Home Page

Last Modified on 07/23/1999 10:02:58.

APPENDIX Q
Request for Legal Action Form

REQUEST FOR LEGAL ASSISTANCE

Date Originated:

Date Received:

To/From: Martin H. Sokolow, Jr., Chief
Central Region Litigation

From/To:

Through: xx

Regional Office Contact:_____

Type of Document:_____

Company/Responsible Individual Name:_____
Address (including Township, County):

_____

_____

Applicable ID/Permit Numbers:_____

Nature of Violation:_____

_____

Attorney Signature Requested:_____

Attorney Action Requested (specify):_____

_____

_____

Other Relevant Information:_____

_____

****

Date Returned:

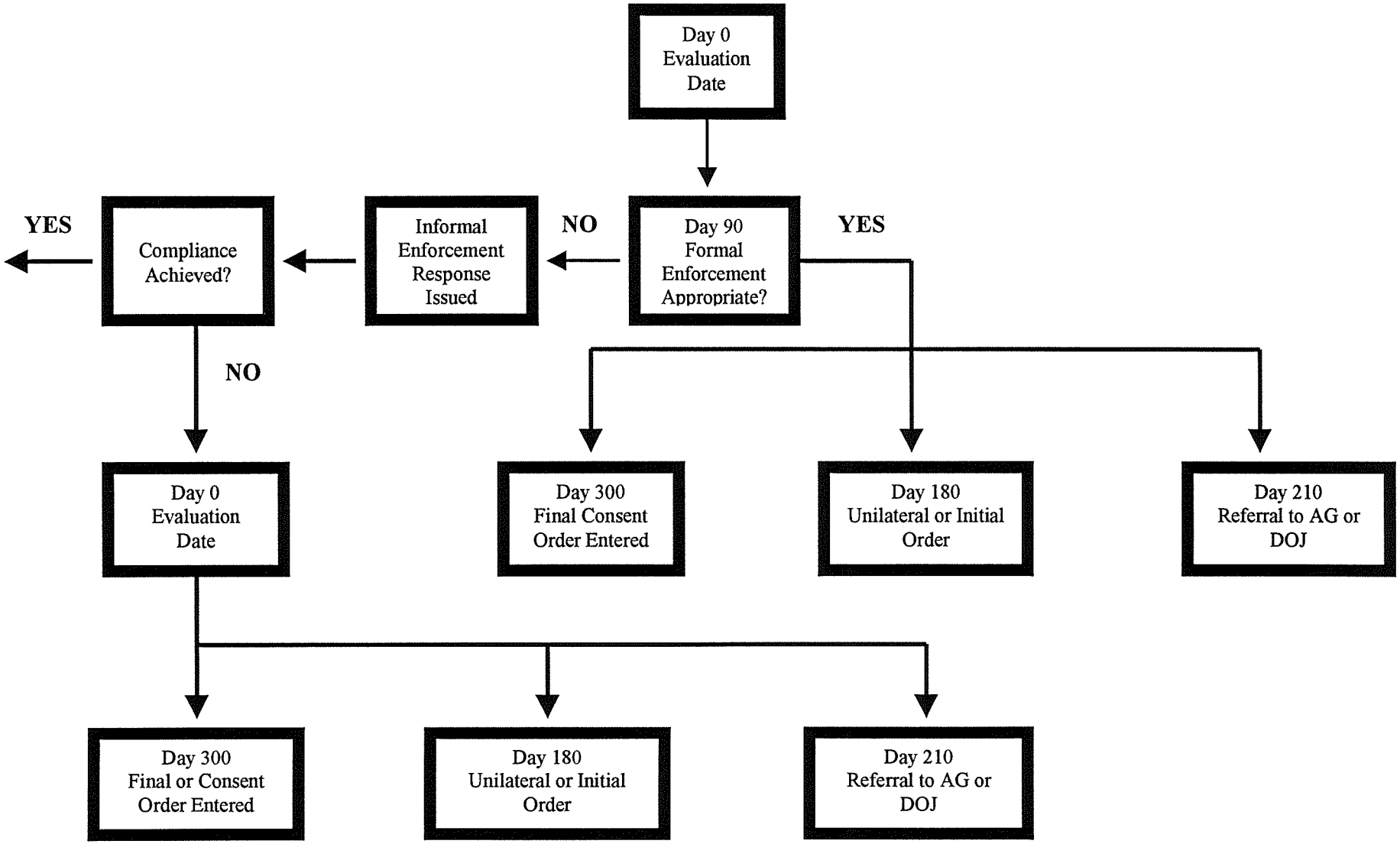
Date Received:

Assigned Attorney:_____

Legal ID Number:_____

APPENDIX R
Enforcement Response Timeline

Timeline For Enforcement Pursuant to The Resource Conservation and Recovery Act



Note: All days are calendar days measured from day 0.

APPENDIX S
Civil Penalty Assessment Process

CIVIL PENALTY ASSESSMENT PROCESS

A. INTRODUCTION

Section 605 of the SWMA authorizes assessment of civil penalties, the Department's policy is to assess penalties based primarily on the severity and willfulness of a violation. Penalties are to be assessed in a fair and uniform manner, and be commensurate with the gravity of the violation. They are intended to act as a deterrent to future violations, eliminate economic incentives for non-compliance and to achieve compliance. This Section discusses how to determine what the proper civil penalty should be once it is decided to assess a civil penalty.

The penalty calculation system consists of (1) determination of a gravity-based penalty for a particular violation; (2) considers economic benefit of non-compliance; and (3) mitigates or adjusts the penalty for factors including willfulness good faith/lack of good faith, compliance history, ability to pay direct cost incurred by the Commonwealth, duration of the violation, and unique factors.

Section 605 (Civil Penalties) of the Solid Waste Management Act (Act 97) states that a penalty may be assessed whether or not the violation was willful or negligent. In determining the amount of the penalty, the Department shall consider the willfulness of the violation, damage to air, water, land or other natural resources of the Commonwealth or their uses, cost of restoration and abatement, savings resulting to the person in consequence of such violation, and other relevant factors. This section also states that the maximum civil penalty that may be assessed pursuant to this section is $25,000 per offense. Each violation for each separate day and each violation of any provision of this act, any order of the Department, or any term or condition of a permit shall constitute a separate and distinct offense under this section.

Changes to existing policy cannot go outside of the bounds of Section 605, in particular, those areas quoted above. Thus, degree of severity of harm caused by the violation, cost incurred by the Commonwealth, savings to the violator (i.e. economic benefit), degree of willfulness, promptness of reporting the incident, violation history and duration of violation must all be considered, and are considered under the present Bureau of Land Recycling and Waste Management Civil Penalty Policy. The EPA factors of potential for harm, deviation from requirements, good faith/ lack of good faith and ability to pay can all be considered as "other relevant factors" or is allowed under Section 605.

The Commonwealth uses a gravity-based penalty matrix with the axis being severity of violation and degree of willfulness. The severity of violation component is similar to the EPA axis of potential for harm; however, under the Bureau of Land Recycling and Waste Management system, severity relates to

actual harm only. Where as the EPA matrix is heavily weighted toward the potential for harm axis, the present DEP policy places equal weight on both axis of the matrix with maximum daily penalty per violation being $25,000 in both the EPA and DEP systems.

Although the initial gravity based penalty component will be calculated using different matrix axis, the EPA economic benefit adjustment has been adopted in total to supplement the Commonwealth's existing policy on savings to violators.

V. (B) DEFINITIONS

The Department's existing Calculation of Act 97 Solid Waste Civil Penalties includes definitions pertinent to utilizing the existing Bureau of Land Recycling and Waste Management policy.

EPA definitions of their assessment factors (excluding economic benefit which is adopted in total and is found in Section V(D)) are as follows:

(1) Good faith efforts to comply/lack of good faith
(Degree of cooperation/noncooperation)

Under 3008(a) of RCRA, good faith efforts to comply with the requirements must be considered in assessing a penalty. Good faith can be manifested by the violator promptly reporting its noncompliance. Assuming such self-reporting is not required by law, this behavior can result in mitigation of the penalty. Prompt correction of environmental problems also can constitute good faith. Lack of good faith, on the other hand, can result in an increased penalty. No downward adjustment should be made if the good faith efforts to comply primarily consist of coming into compliance.

(2) Degree of willfulness and/or negligence

Section 3008(d) of RCRA provides for criminal penalties for "knowing" violations. However, there may be instances of culpability which do not meet the criteria for criminal action. In cases where administrative civil penalties are sought for actions of this type, the penalty may be adjusted upward for willfulness and/or negligence. Conversely, although RCRA is a strict liability statute there may be instances where penalty mitigation may be justified based on the lack of willfulness and/or negligence.

In assessing the degree of willfulness and/or negligence the following factors should be considered, as well as any others deemed appropriate:

how much control the violator had over the events constituting the violation;

the forseeability of the events constituting the violation;

whether the violator took reasonable precautions against the events constituting the violation;

whether the violator knew or should have known of the hazards associated with the conduct;

whether the violator knew of the legal requirement which was violated.

It should be noted that this last factor, lack of knowledge of the legal requirement, should never be used as a basis to reduce the penalty. To do so would encourage ignorance of the law. Rather knowledge of the law should serve only to enhance the penalty.

The amount of control which the violator had over how quickly the violation was remedied also is relevant in certain circumstances. Specifically, if correction of the environmental problem was delayed by factors which the violator can clearly show were not reasonably foreseeable and out of his control, the penalty may be reduced.

(3) History of noncompliance (upward adjustment only)

Where a party previously has violated RCRA or State hazardous waste law at the same or a different site, this is usually clear evidence that the party was not deterred by the previous enforcement response. Unless the previous violation was caused by factors entirely out of the control of the violator, this is an indication that the penalty should be adjusted upwards.

Some of the factors the compliance/enforcement personnel should consider are the following:

- how similar the previous violation was;
- how recent the previous violation was;
- the number of previous violations;
- violator's response to previous violation(s) in regard to correction of problem.

A violation generally should be considered "similar" if the Agency's or State's previous enforcement response should have alerted the party to a particular type of compliance problem. A prior violation of the same or a different RCRA or State requirement would constitute a similar violation.

For purposes of the section, a "prior violation" includes any act or omission for which a formal enforcement response has occurred (eg., EPA or State notice of violation, warning letter, complaint, consent agreement final order, or consent decree). It also includes any act or omission for which the violator has previously been given written notification, however informal, that the Agency believes a violation exists.

In the case of large corporations with many divisions or wholly owned subsidiaries, it is sometimes difficult to determine whether a previous instance of noncompliance should trigger the adjustments described in this section. New ownership often raises similar problems. In making this determination, compliance/enforcement personnel should ascertain who in the organization had control and oversight responsibility for compliance with RCRA or other environmental laws. In those cases the violation will be considered part of the compliance history of that regulated party.

In general, compliance/enforcement personnel should begin with the assumption that if the same corporation was involved, the adjustments for history of non-compliance should apply. In addition, compliance/enforcement personnel should be wary of a party changing operators or shifting responsibility for compliance to different persons or entities as a way of avoiding increased penalties. The Agency may find a consistent pattern of noncompliance by many divisions or subsidiaries of a corporation even though the facilities are at different geographic locations.

This often reflects, at best, a corporate-wide indifference to environmental protection. Consequently, the adjustment for history of noncompliance probably should apply unless the violator can demonstrate that the other violating corporate facilities are independent.

(4) Ability to pay (downward adjustment only)

The Agency generally will not request penalties that are clearly beyond the means of the violator. Therefore, EPA should consider the ability of a violator to pay a penalty. At the same time, it is important that the regulated community not see the violation of environmental requirements as a way of aiding a financially troubled business. EPA reserves the option, in appropriate circumstances, to seek penalties that might put a company out of business. It is unlikely, for example, that EPA would reduce a penalty where a facility refuses to correct a serious violation. The same could be said for a violator with a long history of previous violations. That long history would demonstrate that less severe measures are in-effective.

The burden to demonstrate inability to pay rests on the respondent, as it does with any mitigating circumstance. Thus, a company's inability to pay usually will be considered at the settlement stage, and then only if the issue is raised by the respondent. If the respondent fails to provide sufficient information, then compliance/enforcement personnel should disregard this factor in adjusting the penalty. The National Enforcement Investigations Center (NEIC) has developed the capability to assist the Regions in determining a firm's ability to pay.

When it is determined that a violator cannot afford the penalty prescribed by this policy, or that payment of all or a portion of the penalty will preclude the violator from achieving compliance or from carrying out remedial measures which the Agency deems to be more important than the deterrence effect of the penalty (e.g., payment of penalty would preclude proper closure/postclosure) the following options may be considered:

Consider a delayed payment schedule. Such a schedule might even be contingent upon an increase in sales or some other indicator of improved business.

Consider an installment payment plan with interest.

Consider straight penalty reductions as a last recourse.

The amount of any downward adjustment of the penalty is dependent on the individual financial facts of the case.

These definitions are included as a supplement to our existing Civil Penalty definitions which in all cases are much less detailed. The inclusion of the EPA definitions does not mandate the use of these adjustment factors in the Bureau of Land Recycling and Waste Management Civil Penalty Assessment Calculation but is for the purpose of additional guidance especially as the first three definitions are clearly related to factors which are currently part of our existing civil penalty assessment calculation.

V. (C) MATRIX

A gravity-based matrix has been developed from the Bureau of Land Recycling and Waste Management's Calculation of Civil Penalty Policy. As only Degree of Severity and Willfulness had penalty ranges calculated and both are on a low-moderate-high hierarchy (assuming willful is analogous to high, etc.), then the matrix is developed with the definition of categories as follows:

Willful Violation: a deliberate premeditated action with prior knowledge that the act constituted a violation of environmental statutes, regulations, etc., or a deliberate attempt to circumvent or avoid compliance with same.

Reckless Violation: a violation resulting from the disregard of an obvious risk, the existence, nature, and possible consequences of which were known, or of which prior warning had been given.

Negligent Violation: a violation resulting from the failure to recognize, correct, or prevent a condition which the violator should have recognized carried a certain degree of risk.

Accidental Violation: a violation resulting from factors beyond the control of the violator and, therefore, which could not reasonably have been prevented.

CRITERIA FOR ASSESSING SEVERITY OF INCIDENT

	SEVERE	MODERATE
1.	Loss of service of public or private water supplies contamination exceeding drinking water standards	1. Significant contamination of public or private water supplies not exceeding drinking water standards
2.	Contamination of groundwater sufficient to restrict present or potential future use, or contamination exceeding drinking water standards	2. Measurable contamination of groundwater but not exceeding drinking water standards
3.	Major substrate (soil, streambed, etc.) contamination requiring excavation & removal, extensive treatment or neutralization, or long-term natural recovery	3. Substrate contamination requiring short-term, natural recovery
4.	Destruction, alteration, or contamination of critical habitat of endangered or threatened species	4.
5.	Major fish or wildlife kill or destruction to natural vegetation	5. Limited but significant fish or wildlife kill or destruction to natural vegetation
6.	Incident results in physical injury, illness or death of individuals	6. Incident results in minor injury or illness of individuals
7.	Incident results in major damage to private, personal, or public property	7. Incident results in moderate but significant damage to private, personal. or public property
8.	Incident necessitates prolonged evacuation or evacuation over a comparatively large area	8. Incident necessitates short-term evacuation or evacuation over a limited area
9.	Incident results in a major public nuisance (vectors, odors, smoke, etc.)	9. Incident results in moderate but significant public nuisance
10.	Incident results in a severe or prolonged interruption of public transportation systems	10. Incident results in significant but limited interruption of public transportation systems
11.	Incident results in major impact on land use (agriculture, silviculture, mineral extraction, recreation, future development, etc.)	11. Incident results in significant but limited or short-term impact on land use

CRITERIA FOR ASSESSING SEVERITY OF INCIDENT

SEVERE	MODERATE
12. Incident involves extremely dangerous wastes or large quantities of wastes	12. Incident involves moderately dangerous wastes or limited but significant quantities of wastes
13. The total calculable monetary damage and economic loss (including that from above and any other factors) exceeds $12,500. Do not include any direct Commonwealth expenditures.*	13. The total calculable damage is greater than $5,000, but less than $12,500*

*Consider such factors as loss of fish and wildlife, loss of timber, loss of farm crops and stock, loss of mineral resources, increased costs for water treatment or alternate supply sources, evacuation costs, other emergency response costs (municipal, county, etc.), costs incurred by disruption to transportation systems, economic losses due to altered or restricted land and water uses, etc.

NOTE: Violations which do not produce any of the listed results are considered to be of low severity.

PENALTY ASSESSMENT MATRIX*

		DEGREE OF SEVERITY		
		Major (Severe)	Moderate	Minor
DEGREE OF WILLFULNESS	Major (Willful)	$25,000 max. to $25,000 min.	$25,000 max. to $17,500 min.	$25,000 max. to $13,500 min.
	Moderate (Reckless)	$25,000 max. to $17,500 min.	$25,000 max. to $10,000 min.	$17,500 max. to $ 6,000 min.
	Minor (Negligent)	$25,000 max. to $13,000 min.	$17,500 max. to $ 5,500 min.	$10,000 max. to $1,500 min.
	None (Accidental)	$25,000 max. to $12,500 min.	$12,500 max. to $ 5,000 min.	$ 5,000 max. . to $ 1,000 min.

*Many maximum penalties noted in the matrix cells would have exceeded $25,000; however, that is the statutory maximum allowed per violation.

The selection of the exact penalty amount within each cell is left to the discretion of compliance/enforcement personnel in any given case. Compliance/enforcement personnel should be careful to consider the seriousness of the violation only in selecting the penalty amount within the range. Other factors related to the violator are not considered at this point; they will be considered at the adjustment stage.

V.(D) ADJUSTMENT/MITIGATION AND WORKSHEETS

Adjustments to the matrix-derived penalty will include an initial (additive) adjustment for economic benefit to the violator. This amount will be added to the matrix-derived amount as will the additive amounts calculated under Promptness of Reporting and Violation History. Duration of Violation is discussed in Section V.(E) under multi-day violations.

The present Civil Penalty Policy sets forth the adjustments for Violation History, Promptness of Reporting and Duration of Violation. Economic Benefit (Savings to violator) will be calculated using the EPA format that is included as follows:

EFFECT OF ECONOMIC BENEFIT OF NONCOMPLIANCE

The new civil penalty policy mandates the consideration of the economic benefit of noncompliance to a violator when penalties are assessed. In accordance with the goals of the policy, the Civil Penalty Policy sets forth a system for calculating the economic benefit of noncompliance with RCRA requirements.

An "economic benefit component" should be calculated and added to the gravity-based penalty when a violation results in significant economic benefit to the violator.The following are examples of regulatory areas which should undergo an economic benefit analysis:

- Groundwater monitoring
- Financial requirements
- Closure/post-closure
- Waste determination
- Waste analysis
- Clean-up of discharge
- Part B submittals

For many RCRA requirements, the economic benefit of noncompliance may be difficult to quantify or relatively insignificant. Examples of these types of violations are failure to submit a report or failure to maintain records. In general compliance/enforcement personnel need not calculate the benefit component where it appears that the amount of that component is likely to be less than $2,500.

It is generally the Agency's policy not to settle cases (i.e., the penalty amount) for an amount less than the economic benefit of noncompliance. However, the civil penalty policy does set out three general areas where settling the total penalty amount for less than the economic benefit may be appropriate. The

RCRA policy has added a fourth exception for cases where ability to pay is a factor. The four exceptions are as follows:

the economic benefit component consists of an insignificant amount (i.e., less than $2,500);

there are compelling public concerns that would not be served by taking a case to trial;

it is highly unlikely that EPA will be able to recover the economic benefit in litigation;

the company has documented an inability to pay the total proposed penalty.

If a case is settled for less than the economic benefit component, a justification must be included in the case file.

A. Types of Economic Benefit'

Compliance/enforcement personnel should examine two types of economic benefit from noncompliance in determining the economic benefit component:
Benefit from delayed costs; and
Benefit from avoided costs.

Delayed costs are expenditures that have been deferred by the violator's failure to comply with the requirements. The violator eventually will have to spend the money in order to achieve compliance. Delayed costs are the equivalent of capital costs. Examples of violations which result in savings from delayed costs are:

Failure to install groundwater monitoring equipment;
Failure to submit a Part B permit application; and
Failure to develop a waste analysis plan.

Avoided costs are expenditures which are nullified by the violator's failure to comply. These costs will never be incurred. Avoided costs are the equivalent of operating and maintenance costs. Examples of violations which result in savings from avoided costs are:

Failure to perform annual and semi-annual groundwater monitoring sampling and analysis;

Failure to follow the approved closure plan in removing waste from a facility, where removal is not possible; and

Failure to perform waste analysis before adding waste to tanks, waste piles, incinerators, etc.

B Calculation of Economic benefit

Because the savings that are derived from delayed costs differ from those derived from avoided costs, the economic benefit from delayed and avoided costs are calculated in a different manner. For avoided costs, the economic benefit equals the cost of complying with the requirement, adjusted to reflect income tax effects on the company. For delayed costs, the economic benefit does not equal the cost of complying with the requirements, since the violator will eventually have to spend the money to achieve compliance. The ecomonic benefit for delayed costs consists of the amount of interest on the unspent money that reasonably could ave been earned by the violator during noncomplance. If noncompliance has continued for more than a year, compliance/enforcement personnel should calculate the economic benefit of both the delayed and avoided costs for each year.

The following formula is provided to help calculate the economic benefit component:

Economic Benefit = Avoided Costs (1-T) = (Delayed Costs x Interest Rate)

In the above formula, T represents the firm's marginal tax rate. In the absence of specific information regarding the violator's tax return status, compliance enforcement personnel assume that the company's marginal tax rate is the Federal corporate tax rate for firms whose before-tax profits are greater than $100,000. Compliance/enforcement personnel should calculate interest by using the interest rate charged by the Internal Revenue Service (IRS).

The economic benefit formula provides a reasonable estimate of the economic benefit of noncompliance. If a respondent believes that the benefit is derived from noncompliance differs from the estimated amount, it should present information documenting its actual savings to compliance/enforcement personnel at the settlement stage.

WORKSHEETS

In order to support the penalty proposed in the complaint, compliance/enforcement personnel must include in the case file an explanation of how the proposed penalty amount was calculate. A penalty computation worksheet is to be included in the case file. An example of a worksheet follows.

V. (E) MULTIPLE AND MULTI-DAY PENALTIES

The SWMA states the maximum civil penalty per offense is $25,000, it further states that each violation for each separate day constitutes a separate and distinct offense.

Under existing Bureau policy, separate violations occurring on separate days may be individually assessed and normally should be. The exception is if a violation occurs over a number of days and the collective result is a single incident or pollution event which persists for a number of days. In the particular instance a hybridized calculation is utilized.

Generally, a separate penalty should be assessed for each violation that results from an independent act by the violator and is substantially distinguishable from any other charge in the complaint or Order for which a penalty is to be assessed. For penalty purposes, each of the violations should be assessed separately and the amounts totaled.

As the Department has the authority to assess civil penalties of up to $25,000 per violation per day, with each day that non-compliance continues to be assessed as a separate violation. The economic benefit cost and other adjustments are then added or subtracted from the initial matrix-based monetary amount.

APPENDIX T
Pennsylvania Hazardous Waste Facilities Plan

Pennsylvania Hazardous Waste
FACILITIES PLAN

July 1998

Pennsylvania Department of Environmental Protection
Bureau of Land Recycling & Waste Management

Tom Ridge, Governor
Commonwealth of Pennsylvania

James M. Seif, Secretary
Department of Environmental Protection

Visit DEP through the Pennsylvania homepage at

www.state.pa.us

or directly at

www.dep.state.pa.us

Choose Subjects/Land Recycling & Waste Management

Acknowledgments

The development of this plan was possible due to the effort, ideas, expertise and assistance of the Pennsylvania Hazardous Waste Facilities Planning Advisory Committee (The Pennsylvania Solid Waste Advisory Committee). The members are:

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Pennsylvania Hazardous Waste Facilities Plan

Executive Summary

The Pennsylvania Department of Environmental Protection (DEP) prepared this update to the *Pennsylvania Hazardous Waste Facilities Plan* to satisfy the requirements of the state's Solid Waste Management Act, which was signed into law on July 7, 1980 to provide for the planning and regulation of hazardous waste. The Act directs DEP "to develop, prepare and modify the Pennsylvania Hazardous Waste Facilities Plan,"[1] and states that the plan ". . . shall address the present and future needs for the treatment and disposal of hazardous waste in this Commonwealth."

The plan provides information about hazardous waste generation in Pennsylvania, existing facilities available for treatment and disposal, and types of additional facilities needed for the proper management of waste. It explains pollution prevention and the hazardous waste management hierarchy, and urges hazardous waste generators and owners of facilities to improve upon past technologies in a way that will eliminate or reduce hazardous waste generation and its associated risks.

The plan will play a role in the establishment of new hazardous waste management facilities if a Certificate of Public Necessity (CPN) is required. The Environmental Quality Board is empowered by the Act to issue a CPN, which overrides local restrictions including zoning. When considering an application for a CPN, the Board must consider:

- The extent to which the facility is in compliance with this plan.
- The impact of the proposed facility on adjacent populated areas and areas through which the waste is transported.
- The impact on the municipality in which the facility will be located, including health, safety, cost and consistency with local planning.
- The extent to which citizens have had an opportunity to participate in site selection, including the development of siting criteria, evaluation of alternate sites and technologies, and socioeconomic assessment.

The plan was developed by analyzing available data on hazardous waste generation as defined by DEP regulations. Much of the information (previous to 1991) relies on data gathered for the two previous plans[1]. Information for 1991, 1993 and 1995 was taken from the U.S. EPA's Biennial Reporting System database.

Chapter One explains why the plan was developed, how it was developed, and how it will be used.

---

[1] Previous plans were developed in 1988 and 1992.

Chapter Two presents 1995 data on hazardous waste generation by generators located in Pennsylvania.

- About 49.7 million tons of recurrent hazardous waste were generated in Pennsylvania in 1995. Almost 49.0 million tons were comprised of wastewater and about 751,000 tons were comprised of nonwastewater.

- Of the recurrent nonwastewater, about 55.0 percent was organic liquids, 18.1 percent inorganic solids, and 12.9 percent inorganic liquids.

- Major generators of recurrent nonwastewater were:
  - Chemicals and allied products (SIC code 28) ..... 48.0 percent
  - Primary metal industries (SIC code 33) ..... 30.5 percent
  - Electronic and other electrical equipment (SIC code 36) ..... 10.5 percent

- About 79,000 tons of remediation waste were generated.

Chapter Three examines current (1995) hazardous waste practices within the Commonwealth. This includes existing hazardous waste treatment and disposal facilities, methods used by generators to manage their wastes, and waste management methods used by commercial management facilities. Interstate shipments to and from the Commonwealth are also examined. In 1995:

- About 53.0 million tons of hazardous waste were managed at captive facilities. Almost 52.5 million tons were comprised of wastewater and about 533,000 tons were nonwastewater.

- Solvent recovery accounted for 64.9 percent of captive nonwastewater management. Another 8.4 percent was managed through energy recovery and 11.9 percent through other recovery.

- About 548,000 tons of waste from generators in Pennsylvania were managed commercially. Major generators were:
  - Primary metal industries (SIC code 33) ..... 39.1 percent
  - Chemicals and allied products (SIC code 28) ..... 19.0 percent
  - Electric, gas and sanitary services (SIC code 49) ..... 13.9 percent

- Of the waste generated in Pennsylvania and commercially managed, the most common management methods were:
  - Aqueous inorganic treatment ..... 23.9 percent
  - Metals recovery ..... 17.7 percent
  - Stabilization ..... 16.5 percent
  - Aqueous organic treatment ..... 10.7 percent

- Generators in Pennsylvania sent about 293,000 tons of hazardous waste to out-of-state facilities. Out-of-state generators sent almost 359,000 tons to facilities in Pennsylvania.

- Commercial facilities in Pennsylvania managed about 564,000 tons of hazardous waste. Metals recovery was the largest management category, accounting for over 243,000 tons of this waste.

Chapter Four presents DEP's programs to encourage source reduction and pollution prevention. The chapter discusses the role of the Office of Pollution Prevention and Compliance Assistance and strategies used to reduce hazardous waste generation.

Chapter Five examines the existing commercial hazardous waste management facilities in the Commonwealth and their methods of management, capacities and locations.

Chapter Six develops projections for the commercial management of wastes generated in the Commonwealth. It is anticipated that Pennsylvania generators will commercially manage about 454,000 tons in 2002, and 275,000 tons in 2017.

Conclusions

- **The plan encourages proper captive management of hazardous waste after all economically feasible source reduction and reclamation technologies are given proper consideration.**

- **Generators in Pennsylvania have adequate commercial treatment and disposal capacity available.** The plan projects that in the year 2017, the quantity of in-state hazardous waste to be commercially treated or disposed will be greater than Pennsylvania's current commercial capacity in four treatment and disposal management categories - incineration, 5,548 tons; fuel blending, 14,538 tons; aqueous organic treatment, 30,442 tons; and disposal, 24,855 tons. Due to the national availability of capacity in these four categories, however, the plan finds that generators in Pennsylvania have adequate available capacity.

  This conclusion means no new commercial hazardous waste treatment or disposal facility could obtain a Certificate of Public Necessity that would override local ordinances prohibiting or regulating a facility after the facility received a permit from DEP.

- **Any recovery facility that meets the regulatory test for legitimate use, reclamation or recovery is necessary.** The plan promotes resource recovery over treatment and disposal. Placing limits on the types of recovery facilities, even if there is adequate capacity, could act as a disincentive to developing new and improved resource recovery technologies. The plan projects the quantity of waste to be managed at recovery facilities in the year 2017 will be greater than the current in-state commercial capacity in one recovery management category - solvents recovery (6,844 tons).

TABLE OF CONTENTS

APPENDICES

Chapter 1

INTRODUCTION

Requirements of the Solid Waste Management Act

The Pennsylvania Department of Environmental Protection (DEP) prepared this update to the *Pennsylvania Hazardous Waste Facilities Plan* to satisfy the requirements of the state's *Solid Waste Management Act*, which was signed into law on July 7, 1980 to provide for the planning and regulation of hazardous waste.

The Act directs DEP "to develop, prepare and modify the Pennsylvania Hazardous Waste Facilities Plan,"[1] and states that the plan ". . .shall address the present and future needs for the treatment and disposal of hazardous waste in this Commonwealth." Specifically, the plan must address the following elements:

- Criteria and standards for **siting hazardous waste treatment and disposal facilities.** This requirement was met by the 1986 plan. These regulations can now be found at 25 PA Code Section 269, "Siting."
- An inventory and evaluation of the **sources of hazardous waste concentration** within the Commonwealth, including types and quantities of hazardous waste. This information can be found in Chapter Two of the current plan.
- An inventory and evaluation of **current hazardous waste practices** within the Commonwealth, including existing hazardous waste treatment and disposal facilities. Chapter Three describes existing on-site and off-site hazardous waste management practices.
- A determination of **future facility needs** based on an evaluation of: (1) existing treatment and disposal facilities, including their locations, capacities and capabilities; (2) the existing and projected generation of hazardous waste within the Commonwealth; and (3) the projected generation outside the Commonwealth of hazardous wastes expected to be transported into the Commonwealth for storage, treatment or disposal, where DEP finds such information available. Chapters Two, Three, Five and Six each present a portion of this information. Chapter Six contains projections of hazardous waste generation within the Commonwealth.
- An analysis of methods, incentives, or technologies for **source reduction**, detoxification, reuse, and recovery of hazardous wastes, and a strategy for implementing such methods, incentives, and technologies. The analysis can be found in Chapter Four.
- Identification of such **additional hazardous waste treatment and disposal facilities and their locations** (in addition to existing facilities) as are necessary to provide for the proper

[1] Previous plans were developed in 1986 and 1992.

management of hazardous waste generated within the Commonwealth. This is discussed in Chapters Five and Six.

Objective of the Plan

The objective of this plan is to update the previous (1992) plan as required by the Solid Waste Management Act. In doing so, the plan will determine what additional treatment and disposal capacity is necessary to properly manage hazardous waste generated in Pennsylvania.

How the Plan Was Developed

The plan was developed by analyzing available data on hazardous waste generation as defined by DEP regulations. Much of the data in this report relies on data gathered for the two previous reports, the 1986 plan and the 1992 plan. Data sources analyzed for the 1986 plan included quarterly reports, annual reports, permit applications, and surveys of selected hazardous waste handlers. Data sources for the 1992 plan included quarterly and annual reports and hazardous waste manifests.

Manifests are shipping documents that contain essential information such as the name and address of the shipper and receiver, and the type and quantity of waste being shipped. *Quarterly reports* are summaries of manifested shipments of hazardous waste. *Annual reports* are reports of waste generated and managed onsite.

Upon consultation with the Solid Waste Advisory Committee, DEP utilized the federal Biennial Reporting System database for the updated information (1991, 1993 and 1995) contained in this plan. The Biennial Reporting System is a database maintained by the United States Environmental Protection Agency. It is derived from reports that must be completed every two years by facilities that receive hazardous waste or generate large quantities (usually over 2,200 pounds per month) of hazardous waste.

In March 1994, DEP made a comparison of the differences between the data obtained from hazardous waste manifests and the data obtained from the Biennial Reporting System. The Biennial Reporting System was found to provide more useful data about facilities that generate or manage hazardous waste. Table 1-1 summarizes the differences between the primary data elements of the hazardous waste manifest and the Biennial Reporting System. The advantage of utilizing the Biennial Reporting System is that more useful information is available sooner and at a lower cost.

Manifest data includes small-quantity generator information, while the Biennial Reporting System does not include information on specific small-quantity generators. However, the Biennial Reporting System requires commercial facilities receiving waste from small-quantity generators to report the quantity and type of waste received as well as the method used to manage the waste.

The Biennial Report is completed every other year by facilities that receive hazardous waste or generate large quantities of hazardous waste. The report is divided into four sections:

- **The IC (identification and certification) form** must be completed by all sites that generated large quantities (usually over 2,200 pounds per month) of waste or received waste from offsite. The form provides standard information to identify the site.
- **The GM (generation and management) form** must be filled out by any site that generated or shipped a large quantity (usually over 2,200 pounds per month) of hazardous waste. The form provides information on the type and quantity of waste generated and how it was managed.
- **The WR (waste received) form** is required to be completed by a site if it received hazardous waste from offsite during the year. The form provides information on how much waste was received and how it was managed.
- **The PS (process system) form** is requested to be completed for each individual onsite hazardous waste treatment, disposal, or recycling process system that existed, was planned, or was in the closure process during the year. It provides detailed information on the systems that are used to manage waste onsite.

Table 1-1

Comparison of Hazardous Waste Manifest Versus the Biennial Reporting System

Hazardous Waste Manifest	Biennial Reporting System
Generator Identification	Generator Identification
Management Facility Identification	Management Facility Identification
Unit of Measure	Unit of Measure
EPA Waste Code	EPA Waste Code
Physical State	Form Code (more detailed than physical state)
Container Type	Generation SIC Code
Transporter Identification	Origin Code (e.g., spill)
	Source Code (e.g., painting)
	Point of measurement (e.g., before mixing)
	Radioactive Mixed
	TRI Constituent and CAS number
	TSD System Type (e.g., fuel blending)
	Off-site Availability (e.g., captive)
	Source Reduction Activity for Specific Waste
	Generalized waste minimization information

Pennsylvania Solid Waste Advisory Committee

Section 6018.507(b) of the Solid Waste Management Act specifies that a Hazardous Waste Facilities Planning Advisory Committee be named to assist in the development of the plan. This advisory committee consists of four groups: private citizens, representatives of public interest groups, public

officials, and citizens or representatives of organizations with substantial economic interest in the plan. Committee members are selected for their diverse backgrounds and serve as private citizens, not as representatives of their particular constituencies.

The Pennsylvania Solid Waste Advisory Committee (SWAC) served as the Hazardous Waste Facilities Planning Advisory Committee for the 1997 plan, as it did for the two previous plans. SWAC participated in all aspects of the development of the plan. The committee reviewed all drafts and their recommendations were incorporated into the final plan.

After final adoption of the plan by the Environmental Quality Board, the Solid Waste Management Act calls for the Hazardous Waste Facilities Planning Advisory Committee to disband, "unless the Committee is reconstituted as a provision of the Plan." The advisory committee members and DEP believe the need for the committee's continued input is important, especially concerning the implementation of the plan's recommendations. Therefore, as a provision of this plan, the Hazardous Facilities Planning Advisory Committee is formally reconstituted. SWAC will continue to function as the advisory committee. In accordance with Act 97, Section 507(c), the advisory committee will continue to recommend to DEP "the adoption of such rules and regulations, standards, criteria, and procedures as it deems necessary and advisable" to effect the implementation of this plan.

Public Participation

Public participation played an important role in developing the Pennsylvania Hazardous Waste Facilities Plan. Sharing available information on hazardous waste generation and management helped the Commonwealth promote both environmental protection and economic prosperity.

The Environmental Quality Board accepted the draft Plan at its September 16, 1997 meeting and specified a 60-day comment period, one public meeting and one public hearing. Written notice of the public comment period was placed in the November 1, 1997 edition of the Pennsylvania Bulletin. In addition, the notice was placed in eleven newspapers throughout the Commonwealth during the first week of November.

A public meeting was held on December 4, 1997 followed by a public hearing on December 10, 1997 at the Atherton Hotel in State College. One person presented oral testimony at the public hearing. Four individuals submitted written comments during the public comment period that closed December 30, 1997. The Department prepared a comment/response document to address the comments received during the public comment period. A copy of the comment/response document is available by calling the Planning Section of the Bureau of Land Recycling and Waste Management at (717) 787-7382.

How the Plan Will Be Used

The plan provides information about hazardous waste generation in Pennsylvania, existing facilities available for treatment and disposal of waste, and the types of additional facilities needed for the

proper management of waste. By clearly explaining the Commonwealth's policies of pollution prevention and the hazardous waste management hierarchy, the plan urges hazardous waste generators and owners of facilities to improve upon past technologies in a way that will eliminate or reduce hazardous waste generation and its associated risks.

The plan will play a role in the establishment of new hazardous waste management facilities if a Certificate of Public Necessity (CPN) is required. The Solid Waste Management Act empowers the EQB to issue Certificates of Public Necessity. Section 6018.105 details the "Powers and duties of the Environmental Quality Board." Section 6018.105(h) of the Act states that the issuance of such a certificate ". . .shall suspend and supersede any and all local laws which would preclude or prohibit the establishment of a hazardous waste treatment or disposal facility at said site, including zoning ordinances." The CPN regulations can be found at 25 PA Code Section 269.101--269.163.

The EQB considers several factors, including the plan, in a review of any application for a Certificate of Public Necessity. The factors can be found in 25 Pa. Code Section 269.152-269.155 and include:

- The extent to which the facility is in conformance with the Pennsylvania Hazardous Waste Facilities Plan.
- The impact of the proposed facility on adjacent populated areas and areas through which wastes are transported to the facility.
- The impact on the borough, township, town, home-rule municipality or city in which the facility is to be located in terms of health, safety, cost, and consistency with local planning.
- The extent to which the proposed facility has been the subject of a public participation program in which citizens have had a meaningful opportunity to participate in the evaluation of alternate sites or technologies, the development of siting criteria, a socioeconomic assessment, and all other phases of the site selection process.

Chapter 2

HAZARDOUS WASTE GENERATION
WITHIN PENNSYLVANIA

Chapter Two presents updated information on hazardous waste generation by generators located in Pennsylvania.

Chapter Summary

- About 49.7 million tons of recurrent hazardous waste were generated in Pennsylvania in 1995. Almost 49.0 million tons were comprised of wastewater and about 751,000 tons were comprised of nonwastewater.
- Of the recurrent nonwastewater, about 55.0 percent was organic liquids, 18.1 percent inorganic solids, and 12.9 percent inorganic liquids.
- Major generators of recurrent nonwastewater were:
  - Chemicals and allied products (SIC code 28) ..... 48.0 percent
  - Primary metal industries (SIC code 33)..... 30.5 percent
  - Electronic and other electrical equipment (SIC code 36)..... 10.5 percent
- About 79,000 tons of remediation waste were generated.

Methods Used to Categorize Waste Generation

This chapter will use several methods to classify hazardous waste generation: standard industrial classification codes (SIC codes), source codes, waste categories and waste codes, wastewater and nonwastewater, and recurrent and remediation wastes. The definitions provided below are intended to aid the reader in understanding this report. They are not intended to substitute for, replace or modify statutory or regulatory definitions.

SIC codes are used to classify the **type of generator**. The four-digit codes group various parts of the economy together by the type of product produced or service provided. The first two digits signify a general industrial category, while the last two digits denote specific types of industries. For instance, SIC code 33 represents the general category of the primary metal industries, while SIC code 3312 represents the specific sub-group of blast furnaces and steel mills. SIC codes were obtained from the GM form of the Biennial Report (refer to Chapter 1, Page 3) completed by hazardous waste generators.

Source codes are used to classify the **type of process** that generated the waste. An example of a source code would be A21, waste generated from painting. Wastes generated by different industrial classifications may use the same source code. The plan uses source codes primarily to separate recurrent wastes from remediation wastes. Source codes were obtained from the GM form of the Biennial Report completed by generators of hazardous waste. Refer to Appendix 2-A for a complete listing of source codes.

Waste categories are used to identify the **type of waste** generated. Each waste category contains several more specific *waste codes*. For instance, waste code B302 (soil contaminated with inorganics only) belongs to the more general category, B3 (inorganic solids). Waste categories and codes were obtained from the GM form of the Biennial Report completed by generators of hazardous waste and from the WR form of facilities that received hazardous waste. Table 2-1 contains a listing of all waste categories. For a complete listing of all waste codes and their respective waste categories, see Appendix 2-B.

Table 2-1
Waste Categories

Code	Name	Waste Description
B0	Lab packs	mixed wastes, chemicals, lab wastes.
B1	Inorganic liquids	primarily inorganic and highly fluid (for example, aqueous), with low suspended inorganic solids and low organic content.
B2	Organic liquids	primarily organic and highly fluid, with low inorganic solids content and low-to-moderate water content.
B3	Inorganic solids	primarily inorganic and solid, with low organic content and low-to-moderated water content; not pumpable.
B4	Organic solids	primarily organic and solid, with low-to-moderate inorganic content and water content; not pumpable.
B5	Inorganic sludges	primarily inorganic, with moderate-to high water content and low organic content, and pumpable.
B6	Organic sludges	primarily organic with low-to-moderate inorganic solids content and water content, and pumpable.
B7	Inorganic gases	primarily inorganic with a low organic content and is a gas at atmospheric pressure.
B8	Organic gases	primarily organic with low-to-moderate inorganic content and is a gas at atmospheric pressure.

Wastewater is a predominantly aqueous solution of waste that is contaminated with hazardous constituents. The Biennial Reporting System defines wastewater as a waste with one of the waste codes or management codes listed in Appendix 2-C. If the waste under consideration is reported on the GM form with at least one of the waste codes or management codes listed in the appendix, it is considered wastewater. If none of the codes are present, the waste is classified as *nonwastewater*. For a more complete explanation of management codes, see Page 20.

Recurrent wastes result from ongoing processes that can be expected to continue indefinitely into the future. For example, a steel mill would be expected to generate slag as long as it produces steel.

Recurrent wastes include wastes from manufacturing, construction, utilities, some services, and government. The quantity of waste generated can be expected to vary directly with the amount of economic activity in these sectors. If the generator does **not** report one of the source codes listed in Table 2-2, this plan considers the waste to be recurrent.

Table 2-2

Source Codes Used to Identify Remediation Wastes

Code	Description
A61	Superfund remedial action
A62	Superfund emergency response
A63	RCRA corrective action at solid waste management unit
A64	RCRA closure of hazardous waste management unit
A65	Underground storage tank cleanup
A69	Other remediation
A93	Closure of management unit(s) or equipment other than by remediation specified in codes A61 - A69

Remediation wastes are the result of a one-time-only remediation effort. An example would be the clean-up of a Superfund site. Once the site is clean, no more waste will be generated by that site. Remediation wastes can be identified on the GM form of the hazardous waste report by their source codes. If the generator **does** report one of the source codes listed in Table 2-2, this plan considers the waste to be a remediation waste.

Hazardous Waste Generation in Pennsylvania

This part of the chapter examines hazardous waste generation in Pennsylvania - first recurrent wastes, then remediation wastes. The two are then combined to determine total hazardous waste generation in Pennsylvania.

Recurrent Waste Generation by Industry

Including Wastewater

Total recurrent waste generation in Pennsylvania in 1995 was about 49.7 million tons. The leading generator was petroleum refining and related industries (SIC code 29). This SIC code generated almost 23.6 million tons or 47.4 percent of total recurrent waste. Over 99.9 percent of the recurrent waste generated by petroleum refining and related industries was wastewater. The next largest generating industry was primary metals (SIC code 33). About 98.4 percent of the recurrent waste generated by this SIC code was wastewater.

Five two-digit SIC codes generated more than one million tons of recurrent hazardous waste (including wastewater), as shown in Table 2-3. Combined, these five SIC codes generated almost 47.5 million tons, or 95.5 percent of the total. Appendix 2-D contains a listing of total recurrent hazardous waste generation by SIC codes cross-referenced with waste categories.

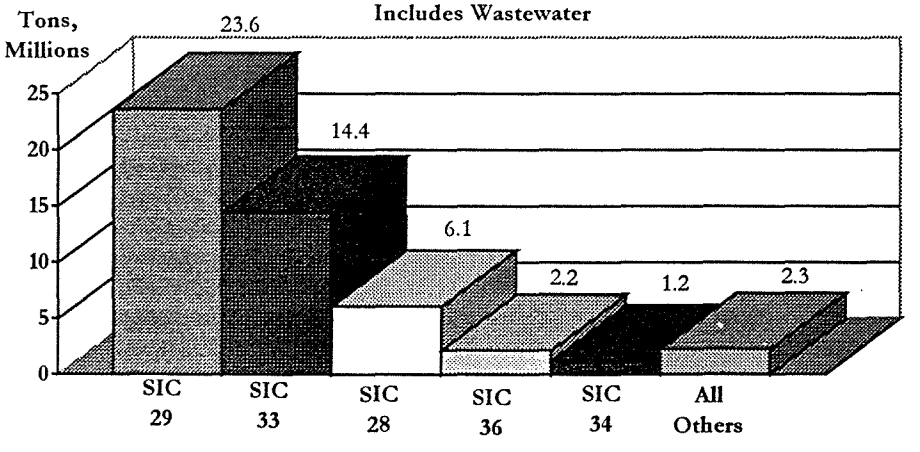
Table 2-3

Total Recurrent Waste Generation in Pennsylvania - 1995

SIC Code	SIC Code Description	Nonwaste-water	Wastewater	Total* Tons	% of Total
29	Petroleum refining and related industries	17,492	23,558,403	23,575,895	47.4%
33	Primary metal industries	229,253	14,191,813	14,421,065	29.0%
28	Chemicals and allied products	360,605	5,724,169	6,084,774	12.2%
36	Electronic and other electrical equipment	78,913	2,136,288	2,215,201	4.5%
34	Fabricated Metal Products	22,982	1,165,785	1,188,767	2.4%
	All other SICs combined	41,514	2,213,675	2,255,190	4.5%
	Total*	750,759	48,990,133	49,740,892	100.00%

Source: 1995 Biennial Reporting System, GM Form
*Some totals do not add due to rounding

Tons of Recurrent Hazardous Waste Generated - 1995



Total Recurrent Waste Generation by Waste Category

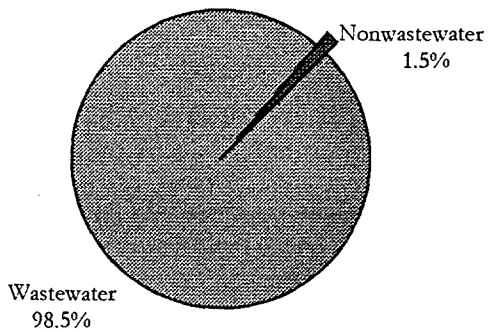
Table 2-4 shows the quantity of recurrent hazardous waste generated in Pennsylvania by waste category. Each waste category is further divided into wastewater and nonwastewater. Almost 98.5 percent of the total hazardous waste generated was wastewater.

Table 2-4

Generation of Recurrent Hazardous Waste - 1995

Waste Cat.	Category Description	Nonwaste-water	Wastewater	Total Tons
B0	Lab packs	615	17	632
B1	Inorganic liquids	97,069	25,310,486	25,407,555
B2	Organic liquids	412,590	23,662,223	24,074,814
B3	Inorganic solids	135,526	4,076	139,603
B4	Organic solids	3,157	3,071	6,228
B5	Inorganic sludges	57,431	9,236	66,668
B6	Organic sludges	44,355	1,022	45,377
B7	Inorganic gases	1	0	1
B8	Organic gases	15	0	15
	Total*	**750,759**	**48,990,133**	**49,740,892**

*Some totals do not add due to rounding.
Source: 1995 Biennial Reporting System, GM Form



Recurrent Wastewater Generation

About 98.5 percent of the total recurrent hazardous waste generated in Pennsylvania was wastewater. Virtually all (more than 99.9 percent) of the wastewater was composed of two waste categories - inorganic (B1) and organic (B2) liquids.

The waste category of inorganic liquids (B1) was comprised mainly of four specific waste codes, each containing more than two million tons. Together, these waste codes accounted for 73.8 percent of the total recurrent inorganic liquids. The waste codes are:

- Acidic aqueous waste (B105) ..... 9.6 million tons
- Other inorganic liquids (B119) ..... 3.1 million tons
- Aqueous waste with low other toxic organics (B102) ..... 3.1 million tons
- Aqueous waste with low solvents (B101) ..... 2.9 million tons

About 14.2 million tons of the inorganic liquid wastewater was generated by primary metal industries (SIC code 33). Chemicals and allied products (SIC code 28) generated almost 5.6 million tons of inorganic liquid wastewater.

The category of organic liquids (B2) was dominated by one waste code - waste oil or emulsion mixture (B205). This one waste code contained 23.5 million tons, or 99.4 percent of all the organic liquids. Virtually all (99.4 percent) organic liquids were generated by petroleum refining and related industries (SIC code 29).

Appendix 2-E shows generation of recurrent wastewater by two-digit SIC codes cross-referenced with waste categories.

Recurrent Nonwastewater Generation

Wastewater does not present the management problems that nonwastewater presents (refer to Chapter 3, Page 25). Because of this, nonwastewater generation is examined separately in this section.

Table 2-5 shows recurrent nonwastewater generation by waste category. Over 750,000 tons of recurrent nonwastewater were generated in Pennsylvania in 1995. Organic liquids made up most (55.0 percent) of the total nonwastewater.

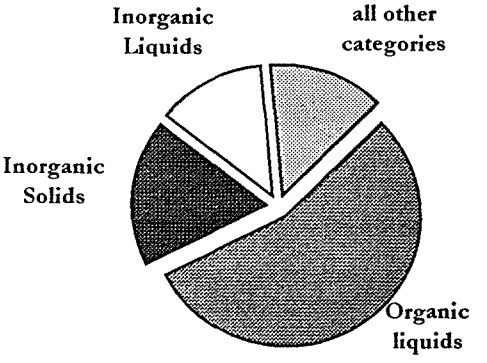
Table 2-5

Generation of Recurrent Nonwastewater - 1995

Waste Cat.	Category Description	Tons of Nonwastewater	Percent of Total Generation
B0	Lab packs	615	0.1%
B1	Inorganic liquids	97,068	12.9%
B2	Organic liquids	412,591	55.0%
B3	Inorganic solids	135,526	18.1%
B4	Organic solids	3,157	0.4%
B5	Inorganic sludges	57,431	7.6%
B6	Organic sludges	44,355	5.9%
B7	Inorganic gases	1	less than 0.1%
B8	Organic gases	15	less than 0.1%
	Total	**750,759**	**100.0%**

*Rounded to the nearest ton

Source - 1995 Biennial Reporting System, GM Form



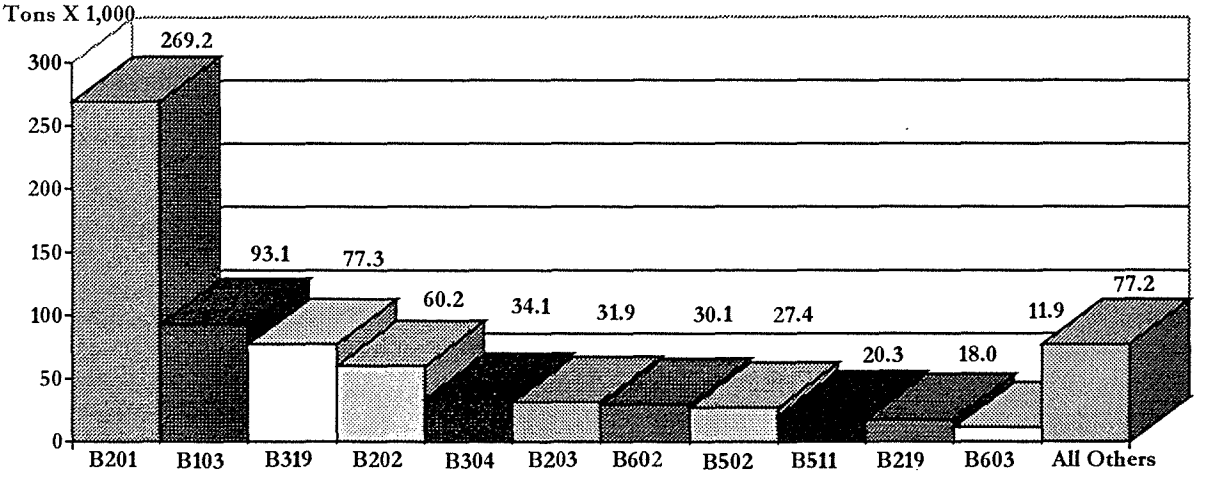
Of the 89 waste codes specified in the biennial report, 11 contained more than 10,000 tons of recurrent nonwastewater. These 11 codes (Table 2-6) accounted for about 89.6 percent of the recurrent nonwastewater generated.

Table 2-6

Waste Codes With Over 10,000 Tons of Recurrent Nonwastewater - 1995

Waste Code	Code Description	Tons	Percent of Total
B201	Concentrated solvent-water solution	269,224	35.9%
B103	Spent acid with metals	93,140	12.4%
B319	Other waste inorganic solids	77,263	10.3%
B202	Halogenated (e.g. chlorinated) solvent	60,217	8.0%
B304	Other "dry" ash, slag, or thermal residue	34,057	4.5%
B203	Nonhalogenated solvent	31,880	4.2%
B602	Still bottoms of nonhalogenated solvents or other organic liquids	30,121	4.0%
B502	Lime sludge with metals/metal hydroxide sludge	27,400	3.6%
B511	Air pollution control device sludge	20,259	2.7%
B219	Other organic liquids	18,024	2.4%
B603	Oily Sludge	11,933	1.6%
	All others combined	77,241	10.3%
	Totals	750,759	99.9%

*Does not total 100.0% due to rounding
Source: 1995 Biennial Reporting System, GM Form



The waste code containing the largest quantity of waste, concentrated solvent-water solution (B201), accounted for 35.9 percent of the total waste. Appendix 2-F contains a complete listing of recurrent nonwastewater generation by waste code.

Table 2-7 shows the two-digit SIC codes that generated more than 5,000 tons of recurrent nonwastewater. Waste was reported under 48 two-digit and 294 four-digit SIC codes. The seven two-digit SIC codes listed in Table 2-7 accounted for 96.1 percent of the recurrent nonwastewater generated in Pennsylvania during 1995. Appendix 2-G shows recurrent nonwastewater generation by two-digit SIC code cross-referenced with waste categories.

Table 2-7

Two-Digit SICs That Generated Over 5,000 tons of Recurrent Nonwastewater - 1995

SIC Code	SIC Description	Tons Generated*	Percent of Total
28	Chemicals and allied products	360,605	48.0%
33	Primary metal industries	229,253	30.5%
36	Electronic & other electrical equipment	78,913	10.5%
34	Fabricated metal products	22,982	3.1%
29	Petroleum refining and related industries	17,492	2.3%
37	Transportation	6,627	0.9%
32	Stone, clay, glass and concrete products	5,889	0.8%
	All other SICs combined	28,998	3.9%
	Total	750,759	100.0%

*Rounded to the nearest ton.
Source: 1995 Biennial Reporting System, GM Form

Chemical and allied products (SIC code 28) was the largest generator of recurrent nonwastewater. Over 76.8 percent (277,035 tons) of this waste came from medicinals and botanicals (SIC code 2833). Another 11.5 percent (41,410 tons) was generated by industrial organic chemicals, nec (SIC code 2869); 5.4 percent (19,349 tons) was generated by plastics material and resins (SIC code 2821); and 3.6 percent (12,949 tons) was generated by paints and allied products (SIC code 2851).

Chemicals and allied products generated 268,625 tons of concentrated solvent-water solution (B201); 29,384 tons of still bottoms of halogenated solvents or other organic liquids (B602); 23,431 tons of nonhalogenated solvent (B203); and 15,444 tons of other organic liquids (B219). Together, these four waste codes accounted for about 93.4 percent of nonrecurrent hazardous waste generated by chemicals and allied products (SIC code 28).

More than 96.1 percent of the waste generated by primary metals industries (SIC code 33) came from five specific SIC codes: blast furnaces and steel mills (SIC code 3312) - 107,439 tons; steel pipes and tubes (SIC code 3317) - 48,662 tons; secondary nonferrous metals (SIC code 3341) - 28,835 tons; cold finishing of steel shapes (SIC code 3316) - 27,816 tons; and primary nonferrous metals, *nec** (SIC code 3339) - 7,467 tons.

The two largest types of waste generated by primary metal industries were spent acid with metals (B103) - 66,894 tons, and other waste inorganic solids (B319) - 65,886 tons. Three other waste codes contained more than 20,000 tons: other "dry" ash, slag or thermal residue (B304) - 22,418 tons; halogenated solvent (B202) - 21,320 tons; and air pollution control device sludge (B511) - 20,214 tons. Together, these

* nec = not elsewhere classified

five waste codes accounted for more than 85.8 percent of the waste generated by primary metal industries.

In the category of recurrent nonwastewater by electronics and other electrical equipment (SIC code 36), two SIC codes dominated generation: Printed circuit boards (SIC code 3672) generated 39,618 tons and storage batteries (SIC code 3691) generated 33,149 tons. Two waste codes generated by electronic and other electrical equipment contained over 10,000 tons: halogenated solvent (B202) - 37,508 tons and spent acid with metal (B103) - 15,073 tons.

About 47.9 percent (11,005 tons) of the waste generated by fabricated metals (SIC code 34) came from metal coatings and allied services (SIC code 3479). The remaining 52.1 percent was spread out over a number of four-digit SIC codes. Spent acid with metals (B103) accounted for 46.0 percent (10,576 tons) of the waste. There were no other dominant types of waste generated by fabricated metals.

Under petroleum refining and related industries (SIC code 29), petroleum refining (SIC code 2911) generated nearly all (94.3 percent) of the waste - 16,840 tons. The largest type of waste generated by petroleum refining and related industries was oily sludge (B603) - 11,412 tons.

In transportation (SIC code 37), motor vehicle parts and accessories (SIC code 3714) generated 3,120 tons (47.1 percent) of the total waste. The largest waste generated by transportation (SIC code 37) was waste oil (B206) - 1,652 tons.

Pressed and blown glass, *nec* (SIC code 3229) accounted for 2,384 tons of the waste generated by stone, clay and glass products (SIC code 32). The waste code of "other waste inorganic solids" (B319) contained 2,130 tons of the waste generated by SIC code 32. Ash, slag and other residue from incineration of wastes (B303) constituted another 2,054 tons.

Remediation Wastes

Remediation wastes are the result of a one-time-only remediation effort. Wastes reported on the GM form under one of the source codes listed in Appendix 2-H were identified as remediation wastes. A total of 178 sites reported remedial waste generation. Groundwater contaminated with hazardous waste is not classified as a solid waste and does not appear in the generation figures.

Table 2-8 shows remediation waste tonnages by source code. Nonwastewater made up 97.9 percent of total remediation waste, while wastewater comprised 2.1 percent of the total. Other remediation (A69) was the source code most listed, with 103 generators reporting under this source code. Most of these generators were engaged in voluntary clean-ups. Other remediation (A69) accounted for about 41.7 percent (33,812 tons) of the total remediation waste.

Table 2-8

Generation of Remediation Waste - 1995

Source Code	Description	# Generators Reporting	Tons Wastewater Generated	Tons Nonwastewater Generated	Total * Tons Generated
A61	Superfund remedial action	15	524	2,300	2,824
A62	Superfund emergency response	1	281	0	281
A63	RCRA corrective action at solid waste management unit	9	90	2,903	2,993
A64	RCRA closure of hazardous waste management unit	4	0	39,528	39,528
A65	Underground storage tank cleanup	34	9	834	842
A69	Other remediation	103	746	33,066	33,812
A93	Closure of management unit(s) or equipment other than by remediation specified in codes A61--A69	23	72	658	730
	Total*	**178****	**1,720**	**79,290**	**81,010**

**Some totals do not add due to rounding*
***Some sites reported under more than one source code*
Source: 1995 Biennial Reporting System, GM Form

RCRA closure of hazardous waste management unit (A64) constituted the largest percentage - 48.8 - of total remediation wastes. Only four generators contributed to this source code.

Table 2-9 shows the quantity of nonwastewater remediation waste generated by waste category. The two largest categories, organic sludges and inorganic solids, when combined, accounted for a total of 96.2 percent of the total nonwastewater remediation waste. See Appendix 2-H for total tons of remediation waste (including wastewater) generated by source code cross-referenced with waste categories.

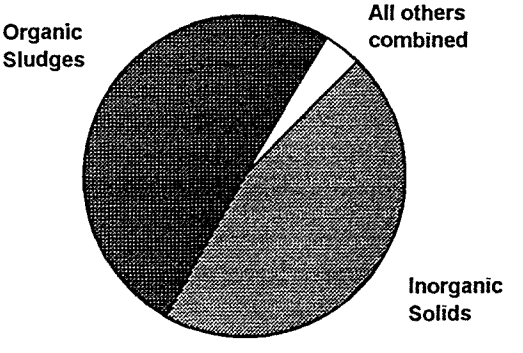
Table 2-9

Tons Generated of Remediation Waste - 1995

Nonwastewater Only

Waste Cat.	Category Description	Nonwaste-water*	Percent of Total
B0	Lab Packs	1	less than 0.1%
B1	Inorganic Liquids	97	0.1%
B2	Organic Liquids	1,281	1.6%
B3	Inorganic Solids	36,402	45.9%
B4	Organic Solids	1,552	2.0%
B5	Inorganic Sludges	39	less than 0.1%
B6	Organic Sludges	39,918	50.3%
	Total	**79,290**	99.9%

** Rounded to the nearest ton. Does not add to 100.0% due to rounding*
Source: 1995 Biennial Reporting System, GM Form



Organic paint or ink sludge (B603) accounted for 39,436 tons of the nonwastewater organic sludges. Almost all of this waste (39,350 tons) came from one RCRA closure of a hazardous waste management unit. Inorganic solids contained two predominant waste codes: soil contaminated with inorganics only (B302) - 21,993 tons and other waste inorganic solids (B319) - 6,240 tons.

Total Nonwastewater Generation of Recurrent and Remediation Wastes

This section combines nonwastewater generation of recurrent and remediation wastes to determine total nonwastewater generation in 1995. Table 2-10 shows total nonwastewater generation by waste category.

Table 2-10

Tons of Recurrent and Remediation Wastes (1995)

Nonwastewater Only

Waste Cat.	Category Description	Tons* Recurrent Waste	Tons* Remediation Waste	Total Tons*	% of Total
B0	Lab packs	615	1	616	0.1%
B1	Inorganic liquids	97,068	97	97,165	11.7%
B2	Organic liquids	412,591	1,281	413,871	49.9%
B3	Inorganic solids	135,526	36,402	171,928	20.7%
B4	Organic solids	3,157	1,552	4,709	0.6%
B5	Inorganic sludges	57,431	39	57,470	6.9%
B6	Organic sludges	44,355	39,918	84,273	10.2%
B7	Inorganic gases	1	.	1	less than 0.1%
B8	Organic gases	15	.	15	less than 0.1%
	Totals	**750,759**	**79,290**	**830,048**	**100.1%**

**Rounded to the nearest ton. Some totals do not add due to rounding.*

Source: 1995 Biennial Reporting System, GM Form

Organic sludges (B6) was the waste category most affected by the addition of remediation wastes (mostly organic paint or ink sludge), nearly doubling this waste category. Inorganic solids (B3) also grew significantly as a result of adding remediation wastes.

See Appendix 2-I for generation of total nonwastewater by waste category cross-referenced with SIC codes.

Chapter Three

HAZARDOUS WASTE MANAGEMENT

Chapter Three examines current hazardous waste practices within the Commonwealth. This includes existing hazardous waste treatment and disposal facilities, methods used by generators to manage their wastes, and waste management methods used by commercial management facilities. Because hazardous waste generators send waste across state boundaries for management, interstate shipments to and from the Commonwealth also are examined.

Chapter Summary

- About 53.0 million tons of hazardous waste were managed at captive facilities. Almost 52.5 million tons were comprised of wastewater and about 533,000 tons were nonwastewater.

- Solvent recovery accounted for 64.9 percent of captive nonwastewater management. Another 8.4 percent was managed through energy recovery and 11.9 percent through other recovery.

- About 548,000 tons of waste from generators in Pennsylvania were managed commercially. Major generators were:

  Primary metal industries (SIC code 33) ..... 39.1 percent
  Chemicals and allied products (SIC code 28) ..... 19.0 percent
  Electric, gas and sanitary services (SIC code 49)..... 13.9 percent

- Of the waste generated in Pennsylvania and commercially managed, the most common management methods were:

  Aqueous inorganic treatment ..... 23.9 percent
  Metals recovery..... 17.7 percent
  Stabilization ..... 16.5 percent
  Aqueous organic treatment..... 10.7 percent

- Generators in Pennsylvania sent about 293,000 tons of hazardous waste to out-of-state facilities. Out-of-state generators sent almost 359,000 tons to facilities in Pennsylvania.

- Commercial facilities in Pennsylvania managed about 564,000 tons of hazardous waste. Metals recovery was the largest management category, accounting for more than 243,000 tons of this waste.

Terms Used in This Chapter

The definitions provided below are intended to aid the reader in understanding this report. They are not intended to substitute for, replace, or modify statutory or regulatory definitions.

Captive facilities manage only wastes generated by their own company. The wastes can be treated *onsite* at the place of generation or be shipped *offsite* to another facility owned by the same company.

Commercial facilities manage wastes generated offsite and received from other companies. The commercial facility receiving the waste is not owned by the same company that shipped the waste.

Manifests are shipping documents that contain essential information to safely track and manage hazardous waste from its point of origin to its final disposal. Information includes the name and address of the shipper and receiver, the type and quantity of waste being shipped, and how to handle spills and other environmental releases. A generator **must use a manifest any time hazardous waste is transported offsite,** whether to a captive or commercial facility.

Management codes are used to classify the specific methods and processes that captive and commercial facilities use to manage hazardous waste. Similar management codes can be grouped together into management categories.

Management categories are used to group similar waste management codes or processes together. By grouping similar management processes together, a broader perspective is gained to better quantify the management of hazardous waste.

Table 3-1 shows the 14 management categories used in the Biennial Reporting System. A breakout of one management category is given to help clarify the relationship between management categories and management codes. Appendix 3-A contains a complete listing of management categories and codes.

Chart 3-1

Management Categories

Category Code	Category Description
M01	Metals Recovery (for reuse)
M02	**Solvents Recovery**
M03	Other Recovery
M04	Incineration
M05	Energy Recovery (for reuse as fuel)
M06	Fuel Blending
M07	Aqueous Inorganic Treatment
M08	Aqueous Organic Treatment
M09	Aqueous Organic & Inorganic Treatment
M10	Sludge Treatment
M11	Stabilization
M12	Other Treatment
M13	Disposal
M14	Transfer Facility Storage

Management Codes for Solvents Recovery

Mgmt Code	Code Description
M021	Fractionation/distillation
M022	Thin film evaporation
M023	Solvent extraction
M024	Other solvents recovery
M029	Solvent recovery - type unknown

Metals recovery technologies are designed to separate desired metals from other constituents of hazardous wastes.

Solvents recovery technologies are designed to separate the hazardous constituents from a solvent in order to make the solvent reusable.

Other recovery technologies are those not included under energy recovery, metals recovery or solvents recovery.

Incineration is controlled combustion for the primary purpose of thermal breakdown of hazardous waste. Flue gases resulting from incineration are treated to prevent remaining wastes from becoming air-borne.

Energy recovery (reuse as fuel) systems burn hazardous waste for its fuel value. The hazardous waste is usually in liquid form.

Fuel blending is the process of blending hazardous waste streams together, generally in tanks, to obtain a fuel that meets specifications of fuel burners.

Aqueous inorganic treatment refers to the removal of inorganic compounds from a solution that is mostly water.

Aqueous organic treatment refers to the removal of organic compounds from a solution that is mostly water.

Aqueous organic and inorganic treatment refers to the removal of both organic and inorganic compounds from a solution that is mostly water.

Sludge Treatment refers to the stabilization or removal of hazardous waste constituents from a waste that is a mixture of both liquids and solids.

Stabilization refers to a treatment process that chemically or physically immobilizes the hazardous constituents in the waste by binding the hazardous constituents into a solid mass. The resulting product has a low permeability that resists leaching.

Other Treatment refers to treatment technologies that are not covered under the management categories of aqueous inorganic treatment, aqueous organic treatment, aqueous organic and inorganic treatment and sludge treatment.

Disposal refers to the placement of a waste into or on land or water where the waste will remain after closure of the disposal facility.

Transfer facility storage captures those hazardous wastes that are shipped offsite to be stored for short periods of time. Sometimes the waste is bulked with other shipments before it is sent elsewhere for management.

Management of Waste Generated in Pennsylvania

Pennsylvania was one of the first states to implement hazardous waste planning, predating even the U.S. EPA's categorization of wastes in its biennial reporting system. As a result, Pennsylvania's previous plan contained 10 management categories, a number of which were the same as those listed above. EPA's categorization, however, provides a clearer picture of waste management and is used in this plan update.

The source of numerical information in this chapter is the GM form of the 1995 Hazardous Waste Report (see Chapter One, Page 2), unless otherwise noted.

As stated at the beginning of this chapter, a generator can treat waste at a captive facility or send the waste to a commercial facility. Table 3-1 examines the different types of waste managed at captive and commercial facilities by management method. The table includes both RCRA-exempt and nonexempt wastes as well as wastes the Commonwealth has determined to be hazardous. All wastes listed in the table are generated in Pennsylvania. Waste generated out-of-state is excluded from the table, but will be discussed later in the chapter. Appendix 3-A gives a complete listing of management categories and subcategories.

In Chapter Two, the total quantity of waste *generated* is shown as 49.9 million tons, about 3.7 million tons less than the quantity of waste shown as *managed* in this Chapter. Management of groundwater - primarily at six clean-up sites - accounted for almost all of this difference. Contaminated groundwater is not classified as a solid waste and, therefore, **not reported as generated**. Once the water enters treatment, however, it is **reported as managed**.

Of the total waste generated and managed in the state, 99.0 percent is managed at captive facilities. About 1.0 percent is sent to commercial facilities.

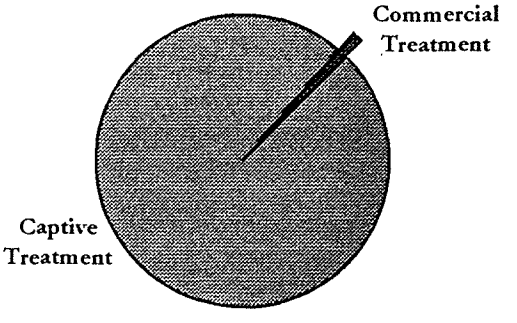
The three largest management categories (aqueous inorganic treatment, aqueous organic treatment, and other treatment) accounted for about 97.6 percent of the total waste managed in 1995.

Table 3-1

Management of Waste Generated in Pennsylvania - 1995

Management Category	Mgmt Code	Tons Managed* - Captive Facilities	Tons Managed* - Commercial Facilities	Total Tons* Managed in PA
Metals Recovery (for reuse)	M01	14,626	97,307	111,934
Solvents Recovery	M02	367,809	14,553	382,363
Other Recovery	M03	68,783	31,667	100,450
Incineration	M04	13,980	11,785	25,765
Energy Recovery (reuse as fuel)	M05	44,707	9,909	54,616
Fuel Blending	M06	0	30,728	30,728
Aqueous Inorganic Treatment	M07	14,900,948	131,156	15,032,104
Aqueous Organic Treatment	M08	16,680,377	58,692	16,739,070
Aqueous Org. & Inorg. Treatment	M09	382,263	23,023	405,285
Sludge Treatment	M10	13,763	2,384	16,146
Stabilization	M11	3,852	90,572	94,424
Other Treatment	M12	20,469,021	7,432	20,476,453
Disposal	M13	45,573	22,630	68,203
Transfer Facility Storage	M14	4	16,445	16,449
TOTALS		**53,005,706**	**548,282**	**53,553,988**

*Rounded to the nearest ton. Some totals do not add due to rounding.
Source: GM form of 1995 Biennial Report



Waste Managed at Captive Facilities

Table 3-2 shows how waste was managed at captive facilities by generators located in Pennsylvania. Each management category is broken down by wastewater and nonwastewater.

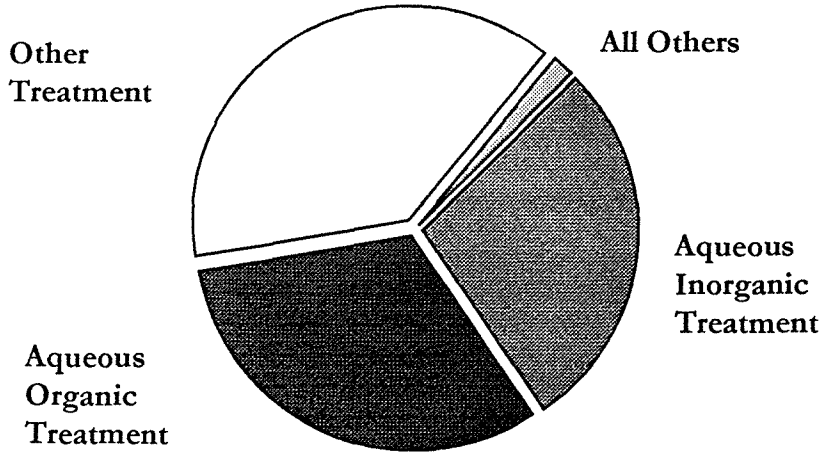
Table 3-2

Captive Management of Waste Generated in Pennsylvania

Mgmt Cat.	Category Description	Tons Wastewater	Tons Nonwastewater	Total Tons	Percent of Total
M01	Metals recovery	0	14,627	14,626	less than 0.1%
M02	Solvents recovery	22,193	345,616	367,809	0.7%
M03	Other recovery	5,117	63,666	68,783	0.1%
M04	Incineration	6,759	7,221	13,980	less than 0.1%
M05	Energy recovery	0	44,707	44,707	0.1%
M06	Fuel blending	0	0	0	0.0%
M07	Aqueous inorganic treatment	14,900,948	0	14,900,948	28.1%
M08	Aqueous organic treatment	16,680,377	0	16,680,377	31.5%
M09	Aqueous org. & inorg. trtmnt	382,262	0	382,263	0.7%
M10	Sludge treatment	0	13,762	13,763	less than 0.1%
M11	Stabilization	0	3,852	3,852	less than 0.1%
M12	Other Treatment	20,469,021	0	20,469,021	38.6%
M13	Disposal	6,223	39,350	45,573	0.1%
M14	Transfer facility storage	1	3	4	less than 0.1%
	TOTALS	**52,472,902**	**532,804**	**53,005,706**	**99.9%**

*Rounded to the nearest ton. Some totals do not add due to rounding. Does not add to 100.0 percent do to rounding.
Source: GM form 0f 1995 Biennial Report

Comparison of Total Tons by Management Category



The three largest management categories (aqueous inorganic treatment, aqueous organic treatment, and other treatment) made up 98.2 percent of all the waste generated in Pennsylvania and managed at captive facilities.

Captive Management of Wastewater

Due to the potentially huge costs associated with shipping wastewater to commercial facilities and the availability of effective and economical onsite treatment methods, wastewater usually is treated onsite. After the water is treated to remove contaminants, it usually is returned to the water source or reused by the generator.

Under the management category of aqueous inorganic treatment (M07):

- 6.4 million tons was managed by chemical precipitation (M077). About 4.2 million tons of this waste came from primary metal industries (SIC code 33).
- 3.8 million tons was managed by other aqueous inorganic treatment (M078). Virtually all (99.97 percent) of this waste came from primary metal industries (SIC code 33). About 3.5 million tons of this waste was spent pickle liquor managed through lime neutralization followed by settling in surface impoundments.
- 3.6 million tons was managed by chrome reduction followed by chemical precipitation (M071). About 2.0 million tons of this waste came from primary metal industries (SIC code 33).

Under the management category of aqueous organic treatment (M08):

- 10.7 million tons were managed by biological treatment (M081). Virtually all (99.9 percent) of this waste came from petroleum refining and related industries (SIC code 29).
- 2.9 million tons were managed by carbon adsorption (M082). About 2.8 million tons of this waste came from chemicals and allied products (SIC code 28).
- 2.8 million tons were managed by air/stream stripping (M083). About 2.0 million tons of this waste came from chemicals and allied products (SIC code 28).

Under the management category of other treatment (M12):

- 13.0 million tons were managed by other treatment (M125). About 12.9 million tons of this waste were in the form of wastewater from petroleum refining and related industries (SIC code 29). About 8.0 million tons of the wastewater from SIC code 29 was pretreated by solids/oil separation and neutralization prior to discharge to a publicly owned treatment work. About 4.6 million tons of this wastewater contained benzene and was processed through an NPDES permitted wastewater treatment facility.
- 6.7 million tons were managed by neutralization only (M121). About 3.1 million tons of this waste were generated by primary metal industries (SIC code 33) and about 2.2 million tons came from chemicals and allied products (SIC code 28).

Captive Management of Nonwastewater

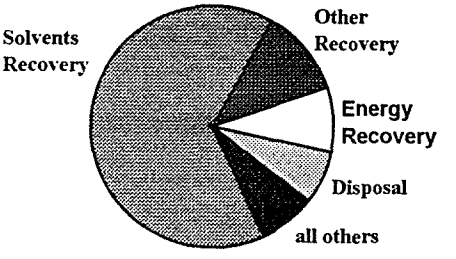
When wastewater is subtracted out of captive management, the remainder of waste managed at captive facilities breaks down into the management categories shown in Table 3-3.

Table 3-3

Captive Management of Nonwastewater Generated in PA - 1995

Mgmt Cat..	Category Description	Tons* Nonwastewater	Percent of Total
M02	Solvents recovery	345,616	64.9%
M03	Other recovery	63,666	11.9%
M05	Energy recovery	44,707	8.4%
M13	Disposal	39,350	7.4%
M01	Metals recovery	14,627	2.7%
M10	Sludge treatment	13,762	2.6%
M04	Incineration	7,221	1.4%
M11	Stabilization	3,852	0.7%
M14	Transfer facility storage	3	less than 0.1%
M06	Fuel blending	0	0.0%
M07	Aqueous inorganic treatment	0	0.0%
M08	Aqueous organic treatment	0	0.0%
M09	Aqueous org. & inorg. trtmnt	0	0.0%
M12	Other Treatment	0	0.0%
	TOTALS	**532,804**	**100.0%**

*Rounded to the nearest ton.
Source: GM form of 1995 Biennial Report



Most (520,516 tons) waste managed at captive facilities was treated onsite. Only 12,288 tons were sent offsite for management. The four largest management categories - solvents recovery (M02), other recovery (M03), energy recovery (M05), and disposal (M13) - accounted for 92.6 percent of total captive management.

Solvent recovery (M02) was the management method used for 64.9 percent of the waste managed at captive facilities. About 99.4 percent (343,563 tons) of the waste in the solvent recovery category was managed by fractionation/distillation (M021). Medicinals and botanicals (SIC code 2833) - 272,135 tons, printed circuit boards (SIC code 3672) - 37,321 tons, and steel pipes and tubes (SIC code 3317) - 19,373 tons were the SIC codes that managed the most waste through fractionation/distillation (M021).

The management category of other recovery (M03) was dominated by acid regeneration (M031), which was used to manage 63,431 tons of waste. Steel pipes and tubes (SIC code 3317) - 26,020 tons, storage batteries (SIC code 3691) - 14,718 tons, and blast furnaces and steel mills (SIC code 3312) - 12,365 tons accounted for 83.7 percent of the waste managed under acid regeneration.

Energy recovery of liquids (M051) accounted for all but one ton of the waste managed under the category of energy recovery (M05). Industrial organic chemicals, *nec* (SIC code 2869) used this method to manage 35,146 tons, and plastics materials and resins (SIC code 2821) used it for 9,195 tons.

All of the waste in the category of disposal (M13) was managed at surface impoundments (M133). Petroleum refining (SIC code 2911) generated all of the waste managed at surface impoundments.

Appendix 3-B cross-references the management categories of captive nonwastewater with two-digit SIC codes of generators located in Pennsylvania.

Use of Commercial Facilities by Generators in Pennsylvania

Generators in Pennsylvania (a total of 47 two-digit SIC codes) had about 548,000 tons of hazardous waste commercially managed in 1995. Table 3-4 lists the seven two-digit SIC codes that had more than 10,000 tons of hazardous waste managed at commercial facilities. These seven codes accounted for 87.8 percent of the commercially managed waste. Appendix 3-C gives a complete categorization of the tons that were commercially managed. The appendix cross-references generator two-digit SIC codes with management categories.

Table 3-4

SIC Codes Having More Than 10,000 Tons Commercially Managed in 1995

SIC Code	SIC Description	Tons Managed	Percent of Total
33	Primary metal industries	214,500	39.1%
28	Chemicals and allied products	104,161	19.0%
49	Electric, gas and sanitary services	76,428	13.9%
34	Fabricated metal products	31,135	5.7%
36	Electronic and other electrical equipment	29,330	5.3%
37	Transportation equipment	13,674	2.5%
99	Nonclassifiable establishments	12,117	2.2%
	All other SICs combined	66,937	12.2%
	TOTALS	**548,282**	**99.9%**

Source: GM Form of 1995 Biennial Report. Does not add to 100.0 percent due to rounding

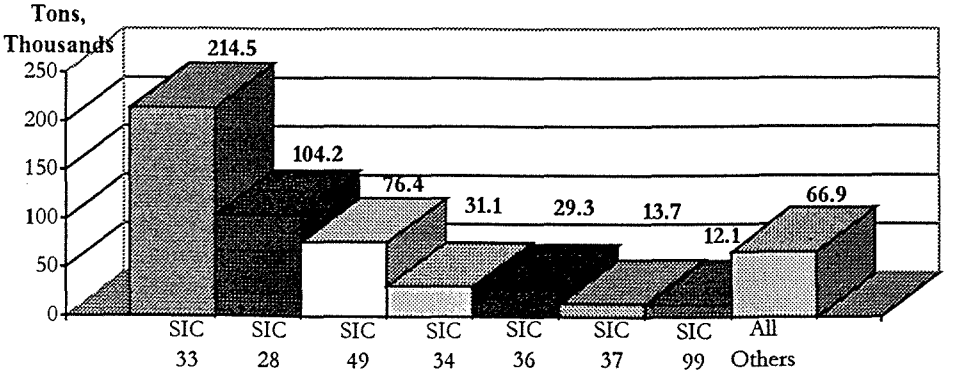


Table 3-5 shows how waste was managed at commercial facilities. Appendix 3-D lists the management codes that accounted for more than 5,000 tons within a category. Each management code is further broken down into SIC codes that generated more than 5,000 tons within the management code. By cross-referencing SIC codes and management codes, the need for specific waste management methods can be tracked to the industries utilizing those methods.

Table 3-5

Commercial Management of Waste from Generators in PA - 1995

Management Category	Mgmt Code	Tons Sent to Commercial Facilities	Percent of Total
Aqueous Inorganic Treatment	M07	131,156	23.9%
Metals Recovery (for reuse)	M01	97,307	17.7%
Stabilization	M11	90,572	16.5%
Aqueous Organic Treatment	M08	58,692	10.7%
Other Recovery	M03	31,667	5.8%
Fuel Blending	M06	30,728	5.6%
Aqueous Organic & Inorganic Treatment	M09	23,023	4.2%
Disposal	M13	22,630	4.1%
Transfer Facility Storage	M14	16,445	3.0%
Solvents Recovery	M02	14,553	2.7%
Incineration	M04	11,785	2.1%
Energy Recovery (reuse as fuel)	M05	9,909	1.8%
Other Treatment	M12	7,432	1.4%
Sludge Treatment	M10	2,384	0.4%
TOTALS		**548,282**	**99.9%**

Source: GM form of 1995 Biennial Report. Total tons does not add due to rounding. Does not add to 100.0% due to rounding.

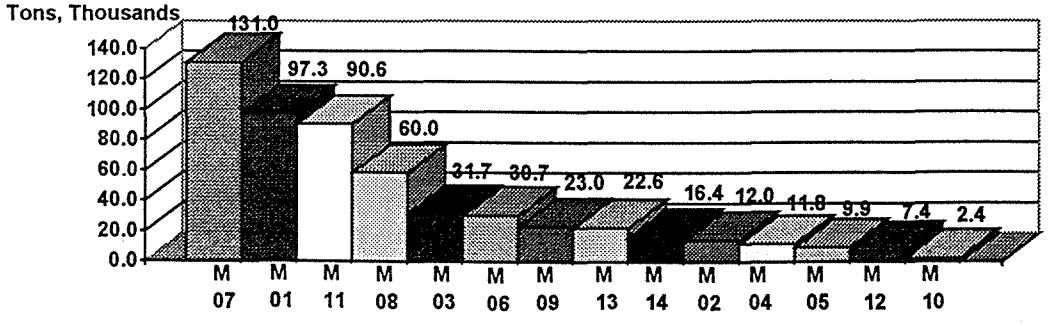
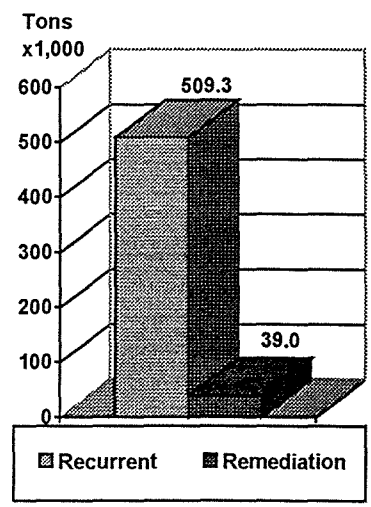


Table 3-6 separates the waste that is commercially managed from generators in Pennsylvania into recurrent wastes and remediation wastes. A brief discussion of the definition of recurrent and remediation wastes can be found in Chapter 2, Page 8.

Table 3-6

Commercial Management of Recurrent and Remediation Wastes Generated in Pennsylvania - 1995

Mgmt Code	Code Description	Recurrent Tons*	Remediation Tons*	Total Tons
M01	Metals recovery	97,179	128	97,307
M02	Solvents recovery	14,549	5	14,553
M03	Other recovery	31,579	88	31,667
M04	Incineration	9,716	2,069	11,785
M05	Energy recovery	9,907	2	9,909
M06	Fuel blending	29,544	1,184	30,728
M07	Aqueous inorganic treatment	130,933	223	131,156
M08	Aqueous organic treatment	58,294	398	58,692
M09	Aq. org. & inorg. treatment	22,368	654	23,023
M10	Sludge treatment	2,384	0	2,384
M11	Stabilization	65,920	24,652	90,572
M12	Other treatment	7,043	389	7,432
M13	Disposal	15,735	6,894	22,630
M14	Transfer facility storage	14,141	2,304	16,445
	TOTALS	**509,291**	**38,991**	**548,282**



*Rounded to the nearest ton. Some totals do not add due to rounding.
Source: GM form of 1995 Biennial Report

Remediation waste made up about 7.1 percent of the total commercially managed waste from generators located in Pennsylvania. The waste management category of stabilization (M11) received 63.2 percent of all manifested remediation waste. Remediation waste accounted for 27.2 percent of all the waste in the management category of stabilization (M11).

Trends in Commercially Managed Waste From Generators in Pennsylvania

Table 3-7 shows how the quantity of hazardous waste generated in Pennsylvania and requiring either in-state or out-of-state commercial treatment has changed over time. Since its peak in 1985, the amount of waste manifested has decreased steadily (except 1989) through 1995.

Table 3-7

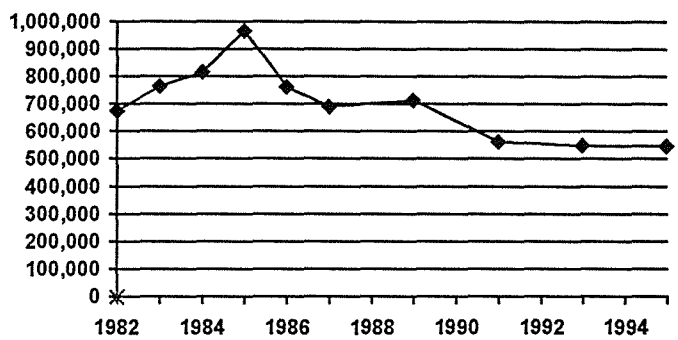
Quantity of Hazardous Waste Requiring Commercial Treatment

(includes both in-state and out-of-state treatment)

Year	Tons Commercially Managed
1982	676,170
1983	764,720
1984	817,630
1985	966,900
1986	762,630
1987	691,020
1989	715,503
1991	581,902*
1993	550,385*
1995	548,282*

Source of data for 1982-89: 1992 Pennsylvania Hazardous Waste Facilities Plan. *Converted from metric tons to standard tons.*

* *Source of data: 1991, 1993, 1995 GM form of Biennial Report*



Interstate Hazardous Waste Shipments

This section examines the interstate flow of hazardous waste to and from Pennsylvania. The source of information on waste generated outside of Pennsylvania and shipped to facilities in the state is the WR form from the Hazardous Waste Report. The source of information on waste originating in Pennsylvania and sent outside the Commonwealth for management is the GM form from the same report. The WR and GM forms were used for the years 1991, 1993 and 1995. The source of data prior to 1991 was the previous Hazardous Waste Facilities Plan.

The movement of hazardous waste across state boundaries for treatment, storage and disposal is a substantial industry. No state in the nation manages all the hazardous waste generated within its borders. In 1995, hazardous waste sent to facilities in Pennsylvania from generators in other states totaled 358,795 tons; 293,211 tons were manifested from inside the Commonwealth to other states.

Table 3-8 compares the quantity of hazardous waste sent to facilities in Pennsylvania from out-of-state to the quantity of waste manifested inside Pennsylvania to out-of-state facilities.

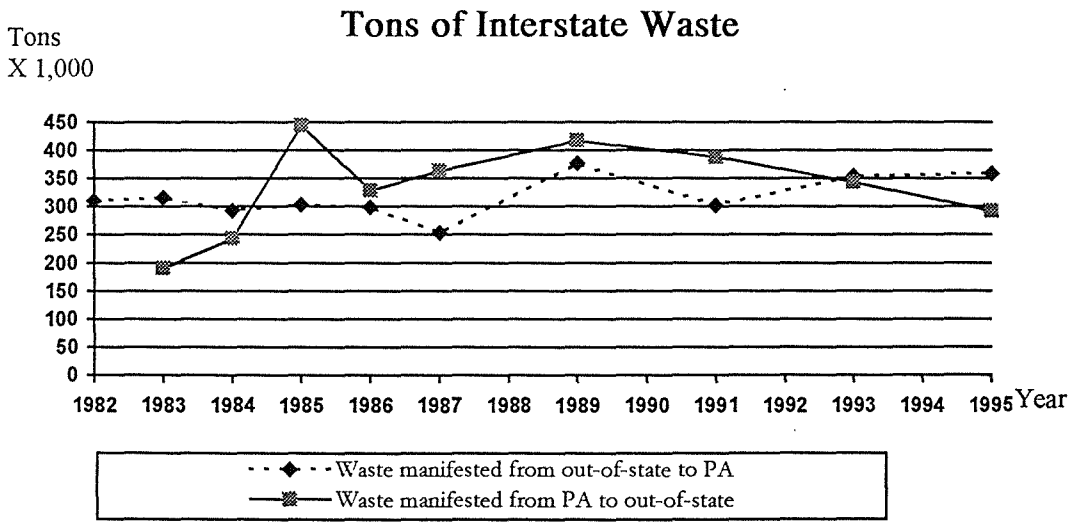
Table 3-8

Waste Manifested To and From PA

Year	Tons to PA from out-of-state (A)	Tons from PA to out-of-state (B)	A--B
1982	311,000	168,300	142,700
1983	315,700	190,300	125,400
1984	293,700	244,200	49,500
1985	303,600	444,400	-140,800
1986	299,200	328,900	-29,700
1987	254,100	364,100	-110,000
1989	377,728	416,852	-39,124
1991*	303,309	389,171	-85,862
1993*	355,333	342,710	12,623
1995*	358,795	293,211	65,584

Source of data for 1982-89: 1992 Pennsylvania Hazardous Waste Facilities Plan. *Converted from metric tons to standard tons.*

• *Source of data: 1991, 1993, 1995 GM and WR form of the Biennial Report*



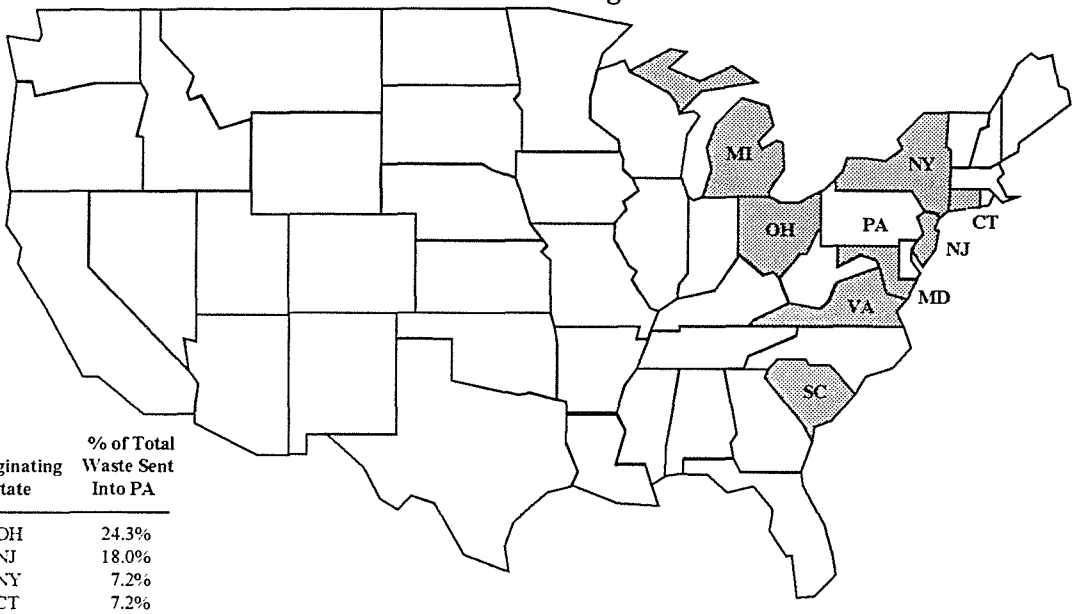
* *No data was available for the years 1988, 1990, and 1992*

Waste manifested out of Pennsylvania peaked in 1985 and has been declining since 1989. Waste shipped into Pennsylvania continues to increase. Most of the waste manifested out of Pennsylvania for management in 1995 went to Ohio (38.4 percent) and New Jersey (28.1 percent). These same two states also sent the largest quantities into Pennsylvania (Ohio, 24.3 percent; New Jersey, 18.0 percent). See Tables 3-9 and 3-10 for a graphical representation of the data and quantities manifested by state.

Table 3-9

Hazardous Waste Manifested into PA from Other States

78% of the hazardous waste manifested into PA comes from these eight states



Originating State	% of Total Waste Sent Into PA
OH	24.3%
NJ	18.0%
NY	7.2%
CT	7.2%
SC	6.4%
MI	5.4%
VA	5.0%
MD	4.6%

Source : WR form of 1995 Biennial Report

State Totals

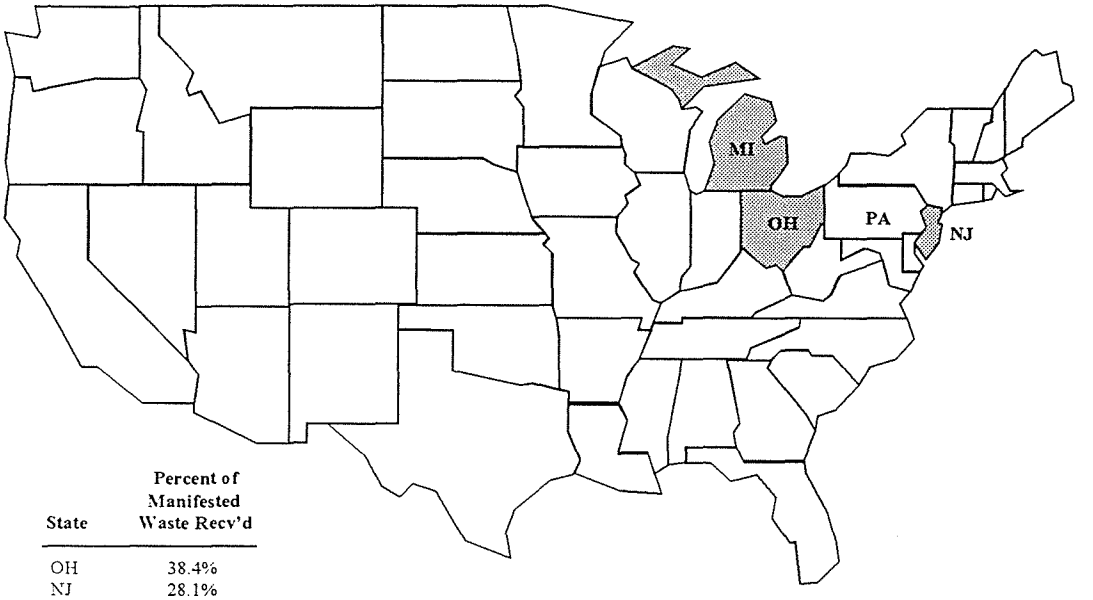
State (From)	Tons sent into PA	Rank	Percent of Total
OHIO	87,272	1	24.3%
NEW JERSEY	64,705	2	18.0%
NEW YORK	25,991	3	7.2%
CONNECTICUT	25,990	4	7.2%
SOUTH CAROLINA	23,095	5	6.4%
MICHIGAN	19,548	6	5.4%
VIRGINIA	17,848	7	5.0%
MARYLAND	16,494	8	4.6%
FOREIGN COUNTRY	15,969	9	4.5%
MASSACHUSETTS	8,582	10	2.4%
ARKANSAS	8,072	11	2.2%
TEXAS	7,308	12	2.0%
FLORIDA	6,875	13	1.9%
DELAWARE	5,806	14	1.6%
NORTH CAROLINA	2,936	15	0.8%
INDIANA	2,697	16	0.8%
NEW HAMPSHIRE	2,695	17	0.8%
KENTUCKY	2,434	18	0.7%
ILLINOIS	1,554	19	0.4%
CALIFORNIA	1,415	20	0.4%
TENNESSEE	1,362	21	0.4%
RHODE ISLAND	1,268	22	0.4%
ALABAMA	1,137	23	0.3%
LOUISIANA	1,065	24	0.3%
WEST VIRGINIA	1,026	25	0.3%
GEORGIA	876	26	0.2%

State (From)	Tons sent into PA	Rank	Percent of Total
VERMONT	722	27	0.2%
PUERTO RICO	656	28	0.2%
COLORADO	559	29	0.2%
VIRGIN ISLANDS	502	30	0.1%
WISCONSIN	452	31	0.1%
MINNESOTA	263	32	0.1%
KANSAS	260	33	0.1%
ARIZONA	251	34	0.1%
MISSISSIPPI	227	35	0.1%
WASHINGTON	194	36	0.1%
IOWA	183	37	0.1%
DISTRICT OF COLUMBIA	106	38	0.0%
MAINE	99	39	0.0%
NEBRASKA	73	40	0.0%
UTAH	66	41	0.0%
MISSOURI	53	42	0.0%
WYOMING	42	43	0.0%
ALASKA	24	44	0.0%
NEVADA	23	45	0.0%
MONTANA	15	46	0.0%
OKLAHOMA	5	47	0.0%
HAWAII	1	48	0.0%
NEW MEXICO	0	49	0.0%
NORTH DAKOTA	0	50	0.0%
TOTALS:	**358,795**		

Table 3-10

States Receiving the Most Waste From Generators In PA

78% of the hazardous waste manifested out of PA goes to three states - Ohio, New Jersey and Michigan



State	Percent of Manifested Waste Recv'd
OH	38.4%
NJ	28.1%
MI	11.9%

Source : GM form of 1995 Biennial Report

State Totals

State (To)	Tons Sent Out of PA	Rank	Percent of total
OHIO	112,669	1	38.43%
NEW JERSEY	82,437	2	28.12%
MICHIGAN	34,984	3	11.93%
FOREIGN COUNTRY	10,744	4	3.66%
NEW YORK	10,412	5	3.55%
INDIANA	5,784	6	1.97%
VIRGINIA	5,216	7	1.78%
MARYLAND	5,189	8	1.77%
KENTUCKY	4,452	9	1.52%
ILLINOIS	4,097	10	1.40%
TEXAS	2,948	11	1.01%
CONNECTICUT	2,044	12	0.70%
GEORGIA	1,627	13	0.56%
SOUTH CAROLINA	1,610	14	0.55%
ALABAMA	1,549	15	0.53%
LOUISIANA	1,387	16	0.47%
NEVADA	1,112	17	0.38%
ARKANSAS	984	18	0.34%
MASSACHUSETTS	817	19	0.28%
TENNESSEE	788	20	0.27%
NORTH CAROLINA	778	21	0.27%
DELAWARE	470	22	0.16%
MISSOURI	339	23	0.12%
KANSAS	136	24	0.05%
WEST VIRGINIA	134	25	0.05%
FLORIDA	128	26	0.04%

State (To)	Tons Sent Out of PA	Rank	Percent of total
MINNESOTA	98	27	0.03%
OKLAHOMA	90	28	0.03%
RHODE ISLAND	67	29	0.02%
UTAH	56	30	0.02%
COLORADO	41	31	0.01%
NORTH DAKOTA	13	32	0.00%
WISCONSIN	5	33	0.00%
NEBRASKA	4	34	0.00%
WASHINGTON	3	35	0.00%
ALASKA	0	36	0.00%
ARIZONA	0	37	0.00%
CALIFORNIA	0	38	0.00%
DISTRICT OF COLUMBIA	0	39	0.00%
HAWAII	0	40	0.00%
IOWA	0	41	0.00%
MAINE	0	42	0.00%
MISSISSIPPI	0	43	0.00%
MONTANA	0	44	0.00%
NEW HAMPSHIRE	0	45	0.00%
NEW MEXICO	0	46	0.00%
PUERTO RICO	0	47	0.00%
VIRGIN ISLANDS	0	48	0.00%
VERMONT	0	49	0.00%
WYOMING	0	50	0.00%
TOTAL:	**293,211**		

In 1995, metals recovery (M01) was the most-used method for managing out-of-state waste - 156,319 tons. The type of waste most frequently manifested into the state was inorganic solids (B3) - 201,248 tons. A listing of waste received from outside the Commonwealth by waste category and receiving facility is given in Appendix 3-E. Appendix 3-F cross-references management categories with waste categories for waste manifested into and out of Pennsylvania.

Generators in Pennsylvania most often shipped waste out-of-state for aqueous organic treatment (M08) - 58,692 tons of waste, most of which was inorganic liquids. This category was followed by stabilization (M11) - 47,170 tons. No other management category was above 30,000 tons.

The types of waste most manifested out of Pennsylvania were: inorganic liquids (B1) - 130,110 tons, inorganic solids (B3) - 70,464 tons, and organic liquids (B2) - 61,049 tons.

Total Amount of Waste Received By Commercial Facilities in Pennsylvania

The total amount of waste received by commercial hazardous waste management facilities located in Pennsylvania, including waste sent to commercial facilities from in-state and out-of-state, was determined by information on the WR form of the 1995 federal Biennial Report, completed by facilities that received hazardous waste (see Chapter 1, Page 3). Table 3-11 shows the quantity of waste received by commercial facilities from in-state and out-of-state by management category. Appendix 3-G shows the quantity of waste received by individual commercial facilities in the state.

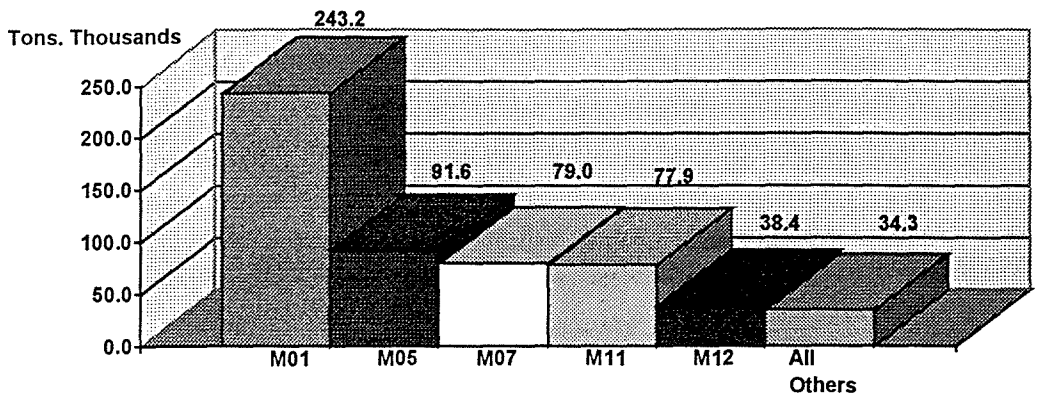
Table 3-11

Tons of Waste Received by Commercial Facilities in PA - 1995

Mgmt Cat.	Category Description	Tons Rec'd from In-state	Tons Rec'd from Out-of -state	Total Tons
M01	Metals recovery	86,872	156,319	243,191
M05	Energy recovery	2,030	89,611	91,642
M07	Aqueous inorganic treatment	49,257	29,696	78,953
M11	Stabilization	41,056	36,876	77,932
M12	Other treatment	5,865	32,546	38,412
M14	Transfer facility storage	11,041	6,354	17,395
M03	Other recovery	8,971	5,375	14,346
M06	Fuel blending	756	756	1,513
M02	Solvents recovery	366	217	583
M10	Sludge treatment	118	224	342
M09	Aqueous organic & inorganic treatment	146	20	166
	TOTALS	**206,479**	**357,995**	**564,474**

**Rounded to the nearest ton. Totals may not add due to rounding*
Source: WR form of 1995 Biennial Report

Tons Received at Commercial Facilities in Pennsylvania - 1995



Metals recovery (M01) accounted for 43.1 percent of the total waste commercially managed in the state. The top five management categories accounted for a total of 93.9 percent of the total waste received by commercial facilities in Pennsylvania.

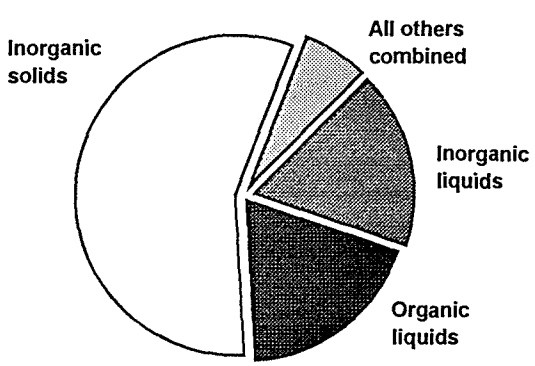
Pennsylvania commercial facilities received almost 358,000 tons from out-of-state. This represented 63.4 percent of the total waste received. About 36.6 percent of the total waste received by commercial facilities in Pennsylvania came from in-state.

Table 3-12 shows the types of waste, by waste category, received by commercial facilities in Pennsylvania. Inorganic solids made up 56.8 percent of the waste received. The three waste categories of inorganic solids, organic liquids, and inorganic liquids combined to make up 93.3 percent of the total. Appendix 3-H cross-references management categories with waste categories for waste received by commercial facilities.

Table 3-12

Tons of Hazardous Waste Received by Waste Category - 1995

Category Code	Category Description	Tons Received
B0	Lab Packs	444
B1	Inorganic Liquids	100,866
B2	Organic liquids	105,501
B3	Inorganic solids	320,545
B4	Organic solids	10,473
B5	Inorganic sludges	26,332
B6	organic sludges	311
B7	Inorganic gases	0
B8	Organic gases	2
	TOTAL	**564,474**



Source: WR form of 1995 Biennial Report

Almost 72.8 percent of the inorganic solids (B3) were managed through metals recovery (M01). About 19.2 percent were managed through stabilization (M11) and 7.3 percent through other treatment (M12). The waste managed through other treatment was "dry" lime or metal hydroxide solids, not "fixed" (B306).

About 86.9 percent of the organic liquids (B2) were managed through energy recovery (M05). Another 10.8 percent were sent to transfer facility storage (M14).

Inorganic liquids (B1) were managed mostly (73.2 percent) by aqueous inorganic treatment (M07). Another 14.2 percent were managed by other recovery (M03). Most of the waste in other recovery (M03) was sulfuric acid from steel finishing.

Most (62.1 percent) of the inorganic sludges were managed by stabilization (M11), while virtually all (96.3 percent) the organic solids (B4) were managed by other treatment (M12). Regeneration of spent carbon accounted for the waste in the management category of other treatment (M12).

Chapter 4

Pennsylvania's Hazardous Waste Minimization Strategy

Chapter Four presents DEP's programs to encourage source reduction and pollution prevention.

Chapter Summary

- The Office of Pollution Prevention and Compliance Assistance was established to provide pollution prevention information and compliance assistance.
- DEP continues to support the use of the waste management hierarchy to manage wastes.
- DEP has established a Land Recycling Program to convert old, vacant industrial sites to productive uses and reduce pressure to develop prime farmland, open areas and forests.
- Other initiatives taken by DEP to encourage source reduction and pollution prevention include:
    - Requiring large quantity generators to develop source reduction strategies
    - Collecting hazardous waste transportation and management fees
    - Sharing pollution prevention information through a website
    - Amending hazardous waste regulations and adopting self-audit policies

Source Reduction, Pollution Prevention & Waste Minimization

Waste minimization, which encompasses source reduction, is the reduction of waste generated and subsequently treated, stored or disposed. It consists of any source reduction, use or reclamation activity that results in the reduction of the quantity and/or toxicity of waste, so long as the reduction is consistent with minimizing present and future threats to human health and the environment. Treatment intended solely to prepare the waste for disposal, such as dewatering, is not waste minimization.

Until the last few years, environmental programs and regulations focused on traditional, reactive techniques that emphasized management of pollution after it was generated. Today's source reduction and pollution prevention techniques are proactive, seeking ways to **eliminate or reduce generation** in order to decrease the amount of waste to be managed. Examples of source reduction include:

- **Management practices** - analyzing wastes to determine preponderant materials and their sources of generation, reviewing material specifications to decrease use of raw materials, encouraging employee participation, and working with customers and suppliers to develop markets for recycled by-products.

- **Feedstock substitutions** - substituting recyclable, recycled or less toxic product ingredients.

- **Product modification**--implementing a closed-loop system to reuse coolant, converting finishing operations from solvent-based painting to electrostatic powder coating, and substituting nontoxic cleaners for acids and solvents at washing stations.

- **Housekeeping practices**--conducting regular inspections to detect and repair equipment leaks.

- **Increasing equipment efficiency**--purchasing state-of-the-art equipment, changing machine settings, and adjusting lubrication.

- **Shipping and packing modifications**--reducing the amount of external packaging, using recycled internal packing.

- **Scheduling modifications**--employing better production scheduling to minimize waste from production run changes.

What Generators in Pennsylvania are Doing

The chart on Page 39 is a summary of the source reduction and pollution prevention information gathered from IC forms of the 1995 Biennial Report. The questions were taken directly from the IC form. A total of 1,156 sites responded to these questions. The first set of questions deal with investigating and implementing source reduction and recycling programs. The next two sets provide information on the factors that limited new or additional source reduction and recycling activities.

QUESTIONS	ANSWERS	
	NO	YES
Did the site begin or expand a source reduction activity during 1994 or 1995?	580	576
Did this site begin or expand a recycling activity during 1994 or 1995?	830	326
Did this site systematically investigate opportunities for source reduction or recycling during 1994 or 1995?	378	778
Did any of the following factors delay or limit the site's ability to initiate new or additional source reduction activities in 1994 or 1995?		
1. Insufficient capital to install new source reduction equipment or implement new source reduction practices.	952	204
2. Lack of technical information on source reduction techniques applicable to specific production processes.	890	266
3. Source reduction is not economically feasible: Cost savings in waste management or production will not recover capital investment..	874	282
4. Concern that product quality may decline as a result of source reduction.	773	383
5. Technical limitations of the production process.	741	415
6. Permitting burdens.	1,035	121
7. Source reduction previously implemented-- additional reduction does not appear to be technically feasible.	858	298
8. Source reduction previously implemented--additional reduction does not appear to be economically feasible.	912	244
9. Source reduction previously implemented-- additional reduction does not appear to be feasible due to permitting requirements.	1,093	63
Did any of the factors listed below delay or limit the site's ability to initiate new or additional on-site recycling activities during 1994 or 1995?		
1. Insufficient capital to install new recycling equipment or implement new recycling practice.	981	175
2. Lack of technical information on recycling techniques applicable to this site's specific process.	913	243
3. Recycling is not economically feasible: Cost savings in waste management will not recover the capital investment..	880	276
4. Concern that product quality may decline as a result of recycling.	870	286
5. Requirements to manifest wastes inhibit shipments off-site for recycling.	1,074	82
6. Financial liability provisions inhibit shipments off-site for recycling.	1,068	88
7. Technical limitations of production processes inhibit shipments off-site for recycling.	1,029	127
8. Technical limitations of production processes inhibit on-site recycling.	878	278
9. Permitting burdens inhibit recycling.	1,013	143
10. Lack of permitted off-site facilities.	1,022	134
11. Unable to identify a market for recycled materials.	852	304
12. Recycling previously implemented - additional recycling does not appear to be technically feasible.	896	260
13. Recycling previously implemented - additional recycling does not appear to be economically feasible.	940	216
14. Recycling previously implemented - additional recycling does not appear to be feasible due to permitting requirements.	1,100	56

Over 67 percent of the respondents reported that they had systematically investigated opportunities to initiate new or additional source reduction activities. The most reported reason for delaying or limiting source reduction activities was technical limitations of the production process (almost 36

percent). The greatest impediment to recycling activities was reported as the inability to identify markets for recycled materials (over 26 percent).

Recom Applied Solutions produced a report for DEP in 1995 based on studies of solid hazardous waste generation in the Commonwealth (*Capacity Assurance Planning and Source Reduction Effectiveness*, April 28, 1995). The study included an historical analysis of the activities of large quantity generators, a review of Pennsylvania's source reduction program, evaluation of source reduction strategy plans provided by large quantity generators, and direct contact with many of those generators. Using 1991 as a baseline year, Recom projected that a well targeted source reduction program could achieve a statewide reduction in solid hazardous waste generation of 25 to 30 percent by the year 2,000 (Section 6.2, Page 7 of the Recom report). The annual rate of reduction would average about 3 percent.

DEP's Implementation Strategy

1. Office of Pollution Prevention and Compliance Assistance (OPPCA)

Governor Ridge pledged that DEP would take "an active, problem solving approach" that emphasizes cooperation with government's customers. He describes the Office of Pollution Prevention and Compliance Assistance (OPPCA) as epitomizing his administration's new approach to environmental regulation.

The office mission, as directed by Governor Ridge, is to help DEP be responsive to regulated communities (industry, local governments, individuals and the public) by providing pollution prevention information and compliance assistance in a more coordinated and user-friendly manner. However, the key role of the office is to facilitate, communicate and demonstrate the environmental value and economic benefits of pollution prevention. In addition, the Office is to spearhead an initiative to develop incentives to encourage and expand the use of "green technologies" in the Commonwealth and to work with the Pennsylvania Department of Community and Economic Development and others to market Pennsylvania-based green technology providers nationwide and abroad.

To achieve its mission, OPPCA is currently operating a number of different programs. These include:

The Governor's Awards for Environmental Excellence

These awards recognize those individuals, employers, municipalities and institutions of all sizes who have implemented projects that benefit the state's environment and economy. In 1996, awards were presented in four categories. The *Education and Outreach Awards* are presented for

established training or education efforts that demonstrate measurable results in the area of pollution prevention and environmental compliance assistance. *The Pollution Prevention Awards* are presented for multi-media projects or programs that result in the reduction of air, water and/or solid waste emissions. *The Recycling and Market Development Awards* are presented for programs that facilitate the recycling of municipal waste materials in Pennsylvania. The *Technology Innovation Awards* are presented for projects that resulted in the development of new and innovative technologies for improving environmental quality and protecting public health and safety.

A fifth award category, *Energy Efficiency Awards,* is devoted to projects that resulted in the reduction of energy consumption or the implementation of a renewable resource technology. There were no award winners in 1996 for this category

The winners of the award demonstrate that accomplishments in pollution prevention and waste minimization can result in cost savings for businesses while promoting environmental protection. For a complete listing of the 1996 award winners, see Appendix 4-A.

Green Technology

OPPCA is currently developing a strategy, working cooperatively with the Department of Community and Economic Development and others, that promotes Pennsylvania-based green technologies nationwide and abroad. The purpose is to maintain and improve environmental protection and regulatory compliance by encouraging and promoting the development and use of green technologies by companies in Pennsylvania.

Recently, Pennsylvania and New York joined four other states (California, Illinois, Massachusetts, and New Jersey) to foster cooperative approval and permitting for environmental technologies. Through a twelve technology pilot program, the states will be able to identify common data and review protocols. This will lead to expedited review and approval in the other five states once a technology has been approved in a lead state. The purpose is to eliminate the difficulty and redundancy of state environmental procedures and enable quick deployment of products to protect and restore the environment.

Strategic Environmental Management

The goal of Strategic Environmental Management is for generators to achieve voluntary zero emissions while maximizing their regulatory flexibility. Strategic Environmental Management integrates environmental management objectives into an organization's strategic goals to enhance the efficiency and effectiveness of its operations and gain a competitive advantage. It provides a management framework within which most companies and local governments can identify cost-effective actions that maximize their regulatory flexibility when they strive for voluntary zero

emissions over time. A strategic management system can improve products, save significant costs, improve production processes, reduce liabilities and waste management costs, enhance market responsiveness, lower insurance premiums, and improve competitiveness while achieving significant environmental and energy efficiencies.

Strategic Environmental Management provides business with the next generation of tools for synthesizing economic development activities and environmental protection. These tools include environmental management systems, pollution prevention, activity-based (environmental) cost accounting and life cycle cost assessment, measurement protocols and performance indicators, and effective community involvement. The use of these tools by business and local governments in their day-to-day decision making is the key to achieving increased environmental performance in a post "command and control" era.

For example, Governor's Award winner St. George Crystal Ltd. was able to eliminate 9,000 pounds of molybdenum electrodes and achieve annual savings of $200,000 by making pollution prevention part of its daily management decisions. St. George Crystal reduced its lead emissions from 244 pounds to less than 48 pounds per year. A closed loop recycling system eliminates 22 tons of waste and saves $5,600. By building a new melter, St. George Crystal also was able to retain 280 jobs.

The Office of Pollution Prevention and Compliance Assistance (OPPCA) will assist DEP in encouraging companies and local governments to move to Strategic Environmental Management by establishing partnerships, developing leaders and mentors, incorporating strategic environmental management concepts throughout DEP's operations, education outreach, pilot projects and pilot project evaluations.

Pollution Prevention Energy Efficiency Site Visits

This non-regulatory, yet innovative program offered by DEP and the Office of Pollution Prevention and Compliance Assistance combines the common-sense benefits of pollution prevention and energy efficiency. The program is being carried out at the regional level with direct support from the central office in a unique blend of professional expertise. Regional air, water, and waste specialists and central office energy experts visit small and medium sized businesses and industries and furnish them with information tailored to assist them in preventing pollution and saving energy and reducing costs.

Levels of assistance and information provided has varied from site to site and included: developing flow and process diagrams; developing and implementing Environmental Management Systems; material substitutions, in-process recycling, and reuses options; financial analysis methods; and energy savings opportunities.

Contacts and Information

For more information, visit DEP's website at **www.dep.state.pa.us, Pollution Prevention and Compliance Assistance**, or contact your DEP regional office (see Page 43).

REGIONAL OFFICES

COUNTIES SERVED	OFFICE LOCATION	OPPCA* CONTACT
Bucks, Chester, Delaware, Montgomery & Philadelphia	Lee Park, Suite 6010 555 North Lane Conshohocken, PA 19428-2233	Suzanne Simoni Telephone: 610 832-6021 Fax: 610 832-6022
Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne & Wyoming	2 Public Square Wilkes-Barre, PA 18711-0790	Janet Warnick Telephone: 717-826-2511 Fax: 717 830-3051
Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry & York	909 Elmerton Avenue Harrisburg, PA 17110-8200	Bob Zaccano Telephone: 717 705-4797 Fax: 717 705-4760
Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumber-land, Potter, Snyder, Sullivan, Tioga & Union	208 W. Third Street, Suite 101 Williamsport, PA 17701-6448	James Young Telephone: 717 327-0537 Fax: 717-327-3565
Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington & Westmoreland	400 Waterfront Drive Pittsburgh, PA 15222-4745	Fred DeNorscia Telephone: 412 442-4343 Fax: 412 442-4194
Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango & Warren	230 Chestnut Street Meadville, PA 16335-3481	Brad Vanderhoof Telephone: 814 332-6816 Fax: 814 332-6125

**Office of Pollution Prevention & Compliance Assistance, regional chiefs*

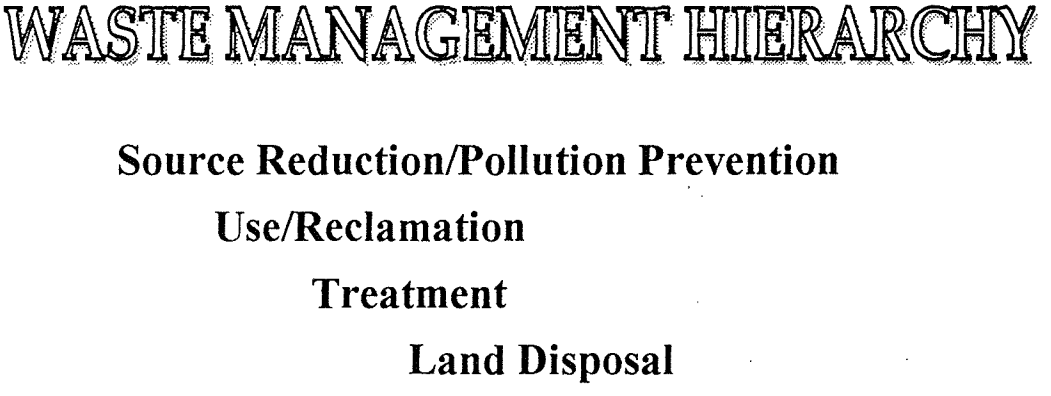
2. Land Recycling Program

Past Pennsylvania environmental policies were disincentives for the private cleanup of old industrial sites. For example, the state could hold new buyers fully responsible for a site cleanup even if they were not responsible for contaminating the property. Such responsibility and associated expenses outweighed the positive aspects - the availability of water and electricity, for instance--of restoring an old industrial site, and discouraged private firms, lenders, and public redevelopment authorities from getting involved.

The Land Recycling Program encourages the recycling and redevelopment of old industrial sites. It set standards, by law, that are protective of human health and the environment while considering future use. It provides potential developers with clear clean up standards based on risk and an end to liability when the clean up standards are achieved. These changes should make many old industrial sites more attractive to potential developers, convert vacant eyesores to productive use, and reduce the pressure to develop prime farmland, open areas and forests.

3. Waste Management Hierarchy

DEP continues to support the use of the waste management hierarchy. The waste management hierarchy integrates a variety of waste-handling methods in a sequence that prevents pollution, conserves natural resources, and saves disposal capacity. The system directs waste through a series of steps, each of which is designed to reduce the amount of waste to be landfilled. This sequence, or hierarchy, of waste management methods is as follows:



Wastes directed through these steps are disposed only if there is not a preferred method to manage them. The amount of control exercised at the first level - source reduction and pollution prevention - sets the direction for management at the other three levels. As more control is exercised at the first level, less waste passes to the second level - use or reclamation - and the third - treatment. In this way, less waste reaches the fourth level - disposal.

- **Source Reduction/Pollution Prevention.** The ideal goal is to prevent generation in the first place. Wherever possible, the quantity or toxic level of a waste stream should be eliminated or at least reduced at the source.
- **Use or Reclamation.** Use is the direct and effective substitution of a waste material for a raw material used as an ingredient in an industrial process, or for a commercial chemical product. Use also includes the substitution of a hazardous waste for a fossil fuel in a boiler or industrial furnace. Reclamation is the treatment of a waste material to regenerate a usable product, recover a usable product, or recover distinct components as separate end products.

- **Treatment.** Waste treatment employs a variety of technologies, either proven or emerging, to destroy, detoxify, or neutralize wastes to less hazardous or nonhazardous substances.
- **Land Disposal.** The waste management method of last resort, land disposal is reserved for residues from the three preceding waste management practices and for waste that cannot be handled by one of these preferred practices. Waste to be land disposed must first be stabilized and meet the treatment standards of the *Federal Resource Conservation and Recovery Act*.

DEP supports the use of the waste management hierarchy, but emphasizes the importance of striving for zero emissions. We recognize that voluntary zero emissions cannot be attained by just stating that it is our goal. It is a process of continuous improvement. The hierarchy can be a bridge to help manage waste more effectively while working towards a zero emissions goal.

4. Source Reduction Strategy

The state hazardous waste regulations require generators of more than 1,000 kilograms of hazardous waste in any given month to prepare a source reduction strategy. The strategy is a written summary of how the generator proposes to reduce waste generation based on the results of internal studies and evaluations of waste sources, equipment, costs and available technologies. For each type of waste generated, the strategy describes source reduction activities during the past five years and projected activities for the next five years. Generators update the strategy every five years unless DEP establishes, in writing, a different period for the individual generator.

There are economic as well as environmental benefits in having a source reduction strategy. Benefits include conservation of raw materials, reduced disposal costs, reduced environmental liability and a reduced environmental compliance burden.

5. Hazardous Waste Transportation and Management Fees

The *Hazardous Sites Cleanup Act* of 1988 imposed hazardous waste transportation and management fees, which are paid into the Hazardous Sites Cleanup Fund (refer to Chapter 9 of the *Hazardous Sites Cleanup Act* for complete information). The fee system encourages conformance with the waste management hierarchy by charging higher fees for less desirable management options. The fees also provide economic incentives for implementing on-site source reduction. The Hazardous Sites Cleanup Fund is used for the following purposes:

- Response actions relating to the release or threatened release of hazardous substances.
- Emergency responses to and cleanup of spills and other uncontrollable releases.
- Reimbursement for alternative or replacement water supplies made necessary by releases of hazardous substances.
- Rehabilitation, restoration or acquisition of natural resources to remedy injuries or losses.

- State matching funds required under the *Federal Superfund Act* for response at National Priority List sites
- Other uses specified in Chapter 9.

6. Website

http://www.dep.state.pa.us

DEP uses every available, cost-effective means to share information and encourage public participation. Internet capabilities now make it possible for the department to furnish the most up-to-date environmental information at any time to anyone with access capability. DEP's fast-growing website encompasses all department program areas and includes "hot" topics and current events, technical assistance, grant aid, publications, legislation, regulations, awards programs, bureau contacts and advisory committees.

To access the **Bureau of Land Recycling and Waste Management**, select *Subjects*, then *Land Recycling and Waste Management*.

To access the **Office of Pollution Prevention and Compliance Assistance**, select *Subjects*, then *Pollution Prevention and Compliance Assistance*.

7. The Hazardous Waste Amendments of January 1997

DEP's hazardous waste regulations were amended to include two new federal waste minimization requirements. **Sections 262.41, 264.75 and 265.75** of the state regulations were changed to require the same waste minimization information on state reports as the U.S. EPA requires on federal biennial reports. Under **§264.73**, the owner or operator of a permitted treatment, storage and disposal facility is required to certify annually in its operating record that, to the extent economically practicable, it has a program in place for reducing the toxicity and volume of wastes generated, and that the treatment, storage and disposal methods selected minimize threats to human health and the environment. Amended **§265.435** allows generators who reduce the toxicity or volume of waste during the 90-day accumulation period to treat their wastes by permit-by-rule.

8. Immunity from Discoveries Made During Self-Audits

Protection of the environment and public health and safety rests principally on the public's voluntary compliance with environmental requirements. Voluntary compliance begins with an awareness of environmental problems, often achieved through regular environmental self-evaluations. To promote voluntary compliance, DEP encourages companies and individuals to

establish compliance management systems and perform voluntary environmental compliance audits.

A major disincentive to undertaking environmental self-evaluations is the threat of civil and criminal sanctions. To remove this disincentive, under the compliance audit policy, DEP will not assess a civil penalty, except to collect any economic benefit due to non-compliance, or suspend or revoke a license, permit or other DEP authorization for violations of environmental requirements which are voluntarily discovered and disclosed following an environmental compliance audit or other self-assessment conducted pursuant to a Compliance Management System if:

- disclosure to DEP is made promptly after the information or knowledge concerning the violation is discovered;
- reasonable action is promptly initiated and diligently pursued to correct or eliminate the violation pursuant to a compliance schedule; and
- the person making the disclosure provides a full written description of the condition, including a compliance schedule to address the violation, and cooperates with DEP regarding the investigation of the disclosed condition.

Public confidence in DEP's administration of environmental programs is enhanced by prompt disclosure and correction of violations of environmental requirements. Prompt disclosure allows DEP to evaluate whether actions to correct the violations are reasonable and diligently pursued

The policy does not apply when the discovery made was not voluntary, the violation was committed intentionally or knowingly, corrective action is not promptly initiated and diligently pursued, significant environmental harm or a significant public health effect was caused by the violation, repeated violations reveal a pattern of conduct or condition that should have been addressed earlier, and the violation or disclosure involved fraud.

The unabridged policy can be found on DEP's website at **www.dep.state.pa.us** under *public participation, final policies*.

Chapter 5

Commercial Facilities in Pennsylvania

This chapter examines the existing commercial hazardous waste management facilities available in the Commonwealth, their capacities and locations, and the method(s) of management offered at the facilities.

Chapter Summary

- There are seventeen commercial hazardous waste management facilities located in Pennsylvania offering services in nine management categories. This does not include transfer facilities.
- There are no commercial management facilities in Pennsylvania that provide services in solvents recovery, incineration, aqueous organic treatment, or disposal.

Commercial Hazardous Waste Facilities

For classification purposes, commercial management facilities are broken into three broad groups--treatment and disposal facilities, recovery facilities, and transfer and storage facilities.

Treatment facilities are designed to change the physical, chemical or biological composition of waste to neutralize it, render it nonhazardous or less hazardous, make it safer to transport or dispose of, or make it amenable for recovery, storage, or volume reduction. *Disposal* is the discharge, deposit, injection, dumping, spilling, leaking or placing of a waste into land or water so the waste or part of the waste may enter into the environment. Treatment and disposal techniques include the management categories of incineration (M04), fuel blending (M06), aqueous inorganic treatment (M07), aqueous organic treatment (M08), aqueous organic and inorganic treatment (M09), sludge treatment (M10), stabilization (M11), other treatment (M12), and disposal (M13).

Recovery facilities remove wastes from hazardous materials to make a hazardous material suitable for its original purpose or use the hazardous waste as a substitute for a raw material in another process. Recovery facilities include the management categories of metals recovery (M01), solvents recovery (M02), other recovery (M03), and energy recovery (M05).

Transfer and storage facilities hold waste for a temporary period. At the end of the period the waste is treated, disposed, or stored elsewhere. Transfer and storage facilities include only one management category - transfer facility storage (M14).

All of the commercial facilities located in Pennsylvania were placed into one of the three broad management groups listed above. Table 5-1 lists all treatment and disposal facilities. Table 5-2 lists

recovery facilities. Table 5-3 lists all transfer and storage facilities. Tables 5-1 and 5-2 show the management categories reported by each commercial facility along with its annual capacity.
Annual capacities were determined from the permits of the commercial facilities unless otherwise noted. Not all the facility capacities listed on the permits were in annual tons. Some had to be converted to annual tons by DEP regional offices. All capacities were provided by DEP regional offices.

Some of the capacities for transfer and storage facilities are not in annual tons. The capacities that are not in annual tons reflect the amount of waste the facility is permitted to store at any given time.

The placement of a commercial facility into a group was determined by the management category reported on the WR form of the facility's biennial report submission (see Chapter One, Page 3). If a facility reported management codes in more than one management category, the facility is listed in all categories for which it reported.

The exceptions to this were Calgon Carbon Corporation and Envirotrol (Beaver Falls and Darlington). These facilities reported under the management category of other recovery (M032). Both were changed to other treatment (M12) because of a recent EPA ruling stating that carbon recovery facilities such as the two listed above should be permitted as thermal treatment units (*Federal Register* / Vol. 56, No. 35 / Thursday, February 21, 1991 / Rules and Regulations). Tons received by commercial facilities in this report reflect Calgon Carbon and Envirotrol as receiving waste under other treatment (M12).

Table 5-1

Treatment and Disposal Facilities

Company Name	Management Category	Permit Capacity (Tons)	Tons Received in 1995
Calgon Carbon Corporation	Other Treatment	83,585	5,529
Envirite Corporation[1]	Aqueous Inorganic Treatment	83,311	30,257
Envirite Corporation	Stabilization	83,311	39,542
Envirotrol Inc.--Beaver Falls	Other Treatment	5,000	3,859
Envirotrol Inc.--Darlington	Other Treatment	21,900	694
Mill Service[2]	Aqueous Inorganic Treatment	365,985	46,850
Mill Service[2]	Stabilization	365,985	28,730
Republic Environmental Systems[3]	Aqueous Inorganic Treatment	31,580	1,846
Republic Environmental Systems[3]	Aq. Organic and Inorganic Treatment	31,580	166
Republic Environmental Systems[3]	Sludge Treatment	31,580	342
Republic Environmental Systems	Stabilization	109,000	9,660
Republic Environmental Systems[4]	Other Treatment	90,233	3,327
World Resources Company	Other Treatment	34,320	24,899

[1]Envirite Corporation received an additional 43 tons under Other Treatment (M12)
[2]Mill Service--capacity numbers are for entire facility and can not be broken into separate management categories
[3]These three management categories utilize the same equipment. The capacity was determined by dividing the total capacity by three.
[4]Capacity obtained from PS form of 1995 Biennial Report
Source of permit capacity--DEP Regional Offices.
Source of Tons Received--WR form of the 1995 Biennial Report
Note: Chemical Waste Management received 2,455 tons of waste in 1995. The facility is now closed, but still maintains a permit. The capacity of this facility is 83,450 tons under Fuel Blending (M06). In addition, the facility has a storage permit.

Table 5-2

Recovery Facilities

Company Name	Management Category	Permit Capacity (Tons)	Tons Received in 1995
Advanced Environmental Recycling Corp.[1]	Metals Recovery	1,858	1,618
Bethlehem Apparatus Co. Inc.	Metals Recovery	2,000	633
General Battery Corp.[2]	Metals Recovery	228,800	9,366
Harcros Pigments, Inc.[3]	Other Recovery	27,500	12,463
Horsehead Resource Dev Corp.[4]	Metals Recovery	215,035	195,486
Inmetco	Metals Recovery	78,008	36,089
Keystone Cement Co.	Energy Recovery	83,865	53,579
Medusa Cement Company	Energy Recovery	82,388	38,058
United Environmental Group[5]	Other Recovery	21,170	1,883

[1]Capacity obtained from PS form of Biennial Report
[2]General Battery also received 62 tons under Other treatment (M12) from 2 captive facilities in Indiana.
[3]Normal operating capacity as estimated by DEP regional office
[4]Normal operating capacity as estimated by DEP regional office
[5]Unite Environmental Group's capacity is combined with their storage capacity.
Source of Tons Received: WR form of the 1995 Biennial Report
Source of permit capacity: DEP Regional Offices
Source of tons received: WR form if 1995 Biennial Report

Table 5-3

Transfer and Storage Facilities

Facility name	Mgmt Code	Capacity (tons)	Tons Received in 1995
Ashland Chemical Co.*	M141	110	535
Remtech Environmental*	M141	1,260	1,882
Republic Environmental*	M141	130	6,257
Safety-Kleen Corp. - Erie	M141	2,200	440
Safety-Kleen Corp. - Athens	M141	54,010	356
Safety-Kleen Corp. - Fairless Hills*	M141	259	883
Safety-Kleen Corp. - Johnstown*	M141	165	674
Safety-Kleen Corp.--New Kingston*	M141	92	1,009
Safety-Kleen Corp.--West Mifflin*	M141	587	953
Safety-Kleen Corp.--West Chester*	M141	235	2,084
Safety-Kleen Corp.--Wilkes-Barre*	M141	179	394
Safety-Kleen Corp.--Allentown*	M141	121	818
United Environmental Inc.[1]	M141	21,170	7

[1]United Environmental Group's capacity is combined with their recovery capacity.
*Permit capacity at any given time. If there is no asterisk, the capacity is given in annual tons.
Source of permit capacity: DEP Regional Offices.
Source of tons received: WR Form of 1995 Biennial Report

Facilities Descriptions

1. Treatment and Disposal Facilities

Calgon Carbon Corporation
200 Neville Rd.
Pittsburgh, PA 15225

Calgon Carbon Corporation is involved in the regeneration and recycling of spent activated carbon from various industrial and municipal sources. Activated carbon is used in absorption processes which include applications such as municipal waterworks, solution purification, air conditioning, odor control and industrial control vapors. The spent carbon is regenerated through thermal treatment.

Envirite Corporation
1600 Pennsylvania Ave. Lot #11
York, PA 17404

Envirite Corporation accepts bulk loads or drums of liquid, semi-solid and solid industrial inorganic wastes. Pretreatment processes depend on specific waste characteristics and can include chromium reduction and/or cyanide oxidation. After pretreatment, wastes undergo neutralization, metals precipitation and vacuum filtration. Liquid effluents are then discharged to the sewer system of the City of York, while the de-listed solid residues are transported offsite to a residual (nonhazardous) waste land disposal site designed for and limited to acceptance of the residue. Wastes accepted include chromic and pickling acids, caustics, cyanides, nonmetallic and metallic inorganics, metallic organics, pumpable metal hydroxide sludges, and corrosive wastes.

Envirotrol Inc.
24th St. and 31st St.
Beaver Falls, PA 15010

Envirotrol Inc. is involved in the regeneration and recycling of spent activated carbon from various industrial and municipal sources. The activated carbon is used to remove undesirable chemicals from groundwater, air, and wastewater sources. The spent carbon is regenerated through thermal treatment.

Envirotrol Inc.
118 Park Rd.
Darlington, PA 16115

Envirotrol Inc. is involved in the regeneration and recycling of spent activated carbon from various industrial and municipal sources. The activated carbon is used to remove undesirable chemicals from groundwater, air, and wastewater sources. The spent carbon is regenerated through thermal treatment.

Mill Service Inc.
R. D. #1 Box 135A
Yukon, PA 15698

Mill Service Inc. accepts nonhazardous and hazardous inorganic wastes that can be treated to make them nonhazardous for disposal in a permitted residual waste surface impoundment. Wastes are treated through neutralization, precipitation, and chromium reduction. Wastes accepted include corrosive liquid wastes, spent pickle liquor, acids including chromic acid, emission sludges, air pollution control dusts, and brine waters from oil and gas operations.

Republic Environmental Systems
2869 Sandstone Drive
Hatfield, PA 19440

Republic Environmental Systems accepts bulk loads, drums and containers of hazardous organic and inorganic wastes. Aqueous wastes undergo batch treatment processes such as neutralization, chemical precipitation, cyanide destruction, carbon absorption, and stabilization/chemical fixation. Treatment effluent is discharged to the Hatfield Municipal Authority sewage treatment plant. Wastes accepted include spent acid with and without metals, aqueous waste with low toxic organics, caustic solutions, soil contaminated with inorganics, metal salts/chemicals and other hazardous wastes.

World Resources Company
Walnut Lane
Pottsville, PA 17901

World Resources accepts F006 metal-bearing sludges. The sludges are processed through formulating, compounding, and thermal concentrating operations to produce metal-concentrate products that are sold to smelters for recovery.

2. Recovery Facilities

Advanced Environmental Recycling Corp.
2591 Mitchell Ave.
Allentown, PA 18103

Advanced Environmental Recycling Corp. accepts lamp tubes and other wastes containing mercury. Most of the wastes received are inorganic solids. Crushing, separating, retorting and distillation are used to recover the mercury.

Bethlehem Apparatus Co. Inc.
890 Front St.
Hellertown, PA 18055

Bethlehem Apparatus Co. Inc. accepts wastes containing mercury including fluorescent lights, manufactured articles containing mercury, and elemental mercury. Most of the wastes received are inorganic solids. The waste is accepted in steel flasks and drums. The mercury is recovered through retorting.

General Battery Corp.
Spring Valley Rd and Nolan St.
Reading, PA 19605

General Battery Corp. accepts waste inorganic solids containing lead. Wastes handled include lead-acid batteries, lead scraps, and residues containing lead. The waste is generally received in bulk loads. The lead is recovered through secondary smelting.

Harcros Pigments, Inc.
1525 Wood Ave.
Easton, PA 18048

Harcros Pigments, Inc. operates an iron oxide plant. Harcros obtains iron through various sources including iron salts and iron ores, along with sulfuric and hydrochloric pickling liquors. The sources of iron are reacted chemically through reduction, crystallization, dehydration and oxidation processes and physically through washing, filtering, drying, milling, etc. to form the pigment and other grades of iron oxide produced at this location.

Horsehead Resource Development Co. Inc.
East of Route 248, Waelzing
Palmerton, PA 18071

Horsehead Resource Development Co. Inc. accepts zinc-containing inorganic solids and baghouse dust. The wastes are generally received in bulk loads. Zinc contained in the wastes are recovered through high temperature metal recovery.

Inmetco
US Steel Industrial Pk. Rt 488
Ellwood City, PA 16117

Inmetco accepts acids, caustics, sludges and dusts containing nickel, chromium and iron in bulk or containerized form. The metals are recovered through secondary metal reclamation.

Keystone Cement Company
Route 329
Bath, PA 18014

The facility uses spent cleaning solvents and coal to fire two rotary cement kilns. Ash created from burning combines with burnt limestone. Slurry is created by mixing limestone with water.

Medusa Cement Company
2001 Portland Park Route 18
Wampum, PA 16157

Medusa Cement uses spent solvents, waste oil, and other organic liquids to fire a rotary cement kiln.

United Environmental Group Inc.
237--241 McAller Rd.
Sewickley, PA 15143

United Environmental Group Inc. accepts water contaminated with petroleum products. The company provides for recovery of petroleum phases and treatment of water from recovery operations.

3. Transfer Facilities

Ashland Chemical Company
150 West 4th Ave.
Freedom, PA 15042

Capital Parts Washers
Lewisberry (closed)

Remtech Environmental
550 Industrial Drive
Lewisberry, PA 17339

Republic Environmental
2869 Sandstone Dr.
Hatfield, PA 19440

Safety Kleen
1606 Pittsburgh Ave.
Erie, PA 16505

Safety-Kleen
Industrial Park Rd.
Athens, PA 18810

Safety-Kleen
77 Canal Rd.
Fairless hills, PA 19030

Safety-Kleen
150 Allenbill Dr.
Johnstown, PA 15904

Safety-Kleen
10 Eleanor Dr.
New Kingston, PA 17072

Safetly-Kleen
650 Noble Dr.
West Mifflin, PA 15122

Safety-Kleen
1140--1142 Greenhill Rd.
Westchester, PA 19380

Safety-Kleen
600 Stewart Rd.
Wilkes-Barre, PA 18706

Safety-Kleen
5540 Memorial Rd.
Allentown, PA 18104

United Environmental
237--241 McAleer Rd.
Sewickely, PA 15143

Summary of Commercial Capacity Available in Pennsylvania

Table 5-4 summarizes the annual capacity available at commercial management facilities located in Pennsylvania. The management category of transfer facility storage (M14) is not included in the table. Most of the permit capacities for transfer facility storage are defined as the amount of hazardous waste the facility is allowed to store onsite at any given time and are not readily converted into annual capacities.

Plans to Commercialize Captive Capacity

Captive facilities may accept waste from only those facilities owned by the same company. Their capacity is not available to other generators not owned by the same company. In a survey conducted by DEP for the 1986 plan, several onsite facilities expressed an interest in commercializing their under-utilized capacity; none of these facilities have followed through. In fact, since the *Solid Waste Management Act* of 1980 was passed, not one captive hazardous waste facility has commercialized, nor is DEP aware of any facilities that plan to make their capacity commercially available in the foreseeable future.

Table 5-4

Tons of Commercial Capacity Available in Pennsylvania--1995

Company	Metals recovery	Solvents recovery	Other recovery	Incin-eration	Energy recovery	Fuel blend-ing	Aqueous inorganic treatment	Aqueous organic treatment	Aq. org. & inorganic treatment	Sludge trtmnt.	Stabili-zation	Other trtmnt	Dis-pos-al
Advanced Env. Recycling Corp.	1,858												
Bethlehem Apparatus	2,000												
Calgon Carbon												83,585	
Envirite Corp.							83,311				83,311		
Envirotrol - Beaver Falls												5,000	
Envirotrol - Darlington												21,900	
General Battery	228,800												
Harcros Pigments, Inc.			27,500										
Horsehead Res. Dev. Corp.	215,035												
Inmetco	78,008												
Keystone Cement Co.					83,865								
Medusa Cement Co.					82,388								
Mill Service[1]							182,993				182,993		
Republic Env. Systems							31,580		31,580	31,580	109,000	90,233	
United Env. Group			21,170										
World Resources												34,320	
TOTALS	**525,701**	**0**	**48,670**	**0**	**166,253**	**0**	**297,884**	**0**	**31,580**	**31,580**	**375,304**	**235,038**	**0**

[1]Permitted capacity is written for both management categories combined. Capacity was calculated by dividing total capacity by two.

Chapter 6

Projections

This section develops projections for the quantity of waste that generators in Pennsylvania are expected to have commercially managed in the years 2002 and 2017.

Chapter Summary

It is anticipated that Pennsylvania generators will commercially manage about 454,000 tons in 2002 and 275,000 tons in 2017.

The plan encourages proper captive management of hazardous waste after all economically feasible source reduction and reclamation technologies are given proper consideration.

The plan projects that in 2017, the quantity of instate hazardous waste to be commercially treated or disposed will be greater than Pennsylvania's current commercial capacity in four treatment and disposal management categories: incineration, 5,548 tons; fuel blending, 14,392 tons; aqueous organic treatment, 30,442 tons; and disposal, 24,855 tons. Due to the national availability of commercial capacity in these four categories, however, the plan finds that generators in Pennsylvania have adequate available capacity.

The plan promotes resource recovery over treatment and disposal. Any commercial recovery facility that meets the regulatory test for legitimate use, reclamation or recovery is necessary. Placing limits on the types of recovery facilities, even if there is adequate capacity, could act as a disincentive to developing new and improved resource recovery technologies. The plan projects the quantity of waste to be managed at recovery facilities in 2017 will be greater than the current instate commercial capacity in one recovery management category - solvents recovery (6,844 tons).

Choosing a Projection Model

In developing a model to project the quantity of hazardous waste that generators in Pennsylvania are expected to have commercially managed, three broad options were considered:

1. Follow EPA's method for developing the Capacity Assurance Plan.

The EPA's method calculated the amount of waste generated in 1991, removed one-time wastes, and made a 10 percent reduction for waste minimization to estimate the amount of waste that would be sent to commercial facilities in 2013. This method was not chosen for two reasons. First, it did not take economic factors into account. Second, the 10 percent decrease in demand for commercial facilities cited in the Capacity Assurance Plan seemed to under-represent the recent trends of

commercially managed waste shown in Table 3-7. Also, EPA's 10 percent source reduction factor was far less than the results of the Recom Report (see Page 40).

2. Develop a regression model.

The second option was to develop a regression model to quantify the various independent factors that influence the demand for commercial hazardous waste facilities. This option was not chosen for several reasons, the foremost being a lack of continuous yearly data for the years preceding this report. Also, numerous changes in regulations, treatment technology, source reduction technology, and the economy would have been very difficult to quantify.

3. Develop a simple, quantitative model.

The third option was to develop a simple model that quantifies the major factors believed to influence the demand for commercial facilities and apply these factors to the current demand. This method was chosen for several reasons. The first reason was the availability of economic and source reduction data -- the same factors that are likely to have the most influence on the quantity of commercially managed hazardous waste. The second reason was the availability of reliable baseline year data from the Biennial Report System.

Development of the Projection Model

The computation for the projection model is very simple:

- Separate recurrent waste sent to commercial management facilities from remediation wastes (the numbers are shown in Table 3-6).
- Increase or decrease recurrent tonnage for expected regulatory changes to obtain the "base" tonnage data.
- Decrease the base tonnage for source reduction.
- Increase the base tonnage for economic growth.
- Add the average remediation tons for the last three biennial reporting cycles (1991, 1993 and 1995).

By following this method, a projection is made that is proportional to the 1995 data, except for the changes made to the data to account for regulatory changes and remediation waste. The model does not make any assumptions about changes in methods to manage wastes. Instead, it relies on how wastes are currently managed to determine how they will be managed in the future. To be consistent with previous Hazardous Waste Facilities Plans, projections will be made for both five years (2002 A.D.) and 20 years (2017 A.D.).

Regulatory Changes

Changes in regulations can impact whether or not wastes are considered hazardous. A change in regulations can either increase or decrease the amount of waste that is expected to be sent to

commercial management facilities. Since 1995 (the base year of the projections), several regulatory changes are expected to affect the quantity of waste sent to commercial facilities by generators in Pennsylvania.

1. **The Universal Waste Rule.** Universal wastes frequently are generated by a vast community other than the industries usually associated with hazardous waste generation. At present, due to lack of effective collection systems, many universal wastes are not properly disposed. It is anticipated that the universal waste rule will encourage the creation of collection systems to facilitate the recycling or proper disposal of universal wastes. Currently, the universal waste rule covers three types of waste--batteries, mercury thermostats, and hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs. Because these wastes will come predominantly from households and conditionally exempt small quantity generators, the universal waste rule is not expected to have a significant impact on the demand for commercial facilities. Data is not available to quantify the impact.

2. The hazardous waste amendments of January 1997 include a provision allowing for a permit-by-rule for generator treatment of hazardous waste in accumulation containers, tanks, or containment buildings (Section 265.435). This provision could affect captive and commercial treatment of hazardous waste. Under this provision, generators can manage wastes without a full permit if they meet the requirements of the regulation. Wastes could be rendered nonhazardous and disposed of in a nonhazardous waste disposal facility. DEP is in the process of developing a new supplementary notification form to determine the impact of this regulation.

3. The hazardous waste amendments of January 1997 will eliminate all state hazardous waste codes except PA01 (waste oil with greater than 1,000 ppm halogens) from being counted as hazardous waste. Table 6-1 lists commercially managed hazardous waste (from generators in Pennsylvania for 1995) that contained only state hazardous waste codes, except PA01. To allow for their use in the projection model (on Pages 64 and 65), management categories are used to classify the waste in Table 6-1. The elimination of these state hazardous waste codes will lower the quantity of hazardous waste being sent for commercial management.

Table 6-1

Management of PA State Hazardous Waste Codes, Excluding PA01

Management Category	Category Description	Tons Managed
M01	Metals Recovery	350
M03	Other Recovery	9,782
M09	Aqueous Organic & Inorganic Treatment	1,259
	Total	11,392

Source: GM form of 1995 Biennial Report

4. The hazardous waste amendments of January 1997 will no longer consider trivalent chromium to be hazardous. However, hexavalent chromium is still classified as hazardous. The impact of this regulatory change on the quantity of waste sent to commercial facilities by generators in Pennsylvania is unknown.

5. The Land Recycling Program encourages the recycling and redevelopment of old industrial sites. Through the cleanup of old industrial sites, more hazardous waste from generators in Pennsylvania is expected to be sent to commercial facilities. The amount of hazardous waste that will be sent to commercial facilities from these sites cannot be quantified.

Source Reduction Factor

The decrease due to source reduction was calculated by taking a percentage of the "base" tonnage sent to commercial facilities from generators in PA. This calculation assumes a 3.0% decrease per year from 1995 figures. The source of the percentage decrease is a report prepared for DEP by RECOM Applied Solutions, Inc. (see page 40). The formula for the decrease due to source reduction is as follows:

Decrease Due to Source Reduction	=	Base Tonnage	x	3.00%	x	Number of Years, Projected

For example, assume there were 1,000 tons of hazardous waste sent in 1995 for commercial metals recovery by generators in Pennsylvania. To calculate how much we would expect the demand for metals recovery to decrease over the next five years (from 1997 to 2002), we would substitute into the above formula as follows:

Decrease Due to Source Reduction	=	1,000 Tons	x	3.00%	x	7 Years	=	210 Tons

Economic Growth Factor

As time passes, we expect the economic activity in the Commonwealth to increase. With this increase in economic activity, we would expect an increase in the quantity of hazardous waste that is commercially managed.

To determine the increase due to economic growth, a factor was calculated using the Federal Reserve Bank of Philadelphia's Economic Activity Index for Pennsylvania. Using this index, the average yearly economic growth rate of Pennsylvania for the period 1973 to 1995 was 0.59% (See Appendix 6-A). A time period of 22 years was used to be consistent with the length of the projection.

The calculation for the increase of hazardous waste expected to be sent to commercial facilities is very similar to the one used for source reduction. It is calculated as follows:

Increase Due to Economic Growth	=	Base Tonnage	x	0.59%	x	Number of Years, Projected

For example, assume there were 1,000 tons of hazardous waste sent for metals recovery in 1995. To calculate how much we would expect the demand for metals recovery to increase over the next five years, we would substitute into the above formula as follows:

Increase Due to Economic Growth	=	1,000 Tons	x	0.59%	x	7 Years	=	41 Tons

Because there are two years between the 1995 data and the current year, the five year projections shown above were multiplied by seven years. Likewise, a 20-year projection would be multiplied by 22 years.

Remediation Wastes

The quantity of hazardous waste sent to commercial facilities as a result of remediation can vary significantly from year to year, depending on the sites being remediated and the wastes found at the sites. As a result of this, a simple average of the remediation wastes reported as being sent to commercial facilities for the biennial report years of 1991, 1993 and 1995 is utilized. The average is able to capture the quantity of wastes and how they were managed.

The three biennial reporting cycles were chosen for consistency of data. The data for years previous to 1991 was collected from entirely different sources than the biennial report data. Also, there were some very large clean-up sites previous to 1991. Combining inconsistent data with several large clean-up sites could lead to an inaccurate picture of future remediation wastes. Therefore, years previous to 1991 were excluded.

Table 6-2

Average Yearly Remediation Wastes

Mgmt Code	Code Description	1995 Tons	1993 Tons	1991 Tons	Average Tons
M01	Metals recovery	128	54	1	61
M02	Solvents recovery	5	1	22	9
M03	Other recovery	88	424	95	202
M04	Incineration	2,069	482	400	984
M05	Energy recovery	2	9	12	8
M06	Fuel blending	1,184	529	262	658
M07	Aqueous inorganic treatment	223	867	3,037	1,376
M08	Aqueous organic treatment	398	7,944	822	3,055
M09	Aqueous org. & inorg. treatment	654	482	1,050	729
M10	Sludge treatment	0	0	86	29
M11	Stabilization	24,652	14,312	2,107	13,690
M12	Other treatment	389	167	3,080	1,212
M13	Disposal	6,894	12,514	32,980	17,463
M14	Transfer facility storage	2,304	531	511	1,115
	TOTALS	**38,991**	**38,315**	**44,465**	**40,590**

*Some totals do not add due to rounding

Projections

Using the formulas and factors outlined above, projections were made for the years 2002 and 2017. Table 6-3 shows the five-year (2002) projections by management category. Table 6-4 shows the 20-year (2017) projections. Table 6-5 shows the total amount of waste from generators in PA that is projected to be commercially managed from 1997 to 2017.

Table 6-3

Tons of Waste Sent to Commercial Facilities

by Generators Located in PA

Projected for 2002

Mgmt Code	Code Description	Recurrent Waste	Regulatory Changes	Base Tonnage	Decrease (Source Reduction)	Increase (Economic Growth)	Average Remediation Wastes	2002 Projection
M01	Metals recovery	97,179	-350	96,829	-20,334	+3,999	+61	80,555
M02	Solvents recovery	14,549	0	14,549	-3,055	+601	+9	12,104
M03	Other recovery	31,579	-9,782	21,797	-4,577	+900	+202	18,322
M04	Incineration	9,716	0	9,716	-2,040	+401	+984	9,061
M05	Energy recovery	9,907	0	9,907	-2,080	+409	+8	8,244
M06	Fuel blending	29,544	0	29,544	-6,204	+1,220	+658	25,218
M07	Aqueous inorganic treatment	130,933	0	130,933	-27,496	+5,408	+1,376	110,221
M08	Aqueous organic treatment	58,294	0	58,294	-12,242	+2,408	+3,055	51,515
M09	Aqueous organic & inorganic treatment	22,368	-1,259	21,109	-4,433	+872	+729	18,277
M10	Sludge treatment	2,384	0	2,384	-501	+98	+29	2,010
M11	Stabilization	65,920	0	65,920	-13,843	+2,722	+13,690	68,489
M12	Other treatment	7,043	0	7,043	-1,479	+291	+1,212	7,067
M13	Disposal	15,735	0	15,735	-3,304	+650	+17,463	30,544
M14	Transfer facility storage	14,141	0	14,141	-2,970	+584	+1,115	12,870
	TOTAL TONS	509,291	-11,392	497,901	-104,559	+20,563	+40,590	454,495

*Some totals do not add due to rounding

Table 6-4

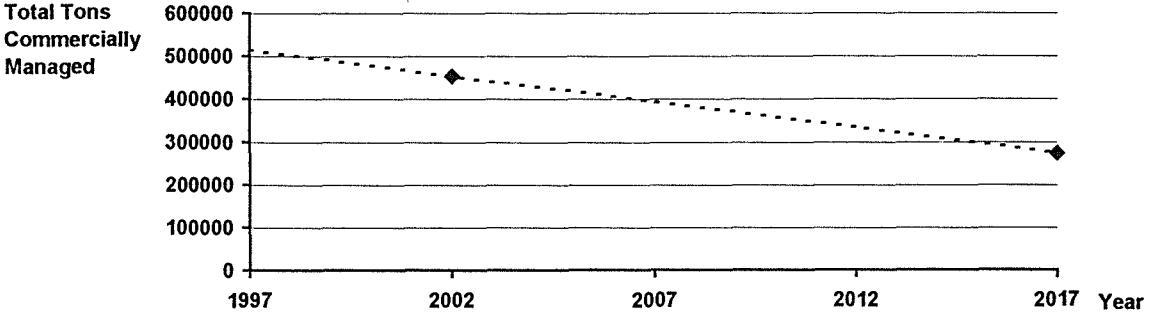
Tons of Waste Sent to Commercial Facilities
by Generators Located in PA
Projected for 2017

Mgmt Code	Code Description	Recurrent Waste	Regulatory Changes	Base Tonnage	Decrease (Source Reduction)	Increase (Economic Growth)	Average Remediation Wastes	2017 Projection
M01	Metals recovery	97,179	-350	96,829	-63,907	+12,568	+61	45,551
M02	Solvents recovery	14,549	0	14,549	-9,602	+1,888	+9	6,844
M03	Other recovery	31,579	-9,782	21,797	-14,386	+2,829	+202	10,442
M04	Incineration	9,716	0	9,716	-6,413	+1,261	+984	5,548
M05	Energy recovery	9,907	0	9,907	-6,539	+1,286	+8	4,662
M06	Fuel blending	29,544	0	29,544	-19,499	+3,835	+658	14,538
M07	Aqueous inorganic treatment	130,933	0	130,933	-86,416	+16,995	+1,376	62,888
M08	Aqueous organic treatment	58,294	0	58,294	-38,474	+7,567	+3,055	30,442
M09	Aqueous organic & inorganic treatment	22,368	-1,259	21,109	-13,932	+2,740	+729	10,646
M10	Sludge treatment	2,384	0	2,384	-1,573	+309	+29	1,149
M11	Stabilization	65,920	0	65,920	-43,507	+8,556	+13,690	44,659
M12	Other treatment	7,043	0	7,043	-4,648	+914	+1,212	4,521
M13	Disposal	15,735	0	15,735	-10,385	+2,042	+17,463	24,855
M14	Transfer facility storage	14,141	0	14,141	-9,333	+1,836	+1,115	7,759
	TOTAL TONS	509,291	-11,392	497,901	-328,615	+64,628	+40,590	274,504

*Some totals do not add due to rounding

Table 6-5

Projections of Commercially Managed Waste from Generators in PA



Comparison of Projections to Capacity Available at Commercial Facilities in Pennsylvania

Tables 6-6 and 6-7 compare the projections for 2002 and 2017 to the capacity available at commercial facilities located in Pennsylvania. The total capacity by management category came from Table 5-4.

The management category of transfer facility storage (M14) was not included in the tables. The Solid Waste Management Act requires the plan to address treatment and disposal facilities, but not storage facilities. In addition, many of the permitted capacities at these facilities are for the quantity of hazardous waste a facility is permitted to store at any given time. These capacities are not readily converted to annual figures.

Table 6-6

Comparison of Permitted Commercial Capacity (in Tons) to Projection for 2002

Mgmt Code	Code Description	Capacity Projection - 2002	Total Permitted Capacity	Projection greater than capacity? How much?
M01	Metals recovery	80,555	525,701	No
M02	Solvents recovery	12,104	0	Yes - 12,104 tons
M03	Other recovery	18,322	48,670	No
M04	Incineration	9,061	0	Yes - 9,061 tons
M05	Energy recovery	8,244	166,253	No
M06	Fuel blending	25,218	0	Yes - 25,218 tons
M07	Aqueous inorganic treatment	110,221	297,884	No
M08	Aqueous organic treatment	51,515	0	Yes - 51,515
M09	Aqueous organic & inorganic treatment	18,277	31,580	No
M10	Sludge treatment	2,010	31,580	No
M11	Stabilization	68,489	375,304	No
M12	Other treatment	7,067	235,038	No
M13	Disposal	30,544	0	Yes - 30,544 tons

Table 6-7

Comparison of Permitted Commercial Capacity (in Tons) to Projection for 2017

Mgmt Code	Code Description	Capacity Projection - 2017	Total Permitted Capacity	Projection greater than capacity? How much?
M01	Metals recovery	45,551	525,701	No
M02	Solvents recovery	6,844	0	Yes - 6,844 tons
M03	Other recovery	10,442	48,670	No
M04	Incineration	5,548	0	Yes - 5,548 tons
M05	Energy recovery	4,662	166,253	No
M06	Fuel blending	14,538	0	Yes - 14,538 tons
M07	Aqueous inorganic treatment	62,888	297,884	No
M08	Aqueous organic treatment	30,442	0	Yes - 30,442 tons
M09	Aqueous organic & inorganic treatment	10,646	31,580	No
M10	Sludge treatment	1,149	31,580	No
M11	Stabilization	44,659	375,304	No
M12	Other treatment	4,521	235,038	No
M13	Disposal	24,855	0	Yes - 24,855 tons

The quantity of commercially managed waste is greater than the commercial capacity located in Pennsylvania for five management categories - solvents recovery, incineration, fuel blending, aqueous organic treatment and disposal. This also occurred in three of these five categories in the previous plan - solvents recovery, incineration, and disposal.

Since the last plan, a small solvent recovery facility (Capital Parts Washers) has closed. The closing of this facility did not significantly impact the relationship between commercial solvents recovery capacity and the quantity that generators in Pennsylvania sent to commercial solvents recovery facilities. There has been no change in total available commercial capacity for incineration and disposal.

One facility with fuel blending capacity has closed since the previous plan (Chemical Waste Management; see footnote in Table 5-1). The closure of this facility eliminated all available commercial fuel blending capacity in the Commonwealth.

The previous plan did not show that the quantity of waste sent to commercial aqueous organic treatment facilities was greater than the available commercial capacity. This is due to adopting the Biennial Reporting System as the data source after the previous plan was completed. In the previous plan, aqueous organic treatment was part of the broader management category of "aqueous treatment ". The previous plan showed adequate commercial "aqueous treatment" capacity available. Consequently, the quantity of waste sent to commercial aqueous organic treatment facilities was not noted as being greater than the commercial capacity available in Pennsylvania at that time.

Conclusions

The plan will continue to support the hierarchy of preferred waste management practices in order to promote more effective methods of hazardous waste management. The hierarchy describes a prioritized series of waste management steps with each step given maximum consideration before proceeding to a less preferred alternative. The waste management hierarchy states that the most effective method to manage waste is to combine a variety of waste-handling methods in a sequence that will save disposal capacity, preserve natural resources, conserve natural resources and reduce pollution. In the end, this series of steps reserves land disposal for only those wastes that cannot be managed by a more preferred method and have been stabilized to reduce the potential for migration. A complete explanation of the sequential steps is provided in Chapter Four. The sequence of events for the waste management hierarchy is:

- **Source Reduction**
- **Use or Reclamation**
- **Treatment**
- **Land Disposal**

Proper management of hazardous waste is important to all Pennsylvanians. Article I, Section 27 of the Commonwealth Constitution declares that the people of the Commonwealth have a right to clean air, pure water and the preservation of the natural, scenic, historic and esthetic values of the environment; that Pennsylvania's natural resources are the common property of all the people, including generations yet to come; and that the Commonwealth, as trustee of these resources, shall conserve and maintain them for the benefit of all the people.

For purposes of this plan, proper management is defined by the following principles:

- Generators should give first priority to source reduction.
- Captive management is preferred over commercial management. Captive onsite management is preferred over captive offsite management.
- Reclamation, especially through new and improved technologies, is preferable to treatment and/or disposal.
- Rely on the free market system and cooperative agreements between waste management facilities and local governments and municipalities for private companies to develop and operate new facilities that provide for the proper management of hazardous waste.
- Rely on the free market system, both in-state and out-of-state, to provide facilities that can adequately handle the demand for commercial hazardous waste treatment and disposal facilities created by generators located in Pennsylvania.

As stated in Chapter One (page 5), the plan will play a role in the establishment of a new hazardous waste management facility if a Certificate of Public Necessity (CPN) is required. In reviewing an application for a CPN, the EQB is to consider several factors, including "the extent to which the facility is in conformance" with this plan. Conformance is to be determined by classifying the facility into one of three types (i.e. captive; commercial treatment and disposal facilities; and commercial recovery) and reviewing the plan's conclusion as to whether or not the proposed type of facility is necessary.

1. Captive Facilities (onsite and offsite)

All onsite and offsite captive facilities are needed. However, all captive facilities, as a priority, should give first and utmost consideration to all economically feasible source reduction and reclamation technologies.

Captive facilities are necessary to continue the downward trend in the demand for commercial facilities. Onsite captive management has certain advantages: (1) The risk associated with transporting wastes across public roadways is eliminated, (2) the liabilities of onsite management are

better defined, and (3) the generator has direct control over both the operations at the onsite facility and the characteristics of the waste stream.

Offsite captive management shares some of these advantages. However, DEP recognizes that there is additional risk from transporting waste from the generator to the offsite captive facility.

This plan encourages proper captive management of hazardous waste - onsite captive management as a first priority and offsite captive management as a second choice. This statement in no way revises the siting criteria established in regulation.

2. Commercial Treatment and Disposal Facilities

Generators in Pennsylvania have adequate commercial treatment and disposal capacity available, even though the quantity of commercially managed hazardous waste from generators in Pennsylvania is projected to be greater than the commercial management capacity available in the state in four treatment and disposal management categories (incineration, fuel blending, aqueous organic treatment, and disposal). This finding is based on two interrelated factors: the Capacity Assurance Plan (CAP) and the interstate movement of hazardous waste.

The U.S. Environmental Protection Agency requires each state to submit a CAP, which describes hazardous waste generation and management. EPA compares, by state and region, waste generation to facility capacities to determine if there is enough commercial capacity for the next 20 years. In its most recent 1997 report, EPA determined that "adequate national capacity for the treatment and disposal of hazardous waste exists through the year 2013."

Commercial facilities located outside the Commonwealth play an important part in the proper management of hazardous waste that is generated in Pennsylvania just as commercial facilities located in Pennsylvania play an important role in the proper management of waste that is generated outside the Commonwealth. The interstate movement of hazardous waste for treatment and disposal is substantial. No state in the nation manages or could economically manage all the hazardous waste generated within its borders.

As shown in Tables 3-9 and 3-10, many tons of hazardous waste are shipped across state boundaries for management. Much of this movement is due to the widely variable nature of hazardous waste. Hazardous waste can take on many different forms and characteristics that require specialized treatment and disposal techniques. Many times, the techniques are specific to a given type of hazardous waste.

For example, in Pennsylvania, the prevalence of steel and its associated manufacturing activities have led to a commercial waste management industry in the state that is directed toward managing metal bearing inorganic wastes. These commercial facilities play an important role managing wastes from steel making facilities in Pennsylvania and other states. In most cases, the facilities could not operate if they were limited to receiving waste from only in-state generators.

The hazardous waste management industry is also very integrated. In Pennsylvania, for example, there is no commercial capacity for fuel blending or solvent recovery. To be managed by one of these methods, organic wastes from generators in Pennsylvania must be sent to out-of-state facilities. A large portion of these wastes are managed in states adjacent to Pennsylvania. Much of the blended fuel is sent back to Pennsylvania to be burned for energy recovery in cement kilns. Some businesses in Pennsylvania and other states re-use their own commercially recovered solvents. Other businesses may actually purchase recovered solvents from commercial recovery facilities rather than buy virgin solvents.

The integration of waste management is also seen in the metals recovery industry. A metals recovery facility may produce a residual which is high in a type of metal (other than what is being recovered) that another recovery facility may be interested in. The residual is then shipped to the other facility for further recovery. Additionally, the metals recovery facilities may generate wastes that need to be stabilized and/or landfilled.

Metals recovery facilities receive waste from generators in many states. The materials, residuals and wastes leaving the generators and recovery facilities often end up in a different state. Before the hazardous waste is ultimately disposed, it may move across state lines several times.

As illustrated above, the commercial hazardous waste management industry is very dynamic and market driven. As a result, commercial facilities often play an important role managing waste generated in other states.

This conclusion means no new commercial hazardous waste treatment or disposal facility could obtain a Certificate of Public Necessity that would override local ordinances prohibiting or regulating a facility after the facility received a permit from DEP.

3. Commercial Recovery Facilities

Any recovery facility that meets the regulatory test for legitimate use, reclamation or recovery is necessary. This plan promotes resource recovery over treatment and disposal. Placing limits on the types of recovery facilities, even if there is adequate capacity, could act as a disincentive to developing new and improved resource recovery technologies.

One management category classified as recovery (solvents recovery) showed a greater amount of waste expected to be commercially managed than the available commercial capacity in Pennsylvania.

Chapter 2

APPENDICES

Appendix 2-A

SOURCE CODES

CLEANING AND DEGREASING

A01 Stripping
A02 Acid cleaning
A03 Caustic (alkali) cleaning
A04 Flush rinsing
A05 Dip rinsing
A06 Spray rinsing
A07 Vapor degreasing
A08 Physical scraping and removal
A19 Other cleaning and degreasing

SURFACE PREPARATION

A21 Painting
A22 Electroplating
A23 Electroless plating
A24 Phosphating
A25 Heat treating
A26 Pickling
A27 Etching
A29 Other surface coating/preparation

PROCESS OTHER THAN SURFACE PREPARATION

A31 Product rinsing
A32 Product filtering
A33 Product distillation
A34 Product solvent extraction
A35 By-product processing
A36 Spent catalyst removal
A37 Spent process liquids removal
A38 Tank sludge removal
A39 Slag removal
A40 Metal forming
A41 Plastics forming
A49 Other processes other than surface reparation

Production Or Service-Derived One-Time & Intermittent Processes

A51 Leak collection
A53 Cleanup of spill residues
A54 Oil changes
A55 Filter/battery replacement
A56 Discontinue use of process equipment
A57 Discarding off-spec material
A58 Discarding out-of-date products or chemicals
A59 Other production-derived, one-time and intermittent processes
A60 Sludge removal

REMEDIATION-DERIVED WASTE

A61 Superfund Remedial Action
A62 Superfund Emergency Response
A63 RCRA corrective action at solid waste management unit
A64 RCRA closure of hazardous waste management unit
A65 Underground storage tank cleanup
A69 Other remediation

POLLUTION CONTROL OR WASTE TREATMENT PROCESSES

A71 Filtering/screening
A72 metals recovery
A73 Solvents recovery
A74 Incineration
A75 Wastewater treatment
A76 Sludge dewatering
A77 Stabilization
A78 Air pollution control devices
A79 Leachate Collection
A89 Other pollution control or waste treatment

OTHER PROCESSES

A91 Clothing and personal protective equipment
A92 Routine cleanup wastes
A93 Closure of management units(s) or equipment other than by remediation specified in codes A61-A69
A94 Laboratory wastes
A99 Other

Source: 1995 Biennial Reporting System

GROUPINGS OF WASTE TYPES

Lab Packs--B0

B001 Lab packs of old chemicals only
B002 Lab packs of debris only
B003 Mixed lab packs
B004 Lab packs containing acute hazardous wastes
B009 Other lab packs

Inorganic Liquids--B1

B101 Aqueous waste with low solvents
B102 Aqueous waste w/low other toxic organics
B103 Spent acids with metals
B104 Spent acid without metals
B105 Acidic aqueous waste
B106 Caustic solution w/metals, no cyanides
B107 Caustic solution with metals & cyanides
B108 Caustic solution with cyanides, no metals
B109 Spent caustic
B110 Caustic aqueous waste
B111 Aqueous waste with reactive sulfides
B112 Aq. waste w/other reactives (e.g., explosives)
B113 Other aq. waste w/high dissolved solids
B114 Other aq. waste w/low dissolved solids
B115 Scrubber water
B116 Leachate
B117 Waste liquid mercury
B119 Other inorganic liquids

Organic Liquids--B2

B201 Concentrated solvent-water solution
B202 Halogenated (e.g., chlorinated) solvent
B203 Nonhalogenated solvent
B204 Halogenated/nonhalogenated solvent mixture
B205 Oil-water emulsion or mixture
B206 Waste oil
B207 Concentrated aq. solution of other organics
B208 Concentrated phenolics
B209 Organic paint, ink, lacquer, or varnish
B210 Adhesives or epoxies
B211 Paint thinner or petroleum distillates
B212 Reactive or polymerizable organic liquid
B219 Other organic liquids

Inorganic Solids--B3

B301 Soil contaminated with organics
B302 Soil contaminated with inorganics only
B303 Ash, slag, or other residue from incineration of wastes
B304 Other "dry" ash, slag, or thermal residue
B305 "Dry" lime or metal hydroxide solids chemically fixed
B306 "Dry" lime or metal hydroxide solids not fixed
B307 Metal scale, filings, or scrap
B308 Empty or crushed metal drums, containers
B309 Batteries or battery parts, casing, cores
B310 Spent solid filters or absorbents
B311 Asbestos solids and debris
B312 Metal-cyanide salts/chemicals
B313 Reactive cyanide salts/chemicals
B314 Reactive sulfide salts/chemicals
B315 Other reactive salts/chemicals
B316 Other metal salts/chemicals
B319 Other waste inorganic solids

Organic Solids--B4

B401 Halogenated pesticide solid
B402 Nonhalogenated pesticide solid
B403 Solid resins or polymerized organics
B404 Spent carbon
B405 Reactive organic solid
B406 Empty fiber or plastic containers
B407 Other halogenated organic solids
B409 Other nonhalogenated organic solids

Inorganic Sludges--B5

B501 Lime sludge without metals
B502 Lime sludge with metals/metal hydroxide sludge
B503 Wastewater trtmnt sludge w/toxic organics
B504 Other wastewater treatment sludge
B505 Untreated plating sludge without cyanides
B506 Untreated plating sludges with cyanides
B507 Other sludge with cyanides
B508 Sludge with reactive sulfides
B509 Sludge with other reactives
B510 Degreasing sludge with metal scale or filings

Inorganic Sludges--B5 (Cont'd)

B511 Air pollution control device sludge (e.g., fly ash, wet scrubber sludge)
B512 Sediment or lagoon dragout contaminated with organics
B513 Sediment or lagoon dragout contaminated with inorganics only
B514 Drilling mud
B515 Asbestos slurry or sludge
B516 Chloride or other brine sludge
B519 Other inorganic sludges

Organic Sludges--B6

B601 Still bottoms of halogenated (e.g., chlorinated) solvents or other organic liquids
B602 Sill bottoms of nonhalogenated solvents or other organic liquids
B603 Oily sludge
B604 Organic paint or ink sludge
B605 Reactive or polymerizable organics
B606 Resins, tars, or tarry sludges
B607 Biological treatment sludge
B608 Sewage or other untreated biological sludge
B609 Other organic sludges

Inorganic Gases--B7

B701 Inorganic gases

Organic Gases--B8

B801 Organic gases

Source: 1995 Biennial Reporting System, GM Form

WASTEWATER CODES

If one of the following codes are present on the GM form on which the waste was reported, the waste is considered to be wastewater. If the codes listed below do not appear with the waste on the GM form, the waste is considered nonwastewater.

Form Codes Indicating Wastewater

Code	Description
B101	Aqueous waste with low solvents
B102	Aqueous waste with low other toxic organics
B105	Acidic aqueous waste
B110	Caustic aqueous waste
B111	Aqueous waste with reactive sulfides
B112	Aqueous waste with other reactives
B113	Other aqueous waste w/high dissolved solids
B114	Other aqueous waste w/low dissolved solids
B115	Scrubber water
B116	Leachate

Management Codes Indicating Wastewater

Code	Description
M071	Chrome reduction followed by chemical precipitation
M072	Cyanide destruction followed by chem. precipitation
M073	Cyanide destruction only
M074	Chemical oxidation followed by chem. precipitation
M075	Chemical oxidation only
M076	Wet air oxidation
M077	Chemical precipitation
M078	Other aqueous inorganic treatment
M079	Aqueous inorganic treatment--type unknown
M081	Biological treatment
M082	Carbon absorption
M083	Air/stream stripping
M084	Wet air oxidation
M085	Other aqueous organic treatment
M089	Aqueous organic treatment--type unknown
M091	Chem. precipitation in combination with biological trtmnt
M092	Chem. precip. in combination with carbon absorption
M093	Wet air oxidation
M094	Other organic/inorganic treatment
M099	Aqueous organic & inorganic treatment▒type unknown
M121	Neutralization
M122	Evaporation
M123	Settling/clarification
M124	Phase separation only
M125	Other treatment
M129	Other treatment—type unknown
M134	Deepwell/underground injection
M135	Direct discharge to sewer/POTW
M136	Direct discharge to surface water under NPDES

Source: Biennial Reporting System Reporting Database User Guide

TOTAL TONS OF RECURRENT WASTE GENERATED

Includes Wastewater and Nonwastewater—1995

SIC Code	SIC Description	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	Total
16	Heavy construction except building	.	3	1	192	.	.	.	.	.	196
17	Construction--special trade contractors	11	.	28	6	8	.	19	.	.	73
20	Food and kindred products	0	.	22	.	7	.	.	.	.	29
22	Textile mill products	.	12	198	10	.	.	.	.	.	220
24	Lumber & wood products except furniture	.	6,826	199	7	33	.	46	.	.	7,111
25	Furniture and fixtures	.	.	568	52	48	23	212	.	.	902
26	Paper and allied products	0	59,811	888	9	74	.	60	.	1	60,842
27	Printing, publishing & allied industries	1	8,038	1,717	182	153	23	379	.	.	10,492
28	Chemicals & allied products	259	5,593,602	452,030	5,360	1,120	2,031	30,360	0	11	6,084,774
29	Petroleum refining & related industries	13	29,792	23,529,580	1,462	59	2,470	12,520	.	.	23,575,895
30	Rubber & miscellaneous plastic products	4	690	1,020	49	132	61	60	.	.	2,017
31	Leather & leather products	.	24	123	.	116	.	.	.	.	263
32	Stone, clay, glass & concrete products	5	796,272	138	5,272	16	189	7	.	.	801,900
33	Primary metal industries	11	14,249,379	24,086	99,201	2,942	45,300	146	.	0	14,421,065
34	Fabricated metal products	9	1,176,106	3,789	3,377	715	4,189	582	0	0	1,188,767
35	Industrial & commercial machinery	3	227,143	1,136	528	46	440	48	.	0	229,343
36	Electronic & other electrical equip.	37	2,147,801	38,763	19,887	91	8,559	62	.	0	2,215,201
37	Transportation equipment	10	507,010	5,426	561	320	1,304	47	.	1	514,679
38	Measuring & analyzing instruments	12	14,549	2,137	138	83	87	14	.	0	17,020
39	Miscellaneous manufacturing industries	2	1,270	2,805	19	75	225	178	.	0	4,574
40	Railroad transportation	.	4	2,480	31	0	1	41	.	.	2,557
41	Local/suburban transit & hwy. passnger	.	5	237	16	.	1	.	.	.	259
42	Motor freight transportation/warehouse	35	1,212	365	368	2	2	.	.	1	1,985
45	Transportation by air	.	14	56	25	0	.	.	.	.	95
46	Pipelines except natural gas	.	.	3,061	1	5	.	118	.	.	3,186
47	Transportation services	0	55	104	82	4	191	0	.	.	435
48	Communications	0	87	9	30	.	.	.	.	.	126
49	Electric, gas & sanitary services	10	444,535	1,527	2,172	13	171	85	0	0	448,512
50	Wholesale trade--durable goods	1	35,108	38	26	.	61	.	.	.	35,234
51	Wholesale trade--nondurable goods	2	701	738	9	5	.	7	.	.	1,462
55	Automotive dealers & service stations	.	0	48	0	0	0	351	.	.	399

SIC Code	SIC Description	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	Total
59	Miscellaneous retail	1	13	31	3	2	.	.	.	0	50
72	Personal services	.	.	190	.	.	1,121	17	.	.	1,328
73	Business services	5	10	28	0	57	.	0	.	0	100
75	Auto repair services & parking	.	0	24	1	.	.	.	.	.	25
76	Miscellaneous repair services	.	.	82	0	.	.	.	.	.	82
80	Health services	21	1	7	19	0	.	3	.	0	50
82	Educational services	74	5	86	24	1	.	4	.	0	195
87	Engineering, accounting & mgmt. services	33	105,467	441	90	34	30	8	.	.	106,104
88	Private households	.	.	.	40	.	.	.	.	.	40
89	Miscellaneous services, nec	1	177	0	0	0	.	.	.	.	179
91	Executive., legislative & general gov't.	.	.	4	0	.	.	.	.	.	5
95	Admin.-environmental quality programs	.	1,708	8	.	.	.	.	.	.	1,717
96	Administration of economic programs	.	18	8	18	.	.	0	.	.	43
97	National security & international. affairs	55	53	251	268	50	118	2	0	0	798
99	Nonclassifiable establishments	17	51	337	69	17	73	.	.	.	564
	TOTALS	632	25,407,555	24,074,814	139,603	6,228	66,668	45,377	1	15	49,740,892

Source: 1995 Biennial Reporting System, GM Form

RECURRENT GENERATION OF WASTEWATER—1995

SIC Code	Description	B0 Lab Packs	B1 Inorganic Liquids	B2 Organic Liquids	B3 Inorganic Solids	B4 Organic Solids	B5 Inorganic Sludges	B6 Organic Sludges	B8 Organic Gases	Total
16	Heavy construction except building	.	3	.	.	.	.	.	.	3
22	Textile mill products	.	12	.	.	.	.	.	.	12
24	Lumber & wood products except furniture	.	6,826	.	.	.	.	.	.	6,826
25	Furniture and fixtures	.	.	1	.	.	23	.	.	24
26	Paper and allied products	0	59,798	.	0	.	.	.	.	59,799
27	Printing, publishing & allied products	.	7,953	22	6	.	.	.	.	7,982
28	Chemicals & allied products	0	5,592,801	129,587	123	273	1,385	.	.	5,724,169
29	Petroleum refining & related industries	.	29,189	23,528,134	39	17	2	1,022	.	23,558,403
30	Rubber & miscellaneous plastics products	.	647	251	.	.	.	.	.	898
31	Leather & leather products	.	24	.	.	.	.	.	.	24
32	Stone, clay, glass & concrete products	0	796,011	.	.	.	.	.	.	796,011
33	Primary metal industries	0	14,181,994	65	100	2,769	6,885	.	0	14,191,813
34	Fabricated metal products	0	1,165,046	128	2	1	610	.	.	1,165,785
35	Industrial & commercial machinery	0	226,882	4	.	.	1	.	.	226,887
36	Electronic & other electrical equipment	1	2,132,281	315	3,618	6	66	.	.	2,136,288
37	Transportation equipment	1	506,697	1,354	.	.	.	.	.	508,052
38	Measuring & analyzing instruments	.	14,306	20	0	.	.	.	.	14,327
39	Miscellaneous manufacturing industries	.	1,083	.	.	.	.	.	.	1,083
40	Railroad transportation	.	4	.	.	.	.	.	.	4
41	Local/suburban transit & highway passenger	.	2	.	.	.	.	.	.	2
42	Motor freight transportation/warehouse	14	1,195	.	.	.	.	.	.	1,209
45	Transportation by air	.	12	1	0	.	.	.	.	14
46	Pipelines except natural gas	.	.	2,189	.	5	.	.	.	2,194
47	Transportation services	.	55	.	.	.	191	.	.	246
48	Communications	.	87	.	0	.	.	.	.	87
49	Electric, gas & sanitary services	.	444,491	2	187	0	0	.	.	444,680
50	Wholesale trade—durable goods	.	35,108	.	.	.	.	.	.	35,108
51	Wholesale trade—nondurable goods	.	525	112	0	.	.	.	.	637
55	Automotive dealers & service stations	.	0	8	0	.	.	.	.	8
59	Miscellaneous retail	.	13	16	.	.	.	.	.	29
73	Business services	.	8	.	.	.	.	.	.	8
80	Health services	.	0	.	.	.	.	.	.	0
82	Education services	.	5	.	.	.	.	.	.	5

SIC Code	Description	B0 Lab Packs	B1 Inorganic Liquids	B2 Organic Liquids	B3 Inorganic Solids	B4 Organic Solids	B5 Inorganic Sludges	B6 Organic Sludges	B8 Organic Gases	Total
87	Engineering & accounting & mgmt. services	.	105,436	1	0	.	.	.	.	105,437
89	Miscellaneous services, nec	.	176	0	0	.	.	.	.	176
95	Admin.--environmental quality programs	.	1,708	.	.	.	.	.	.	1,708
96	Administration of economic programs	.	18	.	.	.	.	.	.	18
97	National Security & international. affairs	0	43	11	0	.	76	.	.	129
99	Nonclassifiable establishments	.	48	.	.	.	.	.	.	48
	TOTALS	17	25,310,487	23,662,223	4,076	3,071	9,237	1,022	0	48,990,133

Source: 1995 Biennial Reporting System, GM Form

RECURRENT GENERATION OF NONWASTEWATER—1995

Waste Code	Waste Description	Tons Generated
B0	**LAB PACKS**	
B001	Lab packs of old chemicals only	92
B002	Lab packs of debris only	3
B003	Mixed lab packs	476
B004	Lab packs containing acute hazardous wastes	40
B009	Other lab packs	4
	Total Lab Packs	**615**
B1	**INORGANIC LIQUIDS**	
B103	Spent acids with metals	93,140
B104	Spent acid without metals	98
B106	Caustic solution with metals but no cyanides	611
B107	Caustic solution with metals and cyanides	538
B108	Caustic solution with cyanides but no metals	10
B109	Spent caustic	1,702
B117	Waste liquid mercury	6
B119	Other inorganic liquids	964
	Total Inorganic Liquids	**97,068**
B2	ORGANIC LIQUIDS	
B201	Concentrated solvent-water solution	269,224
B202	Halogenated (e.g., chlorinated) solvent	60,217
B203	Nonhalogenated solvent	31,880
B204	Halogenated/nonhalogenated solvent mixture	9,455
B205	Oil-water emulsion or mixture	3,139
B206	Waste Oil	5,951
B207	Concentrated aqueous solution of other organics	485
B208	Concentrated phenolics	0
B209	Organic paint, ink, lacquer, or varnish	5,283
B210	Adhesives or epoxies	136
B211	Paint thinner or petroleum distillates	7,780
B212	Reactive or polymerizable organic liquid	1,016
B219	Other organic liquids	18,024
	Total Organic Liquids	**412,591**
B3	**INORGANIC SOLIDS**	
B301	Soil contaminated with organics	1,798
B302	Soil contaminated with inorganics only	4,878
B303	Ash, slag, other residue from incineration of wastes	2,131
B304	Other "dry" ash, slag, or thermal residue	34,057
B305	"Dry" lime or metal hydroxide solids chemically "fixed"	1,039
B306	"Dry" lime or metal hydroxide solids not "fixed"	5,662
B307	Metal scale, filings, or scrap	2,030
B308	Empty or crushed metal drums or containers	78
B309	Batteries or battery parts, casing, cores	3,526
B310	Spent solid filters or absorbents	1,465
B311	Asbestos solids and debris	74
B312	Metal-cyanide salts/chemicals	356
B313	Reactive cyanide salts/chemicals	11
B314	Reactive sulfide salts/chemicals	13
B315	Other reactive salts/chemicals	28
B316	Other metal salts/chemicals	1,117
B319	Other waste inorganic solids	77,263
	Total Inorganic Solids	**135,526**
B4	**ORGANIC SOLIDS**	
B401	Halogenated pesticide solid	1
B402	Nonhalogenated pesticide solid	35
B403	Solid resins or polymerized organics	666
B404	Spent carbon	52
B405	Reactive organic solid	4
B406	Empty fiber or plastic containers	52
B407	Other halogenated organic solids	121
B409	Other nonhalogenated organic solids	2,228
	Total Organic Solids	**3,157**

Waste Code	Waste Description	Tons Generated
B5	**INORGANIC SLUDGES**	
B501	Lime sludge without metals	83
B502	Lime sludge with metals/metal hydroxide sludge	27,400
B503	Wastewater treatment sludge with toxic organics	3,950
B504	Other wastewater treatment sludge	2,587
B505	Untreated plating sludge without cyanides	64
B506	Untreated plating sludges with cyanides	254
B507	Other sludge with cyanides	1
B509	Sludge with other reactives	31
B510	Degreasing sludge with metal scale or filings	9
B511	Air pollution control device sludge	20,259
B512	Sediment or lagoon dragout contaminated with organics	13
B513	Sediment or lagoon dragout contaminated w/inorgs only	100
B519	Other inorganic sludges	2,681
	Total--Inorganic Sludges	**57,431**

Waste Code	Waste Description	Tons Generated
B6	**ORGANIC SLUDGES**	
B601	Still bottoms of halogenated solvents or other organic liquids	181
B602	Sill bottoms of nonhalogenated solvents or other org liquids	30,121
B603	Oily sludge	11,933
B604	Organic paint or ink sludge	1,590
B605	Reactive or polymerizable organics	19
B606	Resins, tars, or tarry sludges	205
B609	Other organic sludges	305
	Total Organic Sludges	**44,355**
B7	**INORGANIC GASES**	
B701	Inorganic gases	1
	Total Inorganic Gases	1
B8	ORGANIC GASES	
B801	Organic gases	15
	Total Organic Gases	**15**
	GRAND TOTAL	**750,759**

* All totals do not add due to rounding

Source: 1995 Biennial Reporting System, GM Form

TONS GENERATED OF RECURRENT NONWASTEWATER--1995

SIC Code	SIC Description	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	Total Tons
16	Heavy construction, excl. buildings	.	.	1	192	.	.	.	.	.	193
17	Special trade contractors	11	.	28	6	8	.	19	.	.	73
20	Food & kindred products	0	.	22	.	7	.	.	.	.	29
22	Textile mill products	.	.	198	10	.	.	.	.	.	208
24	Lumber & wood products	.	.	199	7	33	.	46	.	.	285
25	Furniture & fixtures	.	.	567	52	48	.	212	.	.	879
26	Paper & allied products	0	13	888	9	74	.	60	.	1	1,043
27	Printing & publishing	1	85	1,694	176	153	23	379	.	.	2,510
28	Chemicals & allied products	258	802	322,443	5,237	847	646	30,360	0	11	360,605
29	Petroleum & coal products	13	603	1,446	1,423	42	2,468	11,497	.	.	17,492
30	Rubber & misc. plastic products	4	43	769	49	132	61	60	.	.	1,118
31	Leather & leather products	.	.	123	.	116	.	.	.	.	239
32	Stone, clay and gas products	5	261	138	5,272	16	189	7	.	.	5,889
33	Primary metal industry	11	67,385	24,021	99,101	173	38,415	146	.	.	229,253
34	Fabricated metal products	9	11,061	3,661	3,375	714	3,579	582	0	0	22,982
35	Industrial machinery & equip.	2	261	1,133	528	46	438	48	.	0	2,457
36	Electronic & other electric equip.	36	15,519	38,448	16,268	85	8,494	62	.	0	78,913
37	Transportation equipment	9	313	4,072	561	320	1,304	47	.	1	6,627
38	Instruments & related products	12	243	2,116	138	83	87	14	.	0	2,693
39	Misc. manufacturing industries	2	187	2,805	19	75	225	178	.	0	3,490
40	Railroad transportation	.	1	2,480	31	0	1	41	.	.	2,554
41	Local & interurban passenger transit	.	3	237	16	.	1	.	.	.	257
42	Trucking & warehousing	21	18	365	368	2	2	.	.	1	776
45	Transportation by air	.	1	55	25	0	.	.	.	.	81
46	Pipelines, except natural gas	.	.	872	1	.	.	118	.	.	991
47	Transportation services	0	0	104	82	4	.	0	.	.	189
48	Communications	0	.	9	29	.	.	.	.	.	39
49	Electric, gas & sanitary services	10	44	1,524	1,985	13	171	85	0	0	3,832
50	Wholesale trade, durable goods	1	.	38	26	.	61	.	.	.	126
51	Wholesale trade, nondurable goods	2	176	626	8	5	.	7	.	.	825
55	Automotive dealers & service stations	.	0	40	0	0	0	351	.	.	391
59	Miscellaneous retail	1	0	14	3	2	.	.	.	0	21
72	Personal services	.	.	190	.	.	1,121	17	.	.	1,328
73	Business services	5	2	28	0	57	.	0	.	0	92

SIC Code	SIC Description	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	Total Tons
75	Auto. repair, services & parking	.	0	24	1	.	.	.	.	.	25
76	Miscellaneous repair services	.	.	82	0	.	.	.	.	.	82
80	Health services	21	0	7	19	0	.	3	.	0	50
82	Educational services	74	0	86	24	1	.	4	.	0	190
87	Engineering & management services	33	31	440	90	34	30	8	.	.	667
88	Private households	.	.	.	40	.	.	.	.	.	40
89	Miscellaneous services, nec	1	2	0	0	0	.	.	.	.	3
91	Executives, legislative & general	.	.	4	0	.	.	.	.	.	5
95	Environmental quality & housing	.	.	8	.	.	.	.	.	.	8
96	Administration of economic programs	.	.	8	18	.	.	0	.	.	26
97	National security & internat'l affairs	55	11	241	268	50	43	2	0	0	669
99	Nonclassifiable establishments	17	2	337	69	17	73	.	.	.	515
	TOTAL	**615**	**97,068**	**412,591**	**135,526**	**3,157**	**57,431**	**44,355**	**1**	**15**	**750,759**

Source: 1995 Biennial Reporting System, GM Form
Two SIC codes (07 and 74) generated less than a total of one ton and are not included in this Appendix.

TONS OF REMEDIAL WASTE GENERATED—1995

Includes wastewater and nonwastewater

Source Code	Code Description	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic sludges	Total
A61	Superfund remedial action	0	431	55	2,149	110	0	78	2,824
A62	Superfund emergency response	.	.	281	.	.	.	.	281
A63	RCRA corrective action at solid waste mgmt unit	.	0	.	2,991	2	.	.	2,993
A64	RCRA closure of hazardous waste management unit	.	.	.	164	14	.	39,350	39,528
A65	Underground storage tank cleanup	.	9	178	631	25	.	.	842
A69	Other remediation	1	728	1,069	29,950	1,537	38	490	33,812
A93	Closure of management unit(s) or equipment other than by remediation specified in codes A61-A69	0	79	37	611	0	2	1	730
	TOTALS	**1**	**1,247**	**1,619**	**36,496**	**1,688**	**40**	**39,918**	**81,010**

Source: 1995 Biennial Reporting System, GM Form

REMEDIAL SOURCE CODE DESCRIPTIONS

A61--Superfund Remedial Action

A62--Superfund Emergency Response

A63--RCRA corrective action at solid waste management unit

A64--RCRA closure of hazardous waste management unit

A65--Underground storage tank cleanup

A69--Other remediation

A93--Closure of management unit(s) or equipment other than by remediation specified in codes A61-A69

TOTAL NONWASTEWATER BY SIC CODE CROSS-REFERENCED WITH WASTE TYPE—1995

(Includes recurrent and remediation wastes)

SIC Code	SIC Description	Lab Packs	Inorg. Liquids	Org. Liquids	Inorg. Solids	Org. Solids	Inorg. Sludges	Org. Sludges	Inorg. Gases	Org. Gases	Total Tons
16	Heavy construction excluding buildings	.	.	1	307	.	.	.	.	.	308
17	Special trade contractors	11	.	28	6	8	.	19	.	.	73
20	Food & kindred products	0	.	22	.	7	.	.	.	.	29
22	Textile Mill Products	.	.	198	10	.	.	.	.	.	208
24	Lumber & wood products	.	.	199	130	33	.	46	.	.	408
25	Furniture & fixtures	.	.	567	52	48	.	212	.	.	879
26	Paper & allied products	0	13	889	342	74	.	60	.	1	1,377
27	Printing & publishing	1	85	1,694	176	153	23	379	.	.	2,510
28	Chemicals & allied products	259	803	323,404	7,815	998	653	30,360	0	11	364,304
29	Petroleum & coal products	13	603	1,459	1,505	42	2,468	50,847	.	.	56,936
30	Rubber & miscellaneous plastic products	4	43	770	49	136	61	60	.	.	1,124
31	Leather & leather products	.	.	123	.	116	.	.	.	.	239
32	Stone, clay & glass products	5	312	138	5,462	16	189	7	.	.	6,130
33	Primary metal industries	11	67,395	24,030	99,774	1,055	38,441	146	.	.	230,853
34	Fabricated metal products	9	11,061	3,723	7,270	714	3,579	582	0	0	26,939
35	Industrial machinery & equipment	2	261	1,139	528	47	441	48	.	0	2,467
36	Electronic & other electric equipment	36	15,520	38,452	17,063	86	8,494	62	.	0	79,714
37	Transportation equipment	9	313	4,072	4,978	779	1,304	47	.	1	11,503
38	Instruments & related products	12	243	2,116	191	84	87	15	.	0	2,747
39	Miscellaneous manufacturing industries	2	187	2,805	133	79	225	178	.	0	3,609
40	Railroad transportation	.	1	2,483	73	11	1	41	.	.	2,611
41	Local & interurban passenger transit	.	3	238	5,848	.	1	.	.	.	6,089
42	Trucking & warehousing	21	18	365	909	2	2	.	.	1	1,317
45	Transportation by air	.	1	55	25	0	.	.	.	.	81
46	Pipelines, except natural gas	.	.	876	1	.	.	118	.	.	996
47	Transportation services	0	0	104	82	4	.	0	.	.	189
48	Communications	0	.	9	29	.	.	.	.	.	39
49	Electric, gas & sanitary services	10	48	1,532	3,629	13	171	544	0	0	5,948

SIC Code	SIC Description	Lab Packs	Inorg. Liquids	Org. Liquids	Inorg. Solids	Org. Solids	Inorg. Sludges	Org. Sludges	Inorg. Gases	Org. Gases	Total Tons
50	Wholesale trade, durable goods	1	.	38	26	.	61	.	.	.	126
51	Wholesale trade, nondurable goods	2	176	659	21	5	.	7	.	.	871
55	Automotive dealers & service stations	.	0	122	3	0	0	351	.	.	477
59	Miscellaneous retail	1	0	14	3	2	.	.	.	0	21
72	Personal services	.	.	190	.	.	1,121	17	.	.	1,328
73	Business services	5	2	28	0	62	.	0	.	0	96
75	Automotive repair, services & parking	.	0	26	60	.	.	.	.	.	86
76	Miscellaneous repair services	.	.	85	0	.	.	.	.	.	85
80	Health services	21	0	7	21	0	.	3	.	0	52
82	Education services	74	0	86	25	1	.	4	.	0	191
87	Engineering & management services	33	31	440	97	34	30	8	.	.	674
88	Private households	.	.	.	40	.	.	.	.	.	40
89	Miscellaneous services, nec	1	2	0	14	0	.	.	.	.	17
91	Executive, legislative & general	.	.	4	0	.	.	.	.	.	5
95	Admin-Environmental, quality programs	.	.	8	.	.	.	.	.	.	8
96	Administration of economic programs	.	.	8	905	.	.	5	.	.	917
97	National security & international affairs	55	11	263	782	83	45	2	0	0	1,241
99	Nonclassifiable establishments	18	32	399	13,545	17	73	103	.	.	14,187
	TOTALS	**616**	**97,165**	**413,871**	**171,928**	**4,709**	**57,470**	**84,273**	**1**	**15**	**830,048**

Chapter 3

APPENDICES

Appendix 3-A

WASTE MANAGEMENT CODES

M01--Metals Recovery (for reuse)
M011 High temperature metals recovery
M012 Retorting
M013 Secondary Smelting
M014 Other metals recovery for reuse (e.g., ion exchange, reverse osmosis, acid leaching, etc.)

M02--Solvents Recovery
M021 Fractionation/distillation
M022 Thin film evaporation
M023 Solvent extraction
M024 Other solvent recovery
M029 Solvents recovery--type unknown

M03--Other Recovery
M031 Acid regeneration
M032 Other recovery (e.g., waste oil recovery, nonsolvent organics recovery, etc.)
M039 Other recovery--type unknown

M04--Incineration
M041 Incineration-- liquids
M042 Incineration--sludges
M043 Incineration--solids
M044 Incineration--gases
M049 Incineration--type unknown

M05--Energy Recovery (reuse as fuel)
M051 Energy recovery--liquids
M052 Energy recovery--sludges
M053 Energy recovery--solids
M059 Energy recovery--type unknown

M06--Fuel Blending
M061 Fuel blending

M07--Aqueous Inorganic Treatment
M071 Chrome reduction followed by chemical precipitation
M072 Cyanide destruction followed by chemical precipitation
M073 Cyanide destruction only
M074 Chemical oxidation followed by chemical precipitation
M075 Chemical oxidation only
M076 Wet air oxidation
M077 Chemical precipitation
M078 Other aqueous inorganic treatment (e.g., ion exchange, reverse osmosis, etc.)
M079 Aqueous inorganic treatment--type unknown

M08--Aqueous Organic Treatment
M081 Biological treatment
M082 Carbon absorption
M083 Air/stream stripping
M084 Wet air oxidation
M085 Other aqueous organic treatment
M089 Aqueous organic treatment--type unknown

M09--Aqueous Organic and Inorganic Treatment
M091 Chemical precipitation in combination with biological treatment
M092 Chemical precipitation in combination with carbon absorption
M093 Wet air oxidation
M094 Other organic/inorganic treatment
M099 Aqueous organic and inorganic treatment--type unknown

M10--Sludge Treatment
M101 Sludge treatment
M102 Addition of excess lime
M103 Absorption/adsorption
M104 Solvent extraction
M109 Sludge treatment--type unknown

M11--Stabilization
M111 Stabilization/chemical fixation using cementitious and/or pozzolanic
M112 Other stabilization
M119 Stabilization--type unknown

M12--Other Treatment
M121 Neutralization only
M122 Evaporation only
M123 Settling/clarification

M124 Phase separation (e.g., emulsion breaking, filtration) only
M125 Other treatment
M129 Other treatment--type unknown

M13--Disposal

M131 Land treatment/application/farming
M132 Landfill
M133 Surface Impoundment (to be closed as a landfill)
M134 Deepwell/underground injection
M135 Direct discharge to sewer/POTW (no prior treatment)
M136 Direct discharge to surface water under NPDES (no prior treatment)
M137 Other disposal

M14--Transfer Facility Storage

M141 Transfer facility storage, waste was shipped off site with no on-site TDR activity

Codes and descriptions were obtained from the 1995 Hazardous Waste Biennial Report.

CAPTIVE MANAGEMENT OF NONWASTEWATER
BY GENERATORS LOCATED IN PA--1995

SIC Code	SIC Description	Metals Recovery	Solvents Recovery	Other Recovery	Incinera-tion	Energy Recovery	Sludge Treatment	Stabiliza-tion	Dispos-al	Transfer Facility	Total
24	Lumber & wood products exc. furn.	.	12	.	.	.	.	.	.	.	12
25	Furniture & fixtures	.	339	.	.	.	.	.	.	.	339
26	Paper & allied products	1	94	.	65	.	.	.	.	.	160
27	Printing, publishing & allied ind.	.	531	127	.	.	.	.	.	.	658
28	Chemicals & allied products	9	282,372	49	7,137	44,341	935	36	.	.	334,878
29	Petroleum refining & related ind.	.	.	.	.	337	8,991	.	39,350	.	48,678
30	Rubber & misc. plastics	.	83	.	.	.	.	.	.	.	83
32	Stone, clay, glass & concrete products	.	.	.	.	.	213	.	.	.	213
33	Primary metal industries	12,989	21,209	48,660	.	.	.	3,816	.	.	86,674
34	Fabricated metal products	318	765	111	4	20	.	.	.	3	1,222
35	Ind. & commercial machinery	171	4	.	.	.	.	.	.	.	175
36	Electronic & other elec. equipment	1,139	37,412	14,718	.	.	837	.	.	.	54,105
37	Transportation equipment	.	814	.	.	.	.	.	.	0	814
38	Measuring & analyzing instruments	.	330	.	15	.	.	.	.	.	344
39	Misc. manufacturing industries	.	1,613	.	.	.	.	.	.	.	1,613
47	Transportation services	.	5	.	.	.	.	.	.	.	5
80	Health services	.	5	.	.	.	.	.	.	.	5
87	Engineering, accntng & mgmt svcs	.	24	.	1	.	.	.	.	.	26
89	Miscellaneous services	.	.	.	.	1	.	.	.	.	1
95	Admin--env. quality programs	.	.	.	.	8	.	.	.	.	8
97	nat'l security & internat'l affairs	.	4	.	.	.	.	.	.	.	4
99	Nonclassified establishments	.	.	.	.	.	2,787	.	.	.	2,787
	TOTALS	**14,627**	**345,616**	**63,666**	**7,221**	**44,707**	**13,762**	**3,852**	**39,350**	**3**	**532,804**

Source: GM form of 1995 Biennial Report

COMMERCIAL MANAGEMENT OF HAZARDOUS WASTE (IN TONS)
FROM GENERATORS IN PENNSYLVANIA--1995

SIC Code	SIC Description	Metals Recovery	Solvents Recovery	Other Recovery	Incineration	Energy Recovery	Fuel Blending	Aqueous Inorganic Treatment	Aqueous Organic Treatment	Aqueous Org. & Inorg. Treatment	Sludge Treatment	Stabilization	Other Treatment	Disposal	Transfer Facility Storage	Total
7	Agricultural services	.	.	.	.	.	.	.	.	.	.	.	.	.	0	0
16	Heavy construction except buildings	.	.	.	.	.	.	.	.	.	.	296	.	.	14	310
17	Construction--special trade contractors	.	.	.	0	.	27	.	.	.	.	.	.	.	46	73
20	Food & kindred products	.	.	.	.	0	18	.	.	.	.	.	.	.	5	24
22	Textile mill products	.	.	.	.	65	100	.	.	.	.	.	.	.	55	220
24	Lumber & wood prods except furniture	1	.	.	24	2	180	.	.	2,212	.	.	.	49	141	2,610
25	Furniture & fixtures	.	17	.	43	73	295	24	.	.	.	0	.	.	16	468
26	Paper & allied products	4	68	.	37	111	607	9	.	.	.	351	1	.	209	1,397
27	Printing, publishing & allied industries	156	213	.	20	394	922	197	.	17	.	14	1	.	300	2,235
28	Chemicals & allied products	316	1,979	11	7,000	3,443	12,236	2,372	54,706	11,213	1,632	4,208	1,216	1,377	2,451	104,161
29	Petrol. refining & related industries	98	.	200	35	1	1,575	0	1,680	194	206	1,300	56	1,463	3,079	9,886
30	Rubber & misc. plastics	0	102	1	129	222	610	127	255	50	.	79	51	.	255	1,879
31	Leather & leather products	.	.	.	205	.	57	.	.	.	.	.	.	.	2	263
32	Stone, clay, glass & concrete products	1,278	6	23	4	.	195	178	.	1	.	3,279	106	1,202	98	6,371
33	Primary metal industries	84,084	550	17,850	610	38	1,119	64,391	56	888	343	32,509	3,524	6,176	2,362	214,500
34	Fabricated metal products	3,585	381	9,254	127	185	2,139	4,010	127	139	103	5,451	530	3,420	1,685	31,135
35	Industrial & commercial machinery	197	32	141	28	0	695	165	292	74	.	581	14	14	649	2,883
36	Electronic & other electrical equipment	6,957	197	343	14	64	662	2,162	6	997	.	16,719	246	175	786	29,330
37	Transportation equipment	171	434	352	740	1,632	868	1,091	225	1,062	.	6,232	236	7	625	13,674
38	Measuring & analyzing instruments	58	610	.	210	.	1,076	10	27	15	3	365	32	2	179	2,587
39	Misc. manufacturing industries	145	4	.	0	827	385	23	4	43	19	310	13	.	328	2,099
40	Railroad transportation	26	2	2,318	6	0	131	.	.	.	1	47	.	11	75	2,617
41	Local/suburban transit & highway passenger	7	5	.	.	.	11	.	.	.	.	5,839	.	.	233	6,095
42	Motor freight transportation/warehouse	3	36	.	233	.	257	55	.	.	.	71	603	.	820	2,079
45	Transportation by air	3	3	.	14	3	28	2	.	.	.	3	0	.	39	94
46	Pipelines except natural gas	.	.	82	.	.	822	.	500	983	.	.	367	.	92	2,845
47	Transportation services	1	2	.	6	14	113	.	.	191	.	82	19	.	83	511
48	Communications	3	.	.	.	.	9	0	.	68	.	7	.	.	39	126
49	Electric, gas & sanitary services	60	67	774	1,166	1,843	2,002	56,139	412	4,337	.	2,653	120	6,609	247	76,428

SIC Code	SIC Description	Metals Recovery	Solvents Recovery	Other Recovery	Incineration	Energy Recovery	Fuel Blending	Aqueous Inorganic Treatment	Aqueous Organic Treatment	Aqueous Org. & Inorg. Treatment	Sludge Treatment	Stabilization	Other Treatment	Disposal	Transfer Facility Storage	Total
50	Wholesale trade--durable goods	0	17	5	.	1	11	.	2	.	.	81	.	.	16	132
51	Wholesale trade--nondurable goods	0	8	169	28	24	606	1	292	22	.	4	0	11	138	1,303
55	Automotive dealers & service stations	.	134	63	58	.	564	.	8	36	.	.	.	.	50	914
59	Misc. retail	0	.	.	.	.	9	.	.	.	.	.	16	.	24	50
72	Personal services	.	8	.	.	255	1,058	.	.	.	.	.	.	.	7	1,328
73	Business services	.	9,656	.	.	.	57	.	.	.	.	.	.	.	65	9,777
75	Automotive repair services & parking	.	1	.	.	.	0	.	.	.	.	59	.	.	26	86
76	Misc. repair services	.	.	.	.	67	17	.	.	.	.	.	.	.	2	85
80	Health services	.	.	.	.	.	14	.	.	.	.	.	.	.	37	51
82	Educational services	.	14	.	3	20	21	.	.	.	.	0	.	1	146	205
87	Engineering, accounting, & management services	3	9	.	73	.	233	18	.	2	.	25	32	66	310	771
88	Private households	.	.	.	.	.	.	.	.	.	.	.	.	40	.	40
89	Misc. services, nec	3	2	82	17	625	485	47	35	198	38	300	14	219	40	2,105
91	Executive, legislative & general government	.	.	.	.	.	.	.	.	.	.	.	.	.	5	5
95	Admin.--environmental quality programs	.	.	.	.	.	.	.	7	.	.	.	.	.	.	7
96	Administration of economic programs	.	.	.	.	.	9	.	.	.	.	887	.	.	39	935
97	National security & international affairs	.	.	.	600	.	193	76	10	.	40	397	48	.	106	1,470
99	Nonclassified establishments	146	.	.	354	.	314	59	50	282	.	8,422	184	1,786	520	12,117
	TOTALS	**97,307**	**14,553**	**31,667**	**11,785**	**9,909**	**30,728**	**131,156**	**58,692**	**23,023**	**2,384**	**90,572**	**7,432**	**22,630**	**16,445**	**548,282**

Source: GM Report of 1995 Biennial Report

Appendix 3-D

MOST-USED COMMERCIAL MANAGEMENT METHODS
AND THE GENERATORS WHO MOST OFTEN USE THEM - 1995
(From Generators Located in PA)

Aqueous Inorganic Treatment (M07)--131,156 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Chemical Precipitation (M077)		**80,774**
• Refuse systems (SIC 4953)	55,916	
• Blast furnaces and steel mills (SIC 3312)	7,658	
• Steel pipe and tubes (SIC 3317)	6,108	
Chrome reduction followed by chemical precipitation (M071)		**40,340**
• Cold finishing of steel shapes (SIC 3316)	22,588	
• Blast furnaces and steel mills (SIC 3312)	10,532	
Other aqueous inorganic treatment (M078)		**9,289**
• Secondary nonferrous metals (SIC 3341)	8,934	

Metals Recovery (M01)--97,307 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
High temperature metal recovery (M011)		**85,416**
• Blast furnaces and steel mills (SIC 3312)	73,852	
• Secondary nonferrous metals (SIC 3341)	7,439	
Secondary smelting (M013)		**8,042**
• No SICs over 5,000		

Stabilization (M11)--90,572 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Stabilization/chemical fixation using cementitious and/or pozzolanic materials (M111)		**67,438**
• Secondary nonferrous metals (SIC 3341)	17,275	
• Nonclassifiable establishment (SIC 9999)	8,277	
• Local and suburban transit (SIC 4111)	5,839	
• Blast furnaces and steel mills (SIC 3312)	5,404	
Other stabilization (M112)		**23,134**
• Storage batteries (SIC 3691)	12,411	

Aqueous Organic Treatment (M08)--58,692 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Biological treatment (M081)		**48,964**
• Industrial organic chemicals, *nec* (SIC 2869)	20,904	
• Plastics materials and resins (SIC 2821)	14,109	
• Adhesives and sealants (SIC 2891)	8,048	
Air/steam stripping (M083)		**7,455**
• Industrial organic chemicals, *nec* (SIC 2869)	7,441	

Other Recovery (M03)--31,667 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Other recovery--type unknown (M039)		**27,412**
• Cold finishing of steel shapes (SIC 3316)	15,428	
• Metal coating and allied services (SIC 3479)	9,221	

Fuel Blending (M06)--30,728 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Fuel Blending (M061)		**30,728**
• No SICs over 5,000 tons		

Aqueous Organic And Inorganic Treatment (M09)--23,023 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Chemical precipitation in combination with biological treatment **(M091)**		**14,201**
• Industrial gases (SIC 2813)	6,358	
Other organic/inorganic treatment (M094)		**8,318**
• No SICs over 5,000 tons		

Disposal (M13)--22,630 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Landfill (M132)		**16,352**
• Primary nonferrous metals, *nec* (SIC 3339)	5,371	

Transfer Facility Storage (M14)--16,445 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Transfer Facility Storage		**16,445**
• No SICs over 5,000 tons		

Solvents Recovery (M02)--14,553 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Fractionation/distillation (M021)		**10,344**
• Business services, *nec* (SIC 7389)	6,204	

Incineration (M04)--11,785 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Incineration--liquids (M041)		**7,222**
• No SICs over 5,000 tons		

Energy Recovery (M05)--9,909 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
Energy recovery--liquids (M051)		**9,312**
• No SICs over 5,000 tons		

Other Treatment (M12)--7,432 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
No management codes over 5,000 tons		
• No SICs over 5,000 tons		

Sludge Treatment (M10)--2,384 Tons

(Management codes and four-digit SIC codes with more than 5,000 tons)

Subcategory	Tonnage Subtotals	Tonnage Totals
No management codes over 5,000 tons		
• No SICs over 5,000 tons		

Source: GM form of 1995 Biennial Report

Appendix 3-E

FACILITIES RECEIVING WASTE FROM OUTSIDE PENNSYLVANIA - 1995

Mgmt Category	EPA I.D.	Company Name	Location	Tons Received
Lab Packs				
	PAD064375470	Chemical Waste Management	Coatesville	109
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisburg	23
	PAD085690592	Republic Environmental Sys Pa	Hatfield	128
	PAD987367216	Advance Environmental Recycling Corp.	Allentown	32
Inorganic Liquids				
	PAD000797548	Ashland Chemical Co Freedom	Freedom	1
	PAD002390961	Bethlehem Apparatus Co Inc.	Hellertown	4
	PAD002391548	Harcros Pigments Inc.	Easton	5,106
	PAD004835146	Mill Service Inc Yukon	Yukon	13,961
	PAD010154045	Envirite Corp.	York	14,607
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	24
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisburg	99
	PAD085690592	Republic Environmental Sys Pa	Hatfield	3,238
	PAD087561015	Inmetco Inc.	Ellwood City	2,447
	PAD980552020	Safety Kleen Allentown	Allentown	1
	PAD981038227	World Resources Co.	Pottsville	1,420
	PAD987266673	Safety Kleen Athens	Athens	0
	PAD987266715	Safety Kleen Fairless Hills	Fairless Hills	0
	PAD987283140	United Environmental Group Inc.	Sewickley	269
	PAD987367216	Advanced Environmental Recycling Corp.	Allentown	47
Organic Liquids				
	PAD000738849	Safety Kleen Westchester	Westchester	308
	PAD000797548	Ashland Chemical Co. Freedom	Freedom	136
	PAD002389559	Keystone Cement Co.	Bath	52,412
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	1,022
	PAD067098822	Remtech Environmental Lewisberry Inc	Lewisberry	243
	PAD083965897	Medusa Cement Co.	Wampum	37,199
	PAD085690592	Republic Environmental Sys Pa	Hatfield	1,121
	PAD086673407	Safety Kleen Erie	Erie	86
	PAD980552020	Safety Kleen Allentown	Allentown	207
	PAD981736143	Safety Kleen Johnstown	Johhstown	64
	PAD987266673	Safety Kleen Athens	Athens	297
	PAD987266715	Safety Kleen Fairless Hills	Fairless Hills	119
	PAD987332343	Capital Parts Washers Inc.	Lewisberry	225
Inorganic Solids				
	PAD000797548	Ashland Chemical Co Freedom	Freedom	26
	PAD002390961	Bethlehem Apparatus Co Inc.	Hellertown	567
	PAD002395887	Horsehead Resource Development	Palmerton	134,098
	PAD004835146	Mill Service Inc. Yukon	Yukon	17,375
	PAD010154045	Envirite Corp.	York	5,258
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	71
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisberry	72
	PAD085690592	Republic Environmental Sys Pa	Hatfield	6,607

	PAD087561015	Inmetco Inc.	Ellwood City	5,758
	PAD981038227	World Resources Co.	Pottsville	21,908
	PAD987283140	United Environmental Group Inc.	Sewickley	3
	PAD987367216	Advanced Environmental Recycling Corp.	Allentown	1,454
	PAD990753089	General Battery Corp. Reading Complex	Reading	8,011
	PA0000453084	Bethlehem Apparatus Co. Inc.	Bethlehem	41
Organic Solids				
	PAD000736942	Calgon Carbon Corp.	Pittsburgh	3,174
	PAD000797548	Ashland Chemical Co. Freedom	Freedom	58
	PAD004498010	USS Clairton Works	Clairton	800
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	30
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisberry	54
	PAD085690592	Republic Environmental Sys Pa	Hatfield	109
	PAD980552020	Safety Kleen Allentown	Allentown	4
	PAD980707087	Envirotrol Inc. Beaver Falls	Beaver Falls	3,761
	PAD987270725	Envirotrol Inc. Darlington	Darlington	679
	PAD987283140	United Environmental Group Inc.	Sewickley	0
	PAD987367216	Advance Environmental Recycling Corp.	Allentown	2
	PA6213820503	Letterkenny Army Depot	Chambersburg	0
Inorganic Sludges				
	PAD000797548	Ashland Chemical Co Freedom	Freedom	0
	PAD004835146	Mill Service Inc. Yukon	Yukon	12
	PAD010154045	Envirite Corp.	York	9,396
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	15
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisberry	28
	PAD085690592	Republic Environmental Sys Pa	Hatfield	352
	PAD087561015	Inmetco Inc.	Ellwood City	3,859
	PAD990753089	General Battery Corp Reading Complex	Reading	62
Organic Sludges				
	PAD000797548	Ashland Chemical Co. Freedom	Freedom	11
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	2
	PAD067098822	Remtech Environmental Lewisberry Inc.	Lewisberry	51
	PAD085690592	Republic Environmental Sys Pa	Hatfield	129
	PAD987283140	United Environmental Group Inc.	Sewickley	1
Inorganic Gases				
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	0
Organic Gases				
	PAD064375470	Chemical Waste Management Coatesville	Coatesville	2
	PAD085690592	Republic Environmental Sys Pa	Hatfield	0
		TOTALS		**358,795**

Source: WR form of 1995 Biennial Report

TONS OF HAZARDOUS WASTE MANIFESTED
INTO AND OUT OF PENNSYLVANIA - 1995

TONS OF WASTE MANIFESTED FROM GENERATORS IN PENNSYLVANIA - 1995

Management Method	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	Total
Metals Recovery (for reuse)	0	610	51	10,399	6	995	6	.	.	12,068
Solvents Recovery	.	250	13,494	.	.	.	674	.	.	14,418
Other Recovery	4	13,733	2,577	206	19	.	.	.	2	16,541
Incineration	221	3,962	5,483	3,075	1,552	123	2,092	1	13	16,523
Energy Recovery (reuse as fuel)	10	34	7,395	33	123	87	245	.	.	7,927
Fuel Blending	58	1,596	22,622	663	703	1,176	3,145	.	.	29,964
Aqueous Inorganic Treatment	1	24,383	138	228	1	3,916	.	.	.	28,668
Aqueous Organic Treatment	.	55,396	3,296	0	.	.	.	.	.	58,692
Aqueous Org and Inorg Treatment	.	19,866	1,647	24	0	1,485	.	.	.	23,023
Sludge Treatment	28	103	38	1,874	91	91	51	.	.	2,275
Stabilization	23	2,208	141	37,047	444	6,271	1,037	.	.	47,170
Other Treatment	16	3,362	698	90	871	13	.	.	0	5,049
Disposal	.	2,439	2	14,447	60	1,370	474	.	.	18,791
Transfer Facility Storage	372	2,168	3,468	2,379	1,344	1,222	1,142	0	8	12,103
TOTALS	**735**	**130,110**	**61,049**	**70,464**	**5,213**	**16,751**	**8,866**	**1**	**23**	**293,211**

Source: GM form of 1995 Biennial Report

TONS OF WASTE MANIFESTED INTO PENNSYLVANIA FROM OTHER STATES - 1995

Management Method	Lab Packs	Inorganic Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Organic Gases	Total
Metals Recovery (for reuse)	32	2,498	.	149,928	2	3,859	.	.	156,319
Solvents Recovery	.	.	217	.	.	.	.	.	217
Other Recovery	.	5,375	.	.	.	.	.	.	5,375
Energy Recovery (reuse as fuel)	.	.	89,611	.	800	.	.	.	90,411
Fuel Blending	16	.	740	.	.	.	.	.	756
Aqueous Inorganic Treatment	.	29,019	.	.	.	677	.	.	29,696
Aq. Org. & Inorg. Treatment	.	20	.	.	.	.	.	.	20
Sludge Treatment	.	.	224	.	.	.	.	.	224
Stabilization	.	.	.	27,918	.	8,958	.	.	36,876
Other Treatment	.	2,921	.	21,908	7,613	104	.	.	32,546
Transfer Facility Storage	244	1,393	2,646	1,495	255	126	193	2	6,354
TOTALS	**293**	**41,225**	**93,439**	**201,248**	**8,670**	**13,724**	**193**	**2**	**358,795**

**Rounded to nearest ton*

Source: WR form of 1995 Biennial Report

Appendix 3-G

TONS OF WASTE RECEIVED BY COMMERCIAL FACILITIES IN PENNSYLVANIA--1995

EPA I.D.	Commercial Facility	Tons Received
PAD000736942	Calgon Carbon Corp.	5,529
PAD000738823	Safety Kleen New Kingstown	1,009
PAD000738849	Safety Kleen Westchester	2,084
PAD000797548	Ashland Chemical Co. Freedom	535
PAD002389559	Keystone Cement Co.	53,579
PAD002390961	Bethlehem Apparatus Co. Inc.	592
PAD002391548	Harcros Pigments Inc.	12,463
PAD002395887	Horsehead Resource Development Palmerton	195,486
PAD004835146	Mill Service Inc. Yukon	75,580
PAD009439662	Gemchem Inc.	109
PAD010154045	Envirite Corp.	69,841
PAD064375470	Chemical Waste Management Coatesville	2,455
PAD067098822	Remtech Environmental Lewisberry Inc.	1,882
PAD083965897	Medusa Cement Co.	38,058
PAD085690592	Republic Environmental Sys Pa	21,598
PAD086673407	Safety Kleen Erie	440
PAD087561015	Inmetco Inc.	36,089
PAD980552020	Safety Kleen Allentown	818
PAD980707087	Envirotrol Inc Beaver Falls	3,859
PAD981038227	World Resources Co.	24,899
PAD981736143	Safety Kleen Johnstown	674
PAD981737109	Safety Kleen Wilkes-Barre	394
PAD982576258	Safety Kleen West Mifflin	953
PAD987266673	Safety Kleen Athens	356
PAD987266715	Safety Kleen Fairless Hills	883
PAD987270725	Envirotrol Inc. Darlington	694
PAD987283140	United Environmental Group Inc.	1,890
PAD987332343	Capital Parts Washers Inc.	638
PAD987367216	Advance Environmental Recycling Corp.	1,618
PAD990753089	General Battery Corp. Reading Complex	9,427
PA0000453084	Bethlehem Apparatus Co. Inc.	41
	TOTALS	**564,474**

Source: WR form of 1995 Biennial Report

MANAGEMENT AND WASTE CATEGORIES FOR WASTE RECEIVED BY COMMERCIAL FACILITIES IN PENNSYLVANIA--1995

Mgmt Cat.	Category Description	Lab Packs	Inorg. Liquids	Organic Liquids	Inorganic Solids	Organic Solids	Inorganic Sludges	Organic Sludges	Inorganic Gases	Organic Gases	TOTAL
M01	Metals Recovery	35	5,230	.	233,274	2	4,651	.	.	.	243,191
M02	Solvents Recovery	.	.	583	.	.	.	.	.	.	583
M03	Other Recovery	.	14,346	.	.	.	.	.	.	.	14,346
M05	Energy Recovery	.	.	91,642	.	.	.	.	.	.	91,642
M06	Fuel Blending	17	.	1,496	.	.	.	.	.	.	1,513
M07	Aqueous Inorg.Treatment	.	73,804	121	.	.	5,028	.	.	.	78,953
M09	Aqu. Org. & Inorg. Trtmnt	.	161	5	.	.	.	.	.	.	166
M10	Sludge Treatment	.	32	310	.	.	.	.	.	.	342
M11	Stabilization	.	42	.	61,536	.	16,354	.	.	.	77,932
M12	Other Treatment	.	4,747	.	23,479	10,082	104	.	.	.	38,412
M14	Transfer Facility Storage	393	2,504	11,345	2,256	390	195	311	0	2	17,395
	TOTALS	**444**	**100,866**	**105,501**	**320,545**	**10,473**	**26,332**	**311**	**0**	**2**	**564,474**

Source: WR form of 1995 Biennial Report

Chapter 4

APPENDIX

Appendix 4-A

GOVERNOR'S AWARDS WINNERS--1995

Education & Outreach

*James W. Johnson *Northern Tier Solid Waste Authority *Southeast Pennsylvania Association of Conservation Districts *SSM/Spotts, Stevens and McCoy Inc. and Borough of Kutztown and Topton Borough *The Wilton Company

Pollution Prevention

*Air Products & Chemicals, Inc. *AlliedSignal Inc. - Specialty Films *Aluminum Company of America - ALCOA Technical Center *AMP Incorporated/Harrisburg *AMP Incorporated/Rapho Park Plant *Appleton Papers *Armstrong World Industries, Inc. - Beech Creek Plant *Atotech USA Inc. *Carlisle Tire & Wheel Company *Carpenter Technology Corporation *Chamberlain Manufacturing Corporation *CNG Transmission Corporation *Dana Corporation - Spicer Systems Assembly Division *Dopaco, Inc. *East Penn Manufacturing Co. *GPU Energy *ICI Fluoropolymers *Merck & Co., Inc. - Cherokee Facility *Merck & Co., Inc. - West Point PA Site *Northampton Generating Company *P.R. Finishing, Inc. - Plate-Rite Company *St. George Crystal, LTD. *St. Marys Pressed Metals, Inc. *Warner-Lambert Company

Recycling & Market Development

*Abington Township *AlliedSignal Inc. - Specialty Films *Defense Depot Susquehanna, PA *Environment For All *Fredonia Borough *Indian Creek Industries *International Paper/Lock Haven Mill *Kleerdex Company *The Pennsylvania State University and Centre County Solid Waste Authority *Philadelphia Streets Department *Wegmans Food Markets

Technology Innovation

*Beneficial Ash Management and International Paper Company - Erie Mill *Bethlehem Steel Corporation *City of Harrisburg *Duquesne Light Company *The Pennsylvania State University and PennTurf Products Inc. *Tenneco Energy *University Area Joint Authority

Chapter 6

APPENDIX

CALCULATION OF ECONOMIC GROWTH FACTOR

Yr.	Mo.	Economic Activity Index	Yr. Avg.	Change from Prev. Yr.
73	1	91.17		
73	2	91.33		
73	3	91.31		
73	4	91.04		
73	5	91.54		
73	6	91.91		
73	7	91.49		
73	8	92.26		
73	9	91.89		
73	10	92.25		
73	11	92.44		
73	12	92.57	91.77	
74	1	92.42		
74	2	92.34		
74	3	92.63		
74	4	92.33		
74	5	92.18		
74	6	91.69		
74	7	91.73		
74	8	91.81		
74	9	91.41		
74	10	91.34		
74	11	90.37		
74	12	89.59	91.65	-0.11
75	1	88.98		
75	2	88.24		
75	3	87.64		
75	4	86.98		
75	5	86.39		
75	6	86.90		
75	7	86.98		
75	8	87.04		
75	9	87.03		
75	10	87.28		
75	11	87.62		
75	12	88.16	87.44	-4.22
76	1	88.56		
76	2	88.77		
76	3	88.63		
76	4	88.49		
76	5	88.73		
76	6	88.89		
76	7	89.39		
76	8	89.64		
76	9	89.89		
76	10	89.52		
76	11	89.56		
76	12	89.22	89.11	1.67
77	1	89.31		
77	2	88.86		
77	3	89.68		
77	4	89.91		
77	5	90.49		
77	6	90.47		
77	7	90.65		
77	8	90.17		
77	9	90.59		
77	10	91.10		
77	11	91.65		
77	12	91.07	90.33	1.22
78	1	91.31		
78	2	91.24		
78	3	91.91		
78	4	93.18		
78	5	93.71		
78	6	94.63		
78	7	94.56		
78	8	94.93		
78	9	94.98		
78	10	94.88		
78	11	95.02		
78	12	95.33	93.81	3.48
79	1	95.32		
79	2	95.20		
79	3	95.49		
79	4	95.27		
79	5	95.59		
79	6	95.86		
79	7	95.62		
79	8	95.70		
79	9	95.78		
79	10	95.74		
79	11	95.86		
79	12	95.89	95.61	1.80
80	1	95.72		
80	2	95.68		
80	3	95.16		
80	4	94.55		

Yr.	Mo.	Economic Activity Index	Yr. Avg.	Change from Prev. Yr.
80	5	93.89		
80	6	93.20		
80	7	92.29		
80	8	92.36		
80	9	92.00		
80	10	92.84		
80	11	92.79		
80	12	93.21	93.64	-1.97
81	1	93.38		
81	2	93.52		
81	3	93.49		
81	4	93.21		
81	5	92.93		
81	6	93.18		
81	7	93.16		
81	8	93.23		
81	9	92.37		
81	10	92.09		
81	11	91.67		
81	12	91.10	92.78	-0.86
82	1	90.58		
82	2	90.36		
82	3	89.82		
82	4	89.35		
82	5	88.79		
82	6	88.31		
82	7	87.82		
82	8	87.27		
82	9	86.68		
82	10	85.95		
82	11	85.52		
82	12	85.05	87.96	-4.82
83	1	84.89		
83	2	84.25		
83	3	84.60		
83	4	84.82		
83	5	85.28		
83	6	85.84		
83	7	86.22		
83	8	86.22		
83	9	87.02		
83	10	87.57		
83	11	88.02		
83	12	88.31	86.09	-1.87
84	1	88.96		
84	2	89.47		
84	3	89.81		
84	4	90.06		
84	5	90.33		
84	6	90.60		
84	7	90.94		
84	8	91.17		
84	9	91.45		
84	10	91.82		
84	11	92.06		
84	12	91.96	90.72	4.63
85	1	92.09		
85	2	92.07		
85	3	92.39		
85	4	92.47		
85	5	92.61		
85	6	92.81		
85	7	92.92		
85	8	93.17		
85	9	93.37		
85	10	93.58		
85	11	93.77		
85	12	94.09	92.95	2.23
86	1	94.05		
86	2	94.00		
86	3	94.16		
86	4	94.49		
86	5	94.81		
86	6	94.93		
86	7	95.05		
86	8	95.60		
86	9	95.78		
86	10	95.80		
86	11	95.87		
86	12	96.36	95.08	2.13
87	1	96.91		
87	2	97.17		
87	3	97.42		
87	4	97.97		
87	5	98.20		
87	6	98.42		
87	7	98.79		
87	8	98.90		
87	9	99.01		
87	10	99.58		
87	11	99.78		
87	12	100.20	98.53	3.45
88	1	99.99		
88	2	100.46		
88	3	100.68		
88	4	100.95		
88	5	101.01		
88	6	101.33		
88	7	101.78		
88	8	102.08		
88	9	102.19		
88	10	102.40		
88	11	102.69		
88	12	102.96	101.54	3.01

Yr.	Mo.	Economic Activity Index	Yr. Avg.	Change from Prev. Yr.
89	1	103.22		
89	2	103.51		
89	3	103.66		
89	4	103.86		
89	5	103.76		
89	6	104.07		
89	7	104.13		
89	8	104.15		
89	9	104.32		
89	10	103.99		
89	11	104.11		
89	12	103.82	103.88	2.34
90	1	104.20		
90	2	104.29		
90	3	104.47		
90	4	103.94		
90	5	104.09		
90	6	103.87		
90	7	103.65		
90	8	103.62		
90	9	103.48		
90	10	103.09		
90	11	102.77		
90	12	102.41	103.66	-0.23
91	1	101.80		
91	2	101.44		
91	3	101.04		
91	4	100.71		
91	5	100.49		
91	6	100.42		
91	7	99.99		
91	8	100.23		
91	9	100.21		
91	10	100.20		
91	11	100.17		
91	12	100.03	100.56	-3.10
92	1	99.91		
92	2	99.82		
92	3	99.70		
92	4	99.82		
92	5	99.95		
92	6	99.93		
92	7	100.00		
92	8	99.84		
92	9	99.70		
92	10	100.03		
92	11	99.96		
92	12	99.93	99.88	-0.68
93	1	100.56		
93	2	100.96		
93	3	100.45		
93	4	100.81		
93	5	100.90		
93	6	100.90		
93	7	101.19		
93	8	101.24		
93	9	101.31		
93	10	101.59		
93	11	101.82		
93	12	102.24	101.16	1.28
94	1	101.86		
94	2	101.98		
94	3	102.31		
94	4	102.81		
94	5	103.08		
94	6	103.48		
94	7	103.54		
94	8	103.79		
94	9	104.04		
94	10	104.14		
94	11	104.42		
94	12	104.56	103.33	2.17
95	1	104.76		
95	2	104.86		
95	3	104.90		
95	4	104.62		
95	5	104.57		
95	6	104.69		
95	7	104.33		
95	8	104.65		
95	9	104.77		
95	10	104.86		
95	11	104.81		
95	12	104.87	104.72	1.39
			Total	12.96
			Average	**0.59**