

Industrial
Pollution
Prevention
Planning

Meeting Requirements
Under The New Jersey
Pollution Prevention Act

Guidance for Chemical and Allied Products

Standard Industrial Classification 5169

New Jersey Department of Environmental Protection
Office of Pollution Prevention and Permit Coordination
May 2000

I. INTRODUCTION

This guidance is intended as a supplement to the document published by the Department in September 1995 which provides step-by-step procedures for covered facilities to prepare Pollution Prevention Plans under the requirements of the New Jersey Pollution Prevention Act (N.J.S.A. 13:1D-35 et seq.) and the Pollution Prevention Program Rules (N.J.A.C. 7:1K-1 et seq.). This earlier document entitled "Industrial Pollution Prevention Planning: Meeting Requirements Under The New Jersey Pollution Prevention Act," was intended to assist covered facilities with Standard Industrial Classification (SIC) major industrial groups 20 through 39, which are the initial SIC groups required to submit to the United States Environmental Protection Agency (USEPA) a Toxics Release Inventory (TRI) Reporting Form R under Section 313 of the federal Emergency and Community Right to Know Act of 1986 (EPCRA). Any facility in these codes is covered if it manufactures processes or otherwise uses a substance on the TRI list in excess of 10,000 pounds per year. A facility that is required to submit to the USEPA a TRI Reporting Form R is then also covered under the New Jersey Pollution Prevention Act (N.J.S.A. 13:1D-35), and must comply with the requirements of Pollution Prevention Planning. The Department document published in September 1995 was written as general guidance to assist facilities in all of these initial SIC codes to prepare their Plans.

Under the latest federal TRI rules (40 CFR Part 372, May 1, 1997), facilities in additional SIC codes became subject to the TRI reporting requirements, and thus to the New Jersey Pollution Prevention Planning Rules. Covered facilities having these codes must prepare their Pollution Prevention Plan with 1999 as base year and submit their Plan Summary by July 1, 2000. The first Progress Report for these groups of facilities is due July 1, 2001. Although the existing Department guidance document is still useful for the most part in preparing Plans, some industry-specific considerations must be taken into account. Some of the pollution prevention methods appropriate for facilities in the initial SIC codes do not pertain to these additional types of industries. The additional industries identified in the federal rules are as follows:

1. SIC codes 10 (metal mining) and 12 (coal mining), except for facilities in the following industry codes: 1011 (iron ore mining), 1081 (metal mining services), 1094 (uranium-radium-vanadium ore mining), and 1241 (coal mining services).
2. SIC codes for electric utilities, 4911, 4931 or 4939 (each limited to facilities that combust coal and/or oil for the purpose of generating power for distribution in commerce). These codes refer specifically to electric services (4911), electric and other services combined (4931) and combination utilities, not otherwise classified (4939).
3. SIC code for commercial hazardous waste treatment, 4953 (limited to facilities regulated under the hazardous waste management standards of the Resource Conservation and Recovery Act, Subtitle C, 42 U.S.C. section 6921 et seq.).
4. SIC codes 5169 (chemical and allied products- wholesale), 5171 (petroleum bulk terminals and plants (also known as stations) - wholesale)
5. Solvent recovery services facilities limited to those primarily engaged in solvent recovery services on a contract or fee basis (included among a long list of businesses under SIC code 7389, Business services not otherwise classified)

The Department has determined that facilities whose business is solvent recovery services (SIC 7389) are not regulated by the Worker and Community Right to Know or the Pollution Prevention Planning programs.

A new series of guidance documents has accordingly been prepared to assist the newly-covered industries in New Jersey in preparing their Pollution Prevention Plans.

This guidance focuses on pollution prevention planning for facilities classified as Chemical and Allied Products, Not Elsewhere Classified, SIC 5169.

II. APPLICABILITY

Facilities that are required to submit to the United States Environmental Protection Agency (USEPA) a **toxic chemical release form (Form R)** under Section 313 of the federal Emergency and Community Right to Know Act of 1986 (EPCRA) are covered under the New Jersey Pollution Prevention Act (N.J.S.A. 13:1D-35), and are subject to its pollution prevention planning regulations (N.J.A.C. 7:1K).

Each covered facility must conduct pollution prevention planning for **all** toxic chemicals on the EPCRA Section 313 Toxic Chemical List that it **manufactures, processes or otherwise uses** in excess of **10,000 pounds per year**.

The differences in thresholds between New Jersey pollution prevention planning and USEPA Form R reporting must be noted. The USEPA threshold for submitting a Form R is 25,000 pounds per year per chemical for manufacturing and processing, and 10,000 pounds per year per chemical for otherwise use. Therefore, in the cases of manufacturing and processing a facility is not subject to Form R reporting until the 25,000-pound threshold is met. **However, once a facility is subject to Form R reporting, even for one chemical, it is subject to the pollution prevention planning regulations for all EPCRA chemicals above the 10,000-pound threshold.**

In addition to Form R reporting to the USEPA, some facilities may be eligible for Form A reporting, a simplification of Form R for those facilities that meet an Alternate Threshold specified by the USEPA. Any facility that uses less than 1,000,000 pounds of a chemical per year, and at the same time, generates less than 500 pounds of nonproduct output per year, is eligible to submit a Form A instead of a Form R. Any facility that submits only Form As under EPCRA Section 313 is not subject to the pollution prevention planning regulations. **However, any facility that submits a Form A for one or more chemicals and is also required to submit a Form R, even for only one chemical, is subject to the pollution prevention planning regulations for all chemicals on the EPCRA Section 313 Toxic Chemical List.**

III. P2 PLAN ELEMENTS

A. CERTIFICATIONS [N.J.A.C. 7:1K-4.3(b)1]

The highest ranking corporate official with direct operating responsibility at the industrial facility shall sign the following certification:

"I certify under penalty of law that I have read the Pollution Prevention Plan and that the Pollution Prevention Plan is true, accurate, and complete to the best of my knowledge."

The highest ranking corporate official at the industrial facility shall sign the following certification:

"I certify under penalty of law that I am familiar with the Pollution Prevention Plan and that it is the corporate policy of this industrial facility to achieve the goals of the Pollution Prevention Plan."

B. FACILITY LEVEL MATERIALS ACCOUNTING DATA [N.J.A.C. 7:1K-4.3(b)2]

1. These data elements are the same as those reported on the DEQ-114, the Release and Pollution Prevention Report (RPPR), in Section B, except for use quantities, which must be calculated. Therefore, inclusion of the RPPR is acceptable; however, use quantities must also be included. (see table below)

Facility Level Materials Accounting

Hazardous Substance	INPUTS				Total	OUTPUTS				Total	USE
	Starting Inventory	Brought on Site	Manufact'd	Recycled		Ending Inventory	Shipped in Product	Consumed	Nonproduct Output		
A	12,305	565,795	0	0	578,100	9,560	568,140	0	400	578,100	568,540
B	6,803	1,305,675	0	0	1,312,478	8,984	1,302,119	0	1,375	1,312,478	1,303,494
C	10,450	2,506,250	0	0	2,516,700	8,950	2,503,670	0	3,570	2,516,190	2,507,240
D	8,674	3,567,269	0	0	3,575,943	5,630	3,565,150	0	5,380	3,576,160	3,570,530
Total	38,232	7,944,989	0	0	7,983,221	33,124	7,939,079	0	10,725	7,982,928	7,949,804

Inputs should equal outputs within 5%

Use = Total Inputs – Ending Inventory

2. It is recommended that facilities also include annual air emissions of priority pollutants, as well as any air permit limits for toxics that may be included in previously issued air permits. Studies conducted by DEP and continuing work conducted by facilities and DEP have shown that significant quantities of unpermitted releases have revealed inconsistencies in data. Data reconciliation may be needed to complete the material balance.

C. PROCESS LEVEL MATERIALS INFORMATION [N.J.A.C. 7:1K-4.3(b)3 and 4]

1. The Pollution Prevention Process-Level Data Worksheet (P2-115) must be filled out for each hazardous substance in each process. Effective April 2000, new regulations require that facilities maintain process-level data worksheets for all processes, both targeted and non-targeted. The information contained in these worksheets (completed sample on p.4) allows

NOTE: THIS WORKSHEET IS REQUIRED AS PART OF THE POLLUTION PREVENTION PLAN, AND IS OPTIONAL AS A SUBMITTAL IN LIEU OF SECTIONS C AND D OF THE RELEASE AND POLLUTION PREVENTION REPORT. ALL OPTIONAL SUBMITTALS ARE NOT CONFIDENTIAL.

POLLUTION PREVENTION PROCESS LEVEL DATA WORKSHEET (P2-115)
Base Year 1999

ACME CHEMICAL COMPANY
400 ANYSTREET
ANYTOWN, NJ 00000

PROCESS LEVEL INFORMATION: (Use one sheet for each hazardous substance at each process.)

PROCESS NAME: TOLUENELINE

PROCESS I.D. (from Plan Summary) 01

UNITS OF PRODUCTION (e.g. type of widget, lbs. of chemical, ft² of product) pounds of chemical

Is process targeted? (Y/N) Y Is this a grouped process? (Y/N) N

HAZARDOUS SUBSTANCE <u>Toluene</u>	CAS No.108-88-3					
	Base Year	Year 1	Year 2	Year 3	Year 4	Year 5
Production quantity	2,588,125					
USE (pounds)	2,597,425					
Consumed	0					
Shipped off-site as (or in) product	2,588,125					
NPO (pounds)	9,300					
Recycled out of process	0					
Destroyed: on site treatment	0					
Destroyed on site energy recovery	0					
Stack air emissions	3,500					
Fugitive air emissions	1,500					
Discharge to POTWs	1,100					
Discharge to groundwaters	0					
Discharge to surface waters	0					
On site land disposal	0					
Transferred off site	3,200					
P2 techniques used or planned in given year (code in 1999 RPPR Instructions, Appendix F)	N/A	W32, W36				
Was this process discontinued or sent off site in given year? (Y/N)	N/A					
Did facility make process change(s) that triggered Plan modification? (Y/N)	N/A					
Was facility's P2 progress (targeted process only) less than anticipated? (Y/N) (Attach explanation.)	N/A					

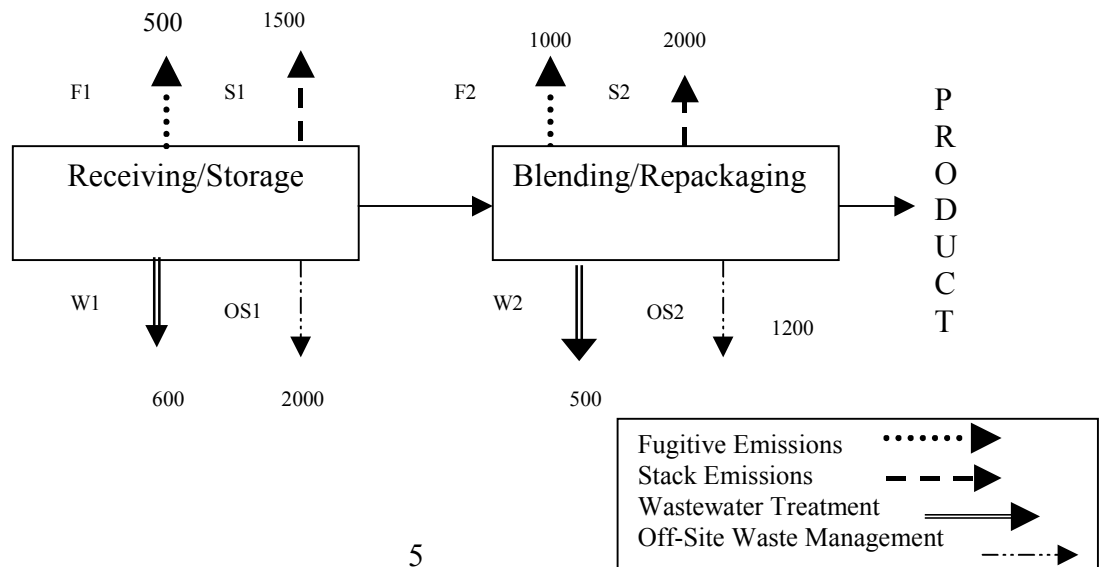
CERTIFICATION OF OWNER OR OPERATOR (Required only on one P2-115) - I certify under penalty of law that the information submitted on this worksheet is true, accurate and complete to the best of my knowledge.

Signature John Doe Date 6/30/00 Phone No: (123) 456-7890
Name (print) John Doe Title: Environmental Manager

the facility to calculate annual changes in Use and nonproduct output (NPO) at the process level. NPO includes all hazardous substances or hazardous wastes that are generated prior to storage, out-of-process recycling, treatment, control or disposal, and that are not intended for use as a product.

2. All processes must be identified. Generating a simple process flow diagram for each process is highly recommended. Process flow diagrams are very useful in determining all the steps in a single process and indicating possible sources of NPO. One process might include several steps including unloading, storage, filtering, filling and packaging.
3. Develop units of production for each process. An example of units of production may be pounds of chemical packaged.
4. Similar processes may be grouped together. For example, if several different chemicals are packaged at the same packaging station using both manual and automatic equipment, and losses are similar, it might be appropriate to combine them into one process. This may simplify data collection and reporting and allow facilities to concentrate their efforts on pollution prevention methods that will reduce hazardous substance use, nonproduct output and releases. If a facility elects to group processes, it should describe the reasons for doing so.
5. Process level NPO can be determined by summing up all the sources of NPO within a process. Determining quantitatively the amount of NPO at each source allows the facility to focus its resources on those sources that contribute to the greatest losses. While facilities are required to measure NPO as pounds of hazardous substance before treatment or control, facilities should also consider quantifying the pounds of all pollutants generated by the facility and look for pollution prevention methods to reduce them. By doing this, facilities can develop a pollution prevention plan that summarizes the "environmental footprint" for that facility and can identify long term environmental goals to reduce its impacts.

GENERIC FLOW DIAGRAM FOR SIC 5169



D. HAZARDOUS WASTE DATA [N.J.A.C. 7:1K-4.3(b)5]

1. Facility Level Data (Inclusion of Hazardous Waste Biannual Report may be sufficient, however, since the Report is only submitted every two years, this data may not be up to date. If it is not, the Report is not sufficient.)
2. At the Process Level, the pounds of each hazardous waste generated at each production process must be identified. The most important part of this step of the pollution prevention plan is identification of the **source** of the hazardous waste in each production process, (i.e., where in the process it is generated.) Some sources of hazardous waste within a process may include line flushing, QA/QC sampling, filter cakes, or bulk sampling.

E. COST DATA [N.J.A.C. 7:1K-4.3(b)6]

An estimate must be included for each source or production process, of the costs of using hazardous substances including at a minimum: storage and handling, monitoring, tracking, reporting, treatment, transportation and disposal, manifest and labeling, permit fees, and liability insurance. Some facilities have developed useful cost accounting metrics like cost per pound of nonproduct output generated that allow them to target the most cost effective environmental improvements to their production processes. There are many cost accounting case studies available, many of which are available via EPA's Environmental Accounting Project website at www.epa.gov/opptintr/acctg/. Facilities may be interested in using free cost accounting software developed by Tellus Institute in conjunction with EPA and DEP called P2/FINANCE (see www.epa.gov/opptintr/acctg/download/p2finan.htm) and E2/FINANCE (see www.tellus.org/general/software.html).

F. DATA UPDATES [N.J.A.C. 7:1K-4.3(c)1, 2, and 3]

Each year following the base year the Plan must be updated. This is achieved by updating the Pollution Prevention Process-Level Data Worksheets and completing a Release and Pollution Prevention Report (RPPR). Facilities will have the option of sending a completed Pollution Prevention Process-Level Data Worksheet (P2-115) to the Office of Pollution Prevention and Permit Coordination, who will then complete the necessary calculations to determine pollution prevention progress (see N.J.A.C. 7:1K-6)

G. IDENTIFY TARGETED PROCESSES [N.J.A.C. 7:1K-4.4]

Facilities need to target production processes that contribute 90% or more of total hazardous substance use, NPO or releases. Facilities are encouraged to target all processes, since cost-effective opportunities for pollution prevention are not limited to the processes that generate the most NPO or releases.

H. ESTIMATE SOURCE LEVEL NPO [N.J.A.C. 7:1K-4.5(a)2]

1. Estimate in pounds the annual quantities of each hazardous substance generated as NPO at each source within each targeted production process. (See sample flow diagram on page 5 for example of source identification and quantification. The example flow diagram estimates NPO losses of toluene in pounds from each source. These estimates match the levels reported in the Source Level NPO table below.) Estimating source level NPO is a critical step in pollution prevention planning. Use of the mass balancing method will increase the likelihood of identifying sources of NPO and associated P2 options. Often facilities' estimates of point source emissions are based on engineering calculations that have not been verified by either materials accounting data or by direct measurement. Often estimates of fugitive emissions are significantly lower than they actually are and materials accounting data plays an important role in this type of data analysis. Sometimes actual sources have been missed entirely, in part because of past environmental efforts that focus on the end of the pipe, rather than the entire production process. Once NPO quantities have been estimated using emission factors, direct measurement (of emissions or fuel sources), or other means, the estimates should be checked against any other related environmental data. This could include air emission data, air permit limits, water point source releases, input locations to POTWs, etc.

Source Level NPO

Process ID 1

Sources	Toluene	Xylene	TOTAL
F1	500	300	800
S1	1,500	1,200	2,700
F2	1000	700	1,700
S2	2000	2,000	4,000
Air Emissions	5,000	4,000	9,000
W1	600	600	1,200
OS1	2,000	2,000	4,000
W2	500	700	1,200
OS2	1,200	1,000	2,200
Water Discharges	1,100	900	2,000
Off-Site	3,200	3,000	6,200
Total NPO	9,300	7,900	17,200

2. Examples of source level NPO might include some of the following for SIC 5169: 1) Fugitives emissions from off-loading from a truck or rail car to a tank. 2) From the tank to the filter, sources of NPO may include emissions from the tank, (point source). 3) Line flushes, and tank cleaning result in releases to the wastewater treatment plant as well as fugitive losses during the cleaning step. Other sources of NPO that are discharged as wastewater in the cleaning step may include pipes that are blown out to remove or recover product. 4) NPO sources from the filter may include fugitives and filter disposal.
- I. IDENTIFYING POLLUTION PREVENTION OPTIONS [N.J.A.C. 7:1K-4.5(a)4]

1. Identify pollution prevention options that reduce the use and generation of hazardous substances. Employees who work with the targeted processes should get actively involved in this step by submitting pollution prevention ideas or attending brainstorming sessions. There are many possibilities for pollution prevention activities that may be applicable, which fall under the following categories: raw material substitution, product reformulation, production process modification, in-process recycling, or improved operation and maintenance of production process equipment. It should be remembered that, although some ideas may seem impractical now, they should still be included here. Those options could become viable in the future due to changes in technology or costs, so it will be helpful to have a record of those ideas for future revisions of the facility's plan.
2. Some possibilities for SIC code 5169 may include 1) reducing the frequency of tank cleaning by tracking and monitoring tank cleanliness to determine more precisely the need for cleaning. 2) filling containers to minimize evaporative losses.

J. FEASIBILITY ANALYSIS [N.J.A.C. 7:1K-4.5(a)5i and ii]

1. Technical analysis
The purpose of a technical analysis is to determine whether a proposed option is possible, regardless of financial constraints.
2. Financial analysis
Facilities need to estimate the cost of implementing pollution prevention options, as well as potential savings that may result from decreased raw material costs, improved efficiency, decreased operation and maintenance costs, decreased environmental compliance costs, etc. Other costs not typically quantified include improved public perception and savings that might result from achieving emission credits.
3. Reasons for not implementing options
If a facility elects not to implement pollution prevention options that would achieve reductions larger than those chosen by the facility, the facility should describe its rationale for not implementing these options. Was the payback period for the pollution prevention option longer than typically allowed by the parent company? Is the facility only going to be in operation for a short time?

K. 5 YEAR GOALS WITH IMPLEMENTATION SCHEDULE [N.J.A.C. 7:1K-4.5(a) 6-12]

(DEP-113, the Pollution Prevention Plan Summary will be sufficient for 1, 2, and 4. Please refer to the Plan Summary instructions for more detail.)

1. Pounds per unit of product

Determine the amount of pounds of each hazardous substance per unit of product by which the facility anticipates reducing its annual use and NPO generation. It is important to do this on a per unit of product basis to account for changes that are a result of increased process efficiencies, and not due to production changes. Remember that these goals are not legally binding so we encourage the facility to set realistically ambitious goals.

2. Percent

The planned reductions should be calculated as a percentage.

3. Impact on releases

The impact of planned pollution prevention reductions on releases to air and water or the quantities of waste generated at the facility should be calculated. In some cases, reductions in releases may result in eliminating the need for permits or other regulatory approvals.

4. Estimated schedule for implementation

Implementation schedules are a way of planning around resource and timing problems. Some goals can be accomplished immediately, while others may have short-, mid-, or long-range timing. It is therefore important to determine a schedule for implementation as a reminder of the facility's plans. This schedule can be modified at any time to reflect new options or changed time frames.