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Hanford Site Guide for Preparing and Maintaining Generator Group Pollution Prevention Program Documentation

United States
Department of Energy
Richland, Washington

Approved for Public Release

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GLOSSARY

ABBREVIATIONS AND ACRONYMS

DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
P2	pollution prevention
P2OA	pollution prevention opportunity assessment
P2SDb	pollution prevention successes database
PWA	process waste assessment
RCRA	*Resource Conservation and Recovery Act of 1976*
RL	U.S. Department of Energy, Richland Operations Office
WHC	Westinghouse Hanford Company

DEFINITIONS

Generator Group. As defined by the responsible contractor, any discrete activity, project, or facility whose act or process produces waste.

Goal. A specific result toward which efforts are directed.

Hazardous Waste. Waste, which because of its quantity, concentration, and physical, chemical, or infectious characteristics may cause, or significantly contribute to, an increase in mortality, or pose a potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. See *Resource Conservation and Recovery Act of 1976* (RCRA) Regulated Waste and State-Only Regulated Waste (DOE 1994a).

High-Level Waste (HLW). Irradiated reactor fuel, liquid wastes resulting from the operations of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and solids into which such liquid wastes have been converted (DOE 1994a).

Low-Level Waste (LLW). Radioactive waste not classified as HLW, transuranic (TRU) waste, spent nuclear fuel, or by-product material (specified as uranium or thorium tailings and waste in accordance with DOE Order 5820.2A [DOE 1994a]).

Metric. A standard of measurement (such as length, area, frequency, etc.).

Mixed Waste. Waste that contains both radioactive (as defined by the *Atomic Energy Act of 1954*) and hazardous (as defined by RCRA, *Toxic Substances Control Act of 1976* [TSCA], and/or state regulations) components (DOE 1994a).

Nonroutine Activities. One-time operations waste: wastes produced from environmental restoration program activities, including primary and secondary wastes associated with retrieval and remediation operations; 'legacy wastes;' and decontamination and decommissioning/transition operations. It also includes all TSCA-regulated wastes, such as polychlorinated biphenyl-

contaminated fluids and/or equipment. By definition, these activities are not considered to be periodic and/or ongoing, because the waste is a direct result of past operations and activities, rather than a current process. However, newly generated wastes that are produced during these 'one-time operations' are considered to be a secondary waste stream, and should be separately accounted for whenever possible. This secondary (newly generated) waste usually results from common activities such as handling, sampling, treatment, repackaging, shipping, etc. (DOE 1994a).

Performance Measure. An objective, quantitative system for rating the quality of an activity or service based on a desired set of improvement objectives.

Process Waste Water. Any water produced during manufacturing or processing operations that comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, by-product, or waste product. This determination is independent of the level and/or nature of the contaminants. Additionally, process waste waters are liquid wastes, which are directly piped to a permitted (onsite) waste treatment facility where treatment may consist of neutralization, evaporation, or placement in a settling or percolation pond, etc. This term does not include the liquid discharges to publicly owned treatment works, which are governed by U.S. Environmental Protection Agency- or state-issued national pollutant discharge elimination system permits, or local pretreatment standards.

Examples of process waste water include cooling water from air compressor systems, air conditioners, and heating systems; boiler or cooling tower blowdown; ion-exchange regeneration waste water; and laboratory operations waste water. It does NOT include non-process waste waters such as storm water, well purge water, irrigation drainage, fire-fighting and hydrant flushings, lawn watering, pavement wash waters, vehicle waste water, etc. (DOE 1994a).

RCRA-Regulated Waste. Solid waste, not specifically excluded from regulations under 40 CFR 261.4, "Identification and Listing of Hazardous Waste," or delisted by petition, that is either a listed hazardous waste (40 CFR 261.30 to 261.33) or exhibits the characteristics of a hazardous waste (40 CFR 261.20 to 261.24).

Recycling. Recycling techniques are characterized as use, reuse, and reclamation techniques (resource recovery). **Use** or **reuse** involves the return of a potential waste material either to the originating process as a substitute for an input material or to another process as an input material. **Reclamation** is the recovery of a useful or valuable material from a waste stream. Recycling allows potential waste materials to be put to a beneficial use instead of going to treatment, storage, or disposal.

Routine Activities. Normal operations waste: waste produced from any type of production operation, analytical and/or research and development (R&D) laboratory operations; treatment, storage, disposal operations, 'work-for-others,' or any other periodic and recurring work that is considered ongoing in nature. 'Normal operations' refers to the type of ongoing process (i.e., production, R&D, etc.), not the specific activity that produced the waste.

Periodic laboratory or facility cleanouts and spill cleanups that occur as a result of these processes are also considered normal operations (DOE 1994a).

Sanitary Waste. Wastes, such as garbage, that are generated by normal housekeeping activities and are not hazardous or radioactive (DOE 1994a).

Spent Nuclear Fuel. Fuel that has been withdrawn from a nuclear reactor following irradiation, but that has not been reprocessed to remove its constituent elements (DOE 1988).

State-Only Regulated Waste. Any other hazardous waste not specifically regulated under TSCA or RCRA, such as used oil, which may be regulated by a state or local authority (DOE 1994a).

Transuranic Waste. Waste that is contaminated with alpha-emitting radionuclides with an atomic number >92 (heavier than uranium), half lives >20 years, and concentrations >100 nCi/g of waste (DOE 1994a).

TSCA-Regulated Waste. Hazardous chemical wastes, both liquid and solid, containing more than 50 p/m of polychlorinated biphenyls (DOE 1994a).

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HANFORD SITE GUIDE FOR PREPARING AND MAINTAINING GENERATOR GROUP POLLUTION PREVENTION PROGRAM DOCUMENTATION

1.0 INTRODUCTION

1.1 PURPOSE OF GUIDE

This manual provides the necessary guidance to contractor generator groups for developing and maintaining documentation of their pollution prevention (P2) program activities. Preparation of program documentation will demonstrate compliance with contractor and U.S. Department of Energy (DOE) requirements, as well as state and federal regulations. **Contractor waste generator groups are no longer required to prepare and update facility waste minimization plans. Developing and maintaining program documentation replace this requirement.**

1.2 BACKGROUND

The Hanford Site P2 program is an organized, comprehensive, and continual effort to systematically reduce the quantity and toxicity of hazardous, radioactive, mixed, and sanitary wastes; conserve energy and resources; and prevent or minimize pollutant releases to all environmental media from all Hanford Site activities. The program, as addressed in DOE/RL-91-31, *Hanford Site Waste Minimization and Pollution Prevention Awareness Program* (RL 1994), has been developed to meet waste minimization and P2 public law requirements, federal and state regulations, and DOE requirements. The Hanford Site P2 program is implemented through the sitewide, contractor, and generator group programs.

Historically, Hanford Site waste generating and treatment, storage, and disposal facilities prepared and issued waste minimization plans containing general and facility-specific information to guide and document their program activities. This planning approach was analyzed to determine ways additional emphasis could be placed on the development and integration of goals, activities, and budgets to achieve P2 results. In addition, the planning and program documentation process was evaluated to determine how it could be could be streamlined and still meet regulatory and DOE requirements. The new approach achieves these objectives in two important ways.

First, the general P2 information common to all generator group plans is now contained in the Hanford Site and contractor plans. Generator groups are now required to only have documentation on key P2 elements and activities within their programs. The DOE, Richland Operations Office (RL) P2 program manager has determined these key elements to be as follows:

- Goals
- Separate, identifiable budget
- Pollution prevention opportunity assessments (P2OA)
- Reporting and P2OA implementation.

The specific activities to be documented under these headings are presented in Figure 1-1. The P2 program documentation will be on file at a generator group to demonstrate compliance with regulatory, DOE, and contractor requirements.

Second, this approach also documents at the Hanford Site, contractor, and/or generator group level, all the suggested program elements in the U.S. Environmental Protection Agency (EPA) guidance for a *Resource Conservation and Recovery Act of 1976* (RCRA)-compliant waste minimization program (EPA 1993). Table 1-1 identifies where each program element is documented. The Washington State Department of Ecology (Ecology) has also determined this approach will meet the intent of WAC 173-307, "Pollution Prevention Plans."

Figure 1-1. Elements and Activities to be Documented in a Generator Group Pollution Prevention Program.

1. **Goals on Waste Types, Pollutants, and Hazardous Chemicals**

   - 5-year forecast and annual goals
     - Source reduction (waste from routine activities only)
     - Recycling (waste from routine activities only)
     - Pollution prevention opportunity assessments (P2OA)
   - Environmental Compliance Officer (or equivalent) and responsible management signatures

2. **Separate, Identifiable Budget, Activities, and Schedule**

   - Budget supporting pollution prevention activities, deliverables, and milestones identified in Multi-Year Program Plans

3. **Pollution Prevention Opportunity Assessments**

   - Summary waste stream prioritization information
     - Waste stream information
     - Priority waste streams and activities
   - P2OA(s)
     - Team and activity description
     - Activity flow diagram
     - Pollution prevention opportunity description
     - Pollution prevention opportunities summary
     - Final summary

4. **Pollution Prevention Reporting and Implementation**

   - Quarterly reports (three)
     - Status on goals
     - Report on accomplishments and P2OA implementation progress
     - Environmental Compliance Officer (or equivalent) and responsible management signatures
   - Annual report
     - Status on achieving annual goals
     - Status on meeting (or adjustments to) 5-year forecast
     - Next 5-year forecast and calendar year annual goals
     - Report on accomplishments and P2OA implementation progress
     - Environmental Compliance Officer (or equivalent) and responsible management signatures
     - Waste minimization/pollution prevention certification reporting
       A. Annual certification with plant manager's signature
       B. Generator Group Waste Minimization Reporting form

Table 1-1. Pollution Prevention Program Documentation Matrix.

EPA guidance[1] Waste Minimization Program elements (per RCRA)[2]	Program documentation
A. Top management support	
Hanford Site policy	Hanford Site plan
Company policy	Contractor plans
Goals	Hanford Site plan, contractor plans, generator group program documentation
Commitment - opportunity implementation	Hanford Site plan, contractor plans
Facility coordinator	Contractor plans
Publicize successes	Hanford Site plan, contractor plans
Incentives	Hanford Site plan, contractor plans
Training	Hanford Site plan, contractor plans
B. Characterization of waste generation	Contractor plans
C. Opportunity assessments	
Identify all opportunities	Contractor plans, generator group program documentation
Determine true costs of the waste	Contractor plans, generator group program documentation
D. Cost allocation system	Hanford Site plan, contractor plans
E. Technology transfer	Hanford Site plan, contractor plans
F. Program evaluation	Hanford Site plan, contractor plans, generator group program documentation

[1]EPA, 1993, "Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program," *Federal Register*, Vol. 58, No. 102, Washington, D.C.

[2]*Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq.

EPA = U.S. Environmental Protection Agency

2.0 P2 PROGRAM DOCUMENTATION

The following information has been developed to assist contractor generator groups in developing and maintaining quality and current documentation of their P2 program activities. All program documentation should be maintained at a central location within the facility.

2.1 GOALS

The development of goals and performance measures is an important element of the Hanford Site P2 program. Pollution prevention goals are necessary to (1) meet federal, state, and DOE regulations and reporting requirements; (2) provide a system for tracking progress and measuring success of our P2 activities; and (3) focus efforts on results-oriented, achievable activities that reduce the generation of waste and pollutants to all media, the use of hazardous substances, and the conservation of energy and natural resources.

2.1.1 Goal-Setting Requirements

The establishment of P2 goals is required for Hanford Site contractor waste generator groups. Setting goals will be divided into two parts and all goals will be established by calendar year.

Part 1--Contractor waste generator groups, for wastes generated from routine activities, will develop quantitative 5-year forecasts for source reduction, recycling, and planned reduction in use and release of *Emergency Planning and Community Right-to-Know Act* toxic chemicals (where applicable). All waste generator groups will develop 5-year forecasts for the number of P2OAs to be conducted. The waste generator group 5-year forecasts, signed by the waste generator Environmental Compliance Officer (or equivalent) and manager responsible for the waste-generating activities, will be submitted to the contractor P2 group. The 5-year forecasts received from the waste generator groups will be assembled into a contractor aggregate 5-year forecast. The contractor aggregate 5-year forecasts are due to the Westinghouse Hanford Company (WHC) P2 group by January 15 of each year and must be signed by the manager of the contractor P2 organization.

Part 2--Contractor waste generator groups, for waste generated from routine activities, will also develop quantitative annual goals every year. These goals will be based on specific waste reduction activities and P2OAs planned for that year and shall as a minimum address the first year of the 5-year forecasts. These specific annual goals will be performance-oriented and based on the unit of output or work of your choice. Contractor waste generator groups, for waste generated from nonroutine activities, will develop qualitative annual goals every year (consideration should be given to establishing quantitative goals). The waste generator group annual goals, signed by the waste generator Environmental Compliance Officer and manager responsible for the waste-generating activities, will be submitted to the contractor P2 group. The waste generator goals for source reduction, recycling, and P2OAs to be conducted and implemented will be assembled into a contractor aggregate annual goal. The contractor aggregate annual goals are due to the WHC P2 group by January 15 of each year and must be signed by the

manager of the contractor P2 organization. As done previously, reports that provide status on progress made toward annual goals and P2OAs shall be submitted on a quarterly basis.

Goal-setting guidance and forms for establishing the 5-year forecasts and annual goals are in Appendix A of this document. The guidance contains specific details and instructions on setting goals and developing performance measures to track and measure progress toward achieving goals. The 5-year forecasts will be aggregated to establish Hanford Site goals. Note that 1993 has been established as the baseline year for measuring progress toward achieving waste reduction goals in routine activities. The DOE complex-wide waste reduction goal and the Hanford Site goal are to reduce waste generated by routine activities below 1993 waste generation levels by December 1999.

2.2 BUDGET, ACTIVITIES, AND IMPLEMENTATION SCHEDULES

2.2.1 P2 Budget Requirements

Pollution prevention budget reporting requirements contained in Executive Order 12856 and the Office of Management and Budget Circular A-106 Pollution Abatement Report mandate that all federal agencies identify, request, and allocate funds for implementing P2 and abatement strategies within their operations (DOE 1994b).

The DOE planning and budgeting guidance states these requirements will be met through the establishment of separate, identifiable P2 funding (DOE 1994b). Separate, identifiable funding established at the contractor generator group level will be consolidated for the Hanford Site to meet DOE reporting requirements for the DOE Annual Report and Waste Generation and Waste Minimization Progress. The budgeting guidance also identifies the specific P2 program elements for which contractor generator groups should budget. These program elements are the key elements identified in the *Waste Minimization/Pollution Prevention Crosscut Plan* (DOE 1994c). These program elements and a description of the activities within the scope of these program elements are listed in Appendix B.

2.2.2 P2 Budgeting

During the preparation of the Multi-Year Program Plans (MYPP) and activity data sheets, separate, identifiable P2 budgets will be established. Contractor generator groups will identify budgets for their program activities in these budget documents. Emphasis should be placed on budgeting for those activities that will help contractor generator groups achieve their goals. Separate, identifiable funding can be established within individual cost account plans at the cost account plan, work, or task package level--depending on the size of the P2 budget and the organization of the contractor generator group program. Copies of the appropriate budget documentation will be maintained as program documentation. In cases where funding is not established in separate budget documents, estimated budget information should be maintained as documentation.

2.3 P2OAs

An important part of an effective P2 program is identifying and prioritizing waste streams, connecting waste streams to specific activities, and performing P2OAs on these activities. Prioritization information and P2OAs should be entered into the pollution prevention successes database (P2SDb) and status maintained (i.e., plan-to-implement, implemented, rejected) to minimize inquiries from outside groups. Access to the P2SDb is available through the WHC P2 group. Worksheets similar to the information entered into P2SDb can be found in WHC-MR-0472, *Pollution Prevention Opportunity Assessment--Guidance for the Hanford Site* (WHC 1994).

The P2OA will provide a basis for identifying specific changes to waste-generating activities needed to achieve the 5-year and annual goals. Completed P2OAs on file at the waste generator group will serve as documentation to meet P2 program requirements. Training on how to conduct a P2OA is available from the WHC P2 group. The *Pollution Prevention Opportunity Assessment--Guidance for the Hanford Site* is also available to help contractor generator groups complete these activities.

2.4 P2 REPORTING AND P2OA IMPLEMENTATION

Contractor generator groups will issue quarterly and annual reports to the contractor P2 group. The quarterly reports can be in the form of a letter with attachments and should address (1) progress toward achieving annual goals for waste generated from routine activities, including the percent of source reduction and recycling achieved, the method used to achieve the goals, and cost saving; (2) status of P2OAs to be conducted and copies of completed P2OAs provided if not entered into the P2SDb or the P2OA identification code of P2OAs entered into the P2SDb; (3) progress in implementing opportunities identified from P2OAs and/or process waste assessments (PWA); and (4) other P2 accomplishments not connected with specific goals. An example of other accomplishments could be the revision of a procedure resulting in improved material-handling practices. Successes in waste quantities reduced or avoided shall be reported by volume (cubic meters) for radioactive/mixed waste and weight (kilograms) for hazardous/sanitary waste. The report shall be signed by the generator group Environmental Compliance Officer and manager responsible for the waste-generating activities.

Contractor aggregate quarterly reports are due to the WHC P2 group the 15th of April, July, and October. The contractor aggregate quarterly report will be in the same format as the generator group reports and signed by the manager of the contractor P2 organization.

In January of each year, the contractor generator group shall prepare and issue to the contractor P2 group a detailed annual report for the previous calendar year's accomplishments toward meeting annual goals and progress toward achieving 5-year forecasts, and provide completed Waste Minimization/Pollution Prevention Certification Reporting and (if applicable) Generator Group Waste Minimization Reporting forms. The report should identify any adjustments in the 5-year forecasts and identify the new 5-year goal forecasts and annual goals for the next calendar year. Copies of completed P2OAs not entered into the P2SDb or the P2OA identification code of P2OAs entered into the P2SDb, progress in implementing opportunities

identified from P2OAs and PWAs, and other P2 accomplishments not connected with specific goals also should be included. The report shall be signed by the generator group Environmental Compliance Officer and manager responsible for the waste-generating activities.

The Waste Minimization/Pollution Prevention Certification form is used by generator groups to identify whether they reduced waste during the reporting period and to certify the waste minimization information being reported is true and accurate. This form is included in Appendix C. Also included in Appendix C is the Generator Group Waste Minimization Reporting form for generator groups to use when providing a summary of the previous calendar year's waste reduction efforts. This information will be used to report waste minimization activities to the DOE, Ecology, and EPA.

Contractor aggregate annual reports are due to the WHC P2 group on January 15 of each year. The contractor aggregate annual report will be in the same format as the generator group reports and signed by the manager of the contractor P2 organization.

A schedule for submitting the annual and quarterly reports is provided in Appendix D. The schedule also identifies dates for preparing and submitting annual goals, budgets, and other key activities required to maintain up-to-date program documentation.

3.0 REFERENCES

40 CFR 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, as amended.

Atomic Energy Act of 1954, 42 USC 2011, et seq.

DOE, 1988, *Radioactive Waste Management*, DOE Order 5820.2A, U.S. Department of Energy, Washington, D.C.

DOE, 1994a, *Waste Minimization Reporting System (WMINRS version 2.0) Users Manual*, U.S. Department of Energy, Washington, D.C.

DOE, 1994b, *Budget Formulation and Activity Data Sheet Development--Supplemental Field Guidance for the FY 1996 Planning and Budgeting Cycle*, U.S. Department of Energy, Washington, D.C.

DOE, 1994c, *Waste Minimization/Pollution Prevention Crosscut Plan*, U.S. Department of Energy, Washington, D.C.

EPA, 1993, "Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program," *Federal Register*, Vol. 58, No. 102, Washington, D.C.

Executive Order 12856, 1993, "Federal Agency Compliance with Community Right-to-Know Laws and Pollution Prevention Requirements," *Federal Register*, Vol. 58, pp. 41981 (August).

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Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

RL, 1994, *Hanford Site Waste Minimization and Pollution Prevention Awareness Program Plan*, DOE/RL-91-31, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Toxic Substances Control Act of 1976, 15 USC 2601, et seq.

WAC 173-307, "Pollution Prevention Plans," *Washington Administrative Code*, as amended.

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Executive Order 12873, 1993, "Federal Acquisition, Recycling and Waste Prevention," *Federal Register*, Vol. 58, pp. 54911 (October).

Pollution Prevention Act of 1990, 42 USC 13101, et seq.

Superfund Amendments and Reauthorization Act of 1986, 42 USC 11001, et seq.

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APPENDIX A

POLLUTION PREVENTION GOAL SETTING FOR THE HANFORD SITE

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APPENDIX A

POLLUTION PREVENTION GOAL SETTING FOR THE HANFORD SITE

A1.0 INTRODUCTION

The development of goals and performance measures is an important element of the Hanford Site pollution prevention (P2) program. Pollution prevention goals are necessary and required for Hanford Site contractor waste generator groups. The setting of goals will be divided into two parts: the establishment of (1) quantitative 5-year forecasts and (2) quantitative annual goals. These goals are for waste generated for waste type from routine activities for source reduction, recycling, planned reduction in use and release of *Emergency Planning and Community Right-to-Know Act of 1986* (EPCRA) toxic chemicals (where applicable) and for all waste generator groups, the number of pollution prevention opportunity assessments (P2OA) to be conducted. It is noted that the U.S. Department of Energy-Headquarters (DOE-HQ) does allow for the development of qualitative annual goals rather then quantitative annual goals for nonroutine waste-generating activities.

Specific information relative to the time frame for development, submittal, and reporting of goals is addressed in Section 2.0 of the main document.

A2.0 GOAL-SETTING REQUIREMENTS

Very few activities are predictable enough to easily set 5-year forecasts for waste reduction and that in future years more waste may be generated than minimized. However, it is a goal of the DOE-HQ and the Hanford Site to reduce waste generated from routine activities by December 31, 1999, to below waste generation levels of waste generated by routine activities and shipped in calendar year (CY) 1993.

The 1993 CY baseline may not accurately reflect the waste generated for all generator group activities but opportunities exist to explain unusual circumstances affecting generator group/contractor goals on an annual basis. It is noted that in some instances a generator group may not have an established 1993 baseline year. In these cases, goals shall be established on the latest CY for which data are available for waste generated from routine activities and shipped. Waste generation data can be obtained from the tracking system(s) used by the contractor/waste generator. Until a baseline year is established for new waste generator groups, qualitative goals are acceptable.

The best routine waste generation projections available should be used to determine quantitative 5-year forecasts for source reduction and recycling. Each year, an opportunity exists to adjust or change forecast goals when it is more clearly known what work will be conducted in the upcoming years.

More detailed instructions on goal setting are found in the following pages. Tables are provided for the 5-year forecasts required and for annual goals required. The quantities identified in the tables provided will be rolled up into sitewide aggregate 5-year forecast goals included in annual reports and the Hanford Site Waste Minimization and P2 Awareness Program Plan. A glossary of definitions is included at the beginning of the main document.

Part 1. Preparing 5-Year Pollution Prevention Forecasts

The preparation of Tables 1, 2, and 3 in this section are required by the DOE for the Annual Waste Generation and Waste Minimization Report. By establishing and reporting against these goals, the DOE is ensuring compliance with the *Resource Conservation and Recovery Act of 1976* (RCRA) requirements for a Waste Minimization Program, the Washington State Pollution Prevention Planning requirements, and recently issued Executive Orders on EPCRA toxic chemical reduction, ozone-depleting substances, sanitary waste prevention, and energy and water conservation.

Instructions:

Table 1: For the 5-year forecasts, it is suggested that the best estimate possible be made at this time using the 5-year solid and liquid routine waste generation projections. Each year, new 5-year forecasts and annual goals are established. This allows for adjustments made to the previous 5-year forecasts to be identified and discussed in the annual report. If a certain waste type is not generated, a priority EPCRA hazardous material is not used, or a waste type is not expected to be generated in upcoming years, insert N/A or not applicable in the appropriate column.

Identify, on Table 1, the CY 1993 baseline for the waste that was generated from routine activities and shipped. As previously stated, if you do not have an established 1993 baseline, provide the same information for the latest CY available. The EPCRA 313 substance 5-year source reduction forecasts should be determined using the latest data available.

Using the applicable CY projected waste generation forecast from the 5-year waste generation projections for waste generated from routine activities, for the waste types listed in Table 1, record the CY forecast quantity and estimated source reduction quantity for CYs 1996 to 2000 on Table 1. This information will be used to determine an aggregate Hanford Site 5-year source reduction forecast (converted to percentages) against the 1993 baseline year, taking into consideration waste generation increases and different waste generation baseline years being used.

Table 2: Executive Orders issued in 1993 have mandated that separate recycling goals be set for hazardous and sanitary waste and process waste water. For each year and waste type listed in the table, using the 1996 waste generation projection as the forecast year, estimate the quantity of waste expected to be reduced due to recycling for CYs 1996 to 2000. Record in Table 2 the forecast projection quantity and estimated quantity of reduction because of recycling for each waste type.

Table 3: The P2OAs are one of the main mechanisms by which contractor waste generator groups will demonstrate that an active waste minimization program is in place. Please fill out the number of P2OAs to be conducted during the next 5 years. Every year, at least one P2OA

should be conducted. Also note, in Table 3, any funding requested for P2 activities (i.e., reporting, P2OAs, training, etc.), addressed in Appendix B, in the outyears.

Table 1. Source Reduction Forecasts for Calendar Years 1996 to 2000.

Waste type	1993 Baseline		CY 1996	CY 1997	CY 1998	CY 1999	CY 2000
Low-level waste (LLW) (m^3)		FY					
		FSR					
Transuranic waste (TRU) (m^3)		FY					
		FSR					
High-level waste (HLW) (m^3)			N/A	N/A	N/A	N/A	N/A
Low-level mixed waste (LLW-M) (m^3)		FY					
		FSR					
Transuranic mixed waste (TRU-M) (m^3)		FY					
		FSR					
RCRA[1] hazardous waste (kg)		FY					
		FSR					
State-only hazardous waste (kg)		FY					
		FSR					
Toxic Substances Control Act[2] (TSCA) regulated waste (kg)		FY					
		FSR					
Sanitary (kg)		FY					
		FSR					
Process waste water (m^3) • Radioactive • Mixed • Hazardous • Nonregulated		FY					
		FSR					
EPCRA[3] 313 Substances (kg)		FY					
		FSR					

[1] Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.
[2] Toxic Substances Control Act of 1976, 15 USC 2601, et seq.
[3] Emergency Planning and Community Right-to-Know Act, as amended, 42 USC 11013, 11028, et seq.

CY = Calendar year
FSR = Forecast source reduction quantity
FY = Forecast year quantity
N/A = Not applicable

Table 2. Recycling Forecasts for Calendar Years 1996 to 2000.

Waste type	Projected forecast	CY 1996	CY 1997	CY 1998	CY 1999	CY 2000
RCRA[1] hazardous waste (kg)						
State-only hazardous waste (kg)						
Toxic Substances Control Act[2] (TSCA) regulated waste (kg)						
Sanitary (kg)						
Process waste water (m^3) • Radioactive • Mixed • Hazardous • Nonregulated						

[1] Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.
[2] Toxic Substances Control Act of 1976, 15 USC 2601, et seq.

CY = Calendar year

Table 3. Pollution Prevention Opportunity Assessments Planned and Conducted for Calendar Years 1996 to 2000.

P2OA	CY 1996	CY 1997	CY 1998	CY 1999	CY 2000
Number of P2OAs					
Funding requested					

CY = Calendar year
P2OA = Pollution prevention opportunity assessment

Part 2. Annual Pollution Prevention Goal Setting and Measuring Progress

Instructions:

Step 1. Summarize Annual Goals and P2OAs

The quantitative annual goals, for waste generated from routine activities, will reflect the forecast source reduction and recycling goals for the specific waste types identified in Tables 1 and 2 planned to be minimized, and the number of P2OAs to be conducted, identified in Table 3. Using the information from Tables 1, 2, and 3 for the current year, fill in the corresponding blanks in Table 4. Using Table 3, fill in the column marked "P2OA" with a check mark to indicate if you will be conducting a P2OA on that waste type. Add the number of check marks and indicate in the space provided at the bottom of Table 4 the total number of P2OAs you plan to perform during the year. Also estimate the number of P2 opportunities, identified from P2OAs, process waste assessments, or other sources you plan to implement during the CY at the bottom of Table 4. It is reiterated that for waste generator groups that generate waste from nonroutine activities, qualitative annual goals shall be developed.

Waste generator groups also can establish additional quantitative goals that are not related to source reduction, recycling, or P2OAs.

Step 2. Develop Performance Measures

Annual goals will be specific, performance-oriented, and based on the work that you do or the services you provide at the Hanford Site. The idea is to break down the goals set in the 5-year forecast into specific, measurable, and achievable goals that will help you document success achieved in preventing pollution. These goals will be chosen by the organization and be based on a unit of work or output of the organization's choice. Annual goals will be tracked on a quarterly basis.

To identify the performance measure(s) for your organization, please provide the following information. It is important to make this as broad as possible. Each answer should only be one line. A blank Annual Goals Worksheet is included, as Attachment 1, to record the appropriate information for developing a performance measure. Example goals, lists of P2 activities, measures, and metrics are included as Attachments 2 and 3, respectively.

Table 4. Summary of Goals and Pollution Prevention Opportunity Assessments for Calendar Year 199X.

Waste type	Source reduction goals	Recycling goal	P2OA?
LLW			
TRU			
HLW			
LLW-M			
TRU-M			
RCRA[1] hazardous			
State-only hazardous			
TSCA[2]			
Sanitary			
Process waste water - Radioactive - Mixed - Hazardous - Nonregulated			

Current CY:
Total number of P2OAs to be performed in CY: _____
Total number of P2 opportunities to be implemented in CY: _____

[1]*Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq.
[2]*Toxic Substances Control Act of 1976*, 15 USC 2601, et seq.

CY = Calendar year
HLW = High-level waste
LLW = Low-level waste
LLW-M = Low-level waste-mixed
P2 = Pollution prevention
P2OA = Pollution prevention opportunity assessment
RCRA = Resource Conservation and Recovery Act
TRU = Transuranic
TRU-M = Transuranic-mixed

Annual Goals Information

Facility: Identify the facility or waste generating group that will be covered by the Annual Goals.

Key Processes or Activities: Identify what the facility or waste generating group does at the Hanford Site. Describe the work done or the services provided (environmental restoration, facility maintenance, computer user-support, etc.).

Key Products, Output(s), or Work of your Organization: Identify what it is that the organization receives funding to do. What is the deliverable(s), the product(s), service(s), or output(s)? Examples include decontaminated equipment, serviced vehicles, clean and well-maintained buildings, data, pilot-scale study results, etc.

This unit of work should be something that is broad enough to cover work activities for the next 5 years. It would be beneficial to keep the same unit of work or output over the 5 years in order to track progress for the entire time period. However, this unit can vary from year to year, based on your facility needs.

Annual Goals: Annual goals set here will have the following format of *Pollution Prevention Activity to be achieved for every unit of work or service provided on a CY basis.*

Goals should be results-oriented (described in the past tense), realistic, attainable, and measurable. Multiple goals may be established. The annual goals should correlate to the summary of goals in Table 4 (i.e., source reduction, recycling, P2Oas and P2OAs to be implemented) or as a minimum at least two goals shall be established.

Measures: Measures compare the results of the P2 activity with the unit of output or measure of success for your organization. Examples of measures for P2 activities are included in Attachment 2 for use in generating ideas.

Metrics: Metrics are the specific units of measure for the P2 activity compared with the unit or work, output, or service. Examples of metrics are for each of the P2 activities or unit of outputs are included in Attachment 3 for use in generating ideas.

Attachment 1

Pollution Prevention Annual Goals

Facility:

Key Processes or Activities:

Key Products in Our System:

Goals:

(1)

(2)

(3)

Measures:

(1)

(2)

(3)

Metrics:

(1)

(2)

(3)

Attachment 2

EXAMPLE:

Facility: D&D/Environmental Restoration

Objectives:
Improved cost-effectiveness
Prevented pollution to all media and conserved energy and natural resources
Improved environment, safety, and health for workers and community

Key Activities:
Environmental cleanup
Decontamination
Decommissioning

Key Products:
Sites remediated and/or restored
Facilities/sites/equipment cleaned for released or disposal
Buildings/areas demolished

Goals:
(1) To keep the rate of waste generation per square feet of area remediated to a ratio of 1:4.
(2) To free release 50% of all equipment decontaminated this year.
(3) Segregate and recycle up to 50% of all material collected from decommissioning this year.

Measures:
(1) Waste generated compared to m^3 area remediated.
(2) Equipment released to total equipment decontaminated.
(3) Material recycled per m^3 building decommissioned.

Metrics:
(1) Mass waste/m^3
(2) Mass equipment released/mass equipment decontaminated
(3) Mass recycled/m^3

Attachment 3

Generic Pollution Prevention Activities and Corresponding Metrics

Activity	Metric
Generation of waste reduced	kg/m^3
Scrap metal recycled	kg
Trained employees	Number of trained people
Decontaminated equipment	kg/m^3
Hazardous material purchases controlled	Number of purchases
Inventory of hazardous products reduced	kg
Radiologically controlled areas reduced	m^2
Procedures changed	Number of procedures or kg waste minimized

A3.0 REFERENCES

Emergency Planning and Community Right-to-Know Act of 1986, 42 USC 11001, et seq.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

Toxic Substances Control Act of 1976, 15 USC 2601, et seq.

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APPENDIX B

POLLUTION PREVENTION GENERATOR GROUP PROGRAM IMPLEMENTATION ELEMENTS

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APPENDIX B

POLLUTION PREVENTION GENERATOR GROUP PROGRAM IMPLEMENTATION ELEMENTS

1. Organization and Infrastructure

   - Designate a generator group pollution prevention (P2) coordinator
   - Interface with the sitewide P2 coordinator(s) and Headquarters
   - Participate in the sitewide P2 Committee and Coordinator Network
   - Institute corrective actions resulting from program evaluation.

2. Program Development

   - Develop and maintain generator group P2 program documentation
   - Develop P2 program objectives and establish quantitative and qualitative goals
   - Develop activity schedules for specific tasks and projects
   - Formulate budgets for generator group programmatic activities
   - Assign personnel to develop and implement the generator group P2 program
   - Integrate P2 practices into site operating procedures.

3. Sitewide Program Participation

   - Involve employees in job-specific P2 practices
   - Exchange information and technologies with other waste generator groups
   - Seek technical assistance from the sitewide program
   - Track material use, waste generation rates, and recycling rates
   - Report on material usage, waste generation, recycling, and progress made because of implementing P2 practices
   - Participate in sitewide source reduction and recycling programs.

4. Training

   - Provide job-specific training
   - Participate in opportunity assessment and implementation training.

5. Opportunity Assessments

   - Identify and evaluate current and potential waste-generating activities
   - Identify and prioritize P2 opportunities
   - Identify research and development needs.

6a. Implement Source Reduction Opportunities for Hazardous, Radioactive, and Mixed Waste Streams

   - Modify processes to reduce hazardous and radioactive waste generation
   - Substitute materials to reduce toxic chemical use and release
   - Substitute materials to reduce hazardous and radioactive waste generation
   - Procure capital equipment to implement P2 opportunities
   - Conduct research, development, and demonstration on difficult to manage waste streams.

6b. Implement Recycling Opportunities for Hazardous, Radioactive, and Mixed Waste Streams

   - Reuse or recycle potential hazardous and radioactive wastes onsite
   - Recycle potential hazardous wastes offsite.

6c. Implement Source Reduction and Recycling Opportunities for Sanitary Waste Streams

   - Use affirmative procurement practices to encourage the purchase and use of recovered materials
   - Reuse or recycle sanitary wastes.

7. Design Considerations

   - Design P2 principles and practices into new facilities
   - Incorporate P2 into facility upgrades and process modifications

- Evaluate the potential of new technologies on waste-generating activities.

8. Program Evaluation

- Evaluate generator group program implementation status
- Evaluate effect of source reduction and recycling on waste generation and disposal rates.

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APPENDIX C

WASTE MINIMIZATION/POLLUTION PREVENTION CERTIFICATION FORM, GENERATOR GROUP WASTE MINIMIZATION REPORTING FORM, AND WASTE MINIMIZATION CODES

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APPENDIX C

WASTE MINIMIZATION/POLLUTION PREVENTION CERTIFICATION FORM

WHO MUST COMPLETE THIS FORM?

This report must be completed by waste generators that engaged in waste-producing activities during the reporting period (January 1 - December 31, 1995).

This information will be used to prepare reports required by the U.S. Department of Energy, Washington State Department of Ecology, and U.S. Environmental Protection Agency (EPA). Please keep a reference copy in your program documentation file.

MINIMIZATION OF *EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986* (FORMERLY *SUPERFUND AND REAUTHORIZATION ACT OF 1986*) REPORTABLE CHEMICALS

If your facility uses any of the chemicals, and/or hazardous substances containing these chemicals, provide projected minimization quantities for the years indicated.

Chemical	1996	1997
Chlorine	_____	_____
Lead	_____	_____

CERTIFICATION:

[ ] No waste reduction was achieved during 1995 (obtain certification; **do not** complete the Generator Group Waste Minimization Reporting form).

[ ] Waste reduction was achieved during 1995 **(Please complete one Generator Group Waste Minimization Reporting form for each waste stream that was reduced or minimized and attach it to this certification form.)**

(Facility Name)

For the generator group(s) listed above, I certify that I have personally examined and am familiar with the information submitted in the attached document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Plant Manager: (Printed name and signature)
Organization:
Date:

GENERATOR GROUP WASTE MINIMIZATION REPORTING FORM

Facility/Location _____
Facility Contact* Name/Phone Number _____
Waste Stream Name _____
Type of Stream:

[ ] HLW [ ] TRU [ ] TRU-Mixed [ ] LLW [ ] LLW-Mixed
[ ] RCRA [ ] TSCA [ ] TSCA-Mixed [ ] State [ ] Sanitary

*Contact should be familiar with details of activity being reported.

INSTRUCTIONS:
Complete this report for each waste stream minimized in 1995.
Throughout this report enter "DK" if the information requested is unknown or unavailable; enter "N/A" if the information requested is not applicable.
Indicate if information is an estimate.

SECTION I - WASTE REDUCTION ACTIVITY DESCRIPTION

A. Please provide a complete narrative of the waste minimization activity.
Include the reason for initiating the activity, what was reduced, and the actions that enabled the reduction of waste. For source reduction and recycling activities, identify the appropriate EPA Waste Minimization Activity code and the appropriate Activity Identification code (see pages C-7 through C-10), and the month and year the activity started.

EPA ID WMin activity code _____

Activity ID code _____

Date activity started _____
month/year

B. Waste minimization approach
What was the method used to reduce the volume (mass) or toxicity of waste? (Check all applicable boxes.)

[ ] Source reduction
[ ] Recycling
[ ] Treatment techniques

C. Waste quantity avoided
Radioactive/mixed _____ m^3.
Hazardous/sanitary _____ kg.

[ ] Density of waste _____ or [ ] Specific gravity _____
Units _____

D. Onsite/offsite recycling (skip if recycling is not the waste minimization approach)
Quantity recycled onsite in 1995 _____
Quantity recycled offsite in 1995 _____

E. Did waste minimization result in a change of the degree of hazard or toxicity associated with this waste?
[ ] Yes: [ ] Increase [ ] Decrease
[ ] No

E1. If yes, describe whether the change was in:
[ ] Concentration of hazardous constituents
[ ] Substitution of constituents
[ ] Both concentration of hazardous constituents and substitution of constituent.

F. What was the dollar amount of expenditures devoted to this waste minimization activity?
$ _____ Capital

$ _____ Expense

G. Did this waste minimization activity result in cost savings?
[ ] Yes (explain in comments and identify estimated cost savings)
[ ] No
Comments: Cost Savings in 1995 $_____
Annual Cost Savings $_____ for _____ years

SECTION II - DESCRIPTION OF WASTE REDUCED

A. Describe waste minimized (provide state, EPA hazardous waste codes, Solid Waste Information Tracking System (SWITS) waste stream codes,* constituents, pH, flashpoint, if applicable). The SWITS waste stream code should be obtained from the SWITS database.
Contact your SWITS database operator for this information. If there are changes in waste codes after the reduction activity, please indicate the change.
*This code should exactly match the waste steam code identified in SWITS for this waste stream.

SWITS Waste Stream Code _____ (if hazardous or mixed) H__ M__
EPA Hazardous Waste Code _____ State Code _____

B. Waste form/physical state
[ ] Liquid [ ] Gas
[ ] Solid [ ] Sludge

C. Waste source description
Is waste result of:
[ ] Routine operations such as production, service or maintenance activities, or waste management
[ ] Nonroutine such as D&D or backlog waste processing.

D. Quantity generated before treatment, disposal, or recycling activities.

1994_____ 1995_____

If the quantity in 1995 is more or less than the quantity in 1994, provide an explanation on what caused the change.

WASTE MINIMIZATION CODES

RECYCLING ACTIVITY

W01 Onsite recycling began during 1996

W02 Offsite recycling began during 1996

SOURCE REDUCTION ACTIVITY

Good Operating Practices

W11 Began to segregate types of hazardous waste to make them more amenable to recycling

W12 Began to segregate (stopped combining) hazardous waste from nonhazardous waste (NOTE: for purposes of hazardous waste reporting, reduces volume of hazardous waste, but does not reduce total waste volume)

W13 Improved maintenance scheduling, recordkeeping, or procedures

W14 Changed production schedule to minimize equipment and feedstock changeovers

W19 Other changes in operating practices (Specify in Comments)

Inventory Control

W21 Instituted procedures to ensure that materials do not stay in inventory beyond shelf-life

W22 Began to test outdated material--continue to use if still effective

W23 Eliminated shelf-life requirements for stable materials

W24 Instituted better labelling procedures

W25 Instituted clearinghouse to exchange materials that would otherwise be discarded

W29 Other (Specify in Comments)

Spill and Leak Prevention

W31 Improved storage or stacking procedures

W32 Improved procedures for loading, unloading, and transfer operations

W33 Installed overflow alarms or automatic shut-off valves

W34 Installed secondary containment

W35 Installed vapor recovery systems

W36 Implemented inspection or monitoring program of potential spill or leak sources

W39 Other (Specify in Comments)

Raw Material Modifications

W41 Increased purity of raw materials

W42 Substituted raw materials

W49 Other (Specify in Comments)

Process Modifications

W51 Instituted closed-loop recycling

W52 Modified equipment, layout, or piping

W53 Changed process catalyst

W54 Instituted better controls on operating conditions (flow rate, temperature, pressure, residence time)

W55 Changed from small volume containers to bulk containers to minimize discarding of empty containers

W58 Other (Specify in Comments)

Cleaning and Degreasing

W59 Modified stripping/cleaning equipment

W60 Changed to mechanical stripping/cleaning devices (from solvents or other materials)

W61 Changed to aqueous cleaners (from solvents or other materials)

W62 Reduced the number of solvents used, to make waste more amenable to recycling

W63 Modified containment procedures for cleaning units

W64 Improved draining procedures

W65 Redesigned parts racks to reduce dragout

W66 Modified or installed rinse systems

W67 Improved rinse equipment design

W68 Improved rinse equipment operation

W71 Other (Specify in Comments)

Surface Preparation and Finishing

W72 Modified spray systems or equipment

W73 Substituted coating materials used

W74 Improved application techniques

W75 Changed from spray to other system

W78 Other (Specify in Comments)

Product Modifications

W81 Changed product specifications

W82 Modified design or composition

W83 Modified packaging

W89 Other (Specify in Comments)

Other Source Reduction Activity

W99 Specify in Comments

ACTIVITY IDENTIFICATION CODES

This code identifies where the waste minimization/pollution prevention success started.

T01 Internal Pollution Prevention Opportunity Assessment(s)

T02 External Pollution Prevention Opportunity Assessment(s)

T03 Materials Balance Audits

T04 Participative Team Management

T05 Employee Recommendation (independent of a formal company program)

T06 Employee Recommendation (under a formal company program)

T07 State Government Technical Assistance Program

T08 Federal Government Technical Assistance Program

T09 Trade Association/Industry Technical Assistance

T10 Vendor Assistance

T11 Other

APPENDIX D

POLLUTION PREVENTION PROGRAM DOCUMENTATION SCHEDULE

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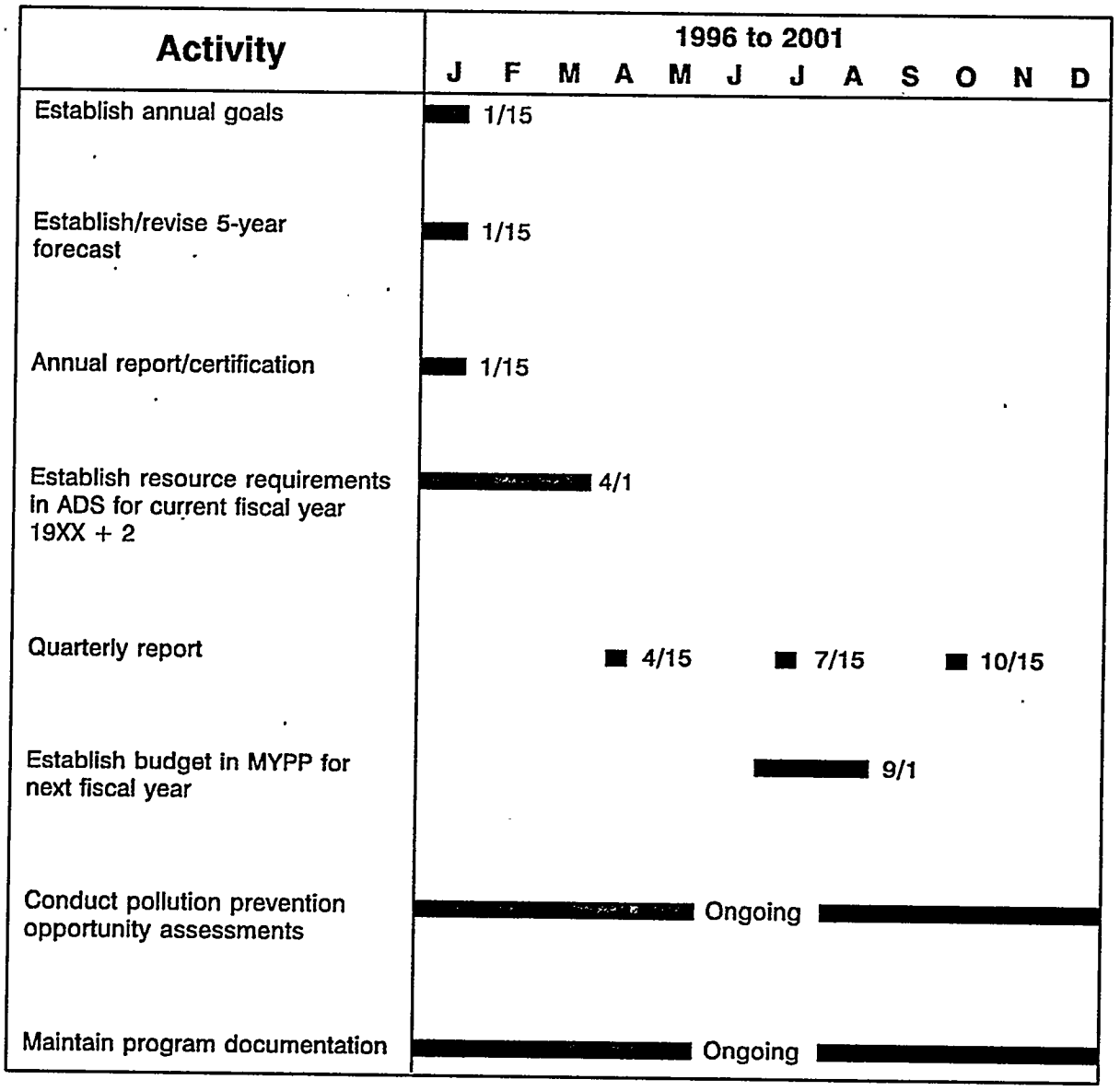
APPENDIX D

POLLUTION PREVENTION PROGRAM DOCUMENTATION SCHEDULE



ADS = Activity data sheet
MYPP = Multi-Year Program Plan

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