

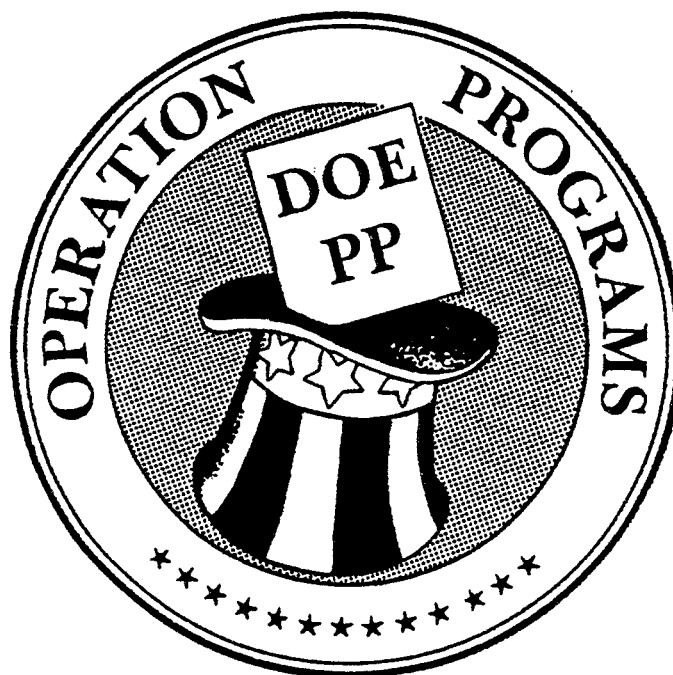
**Pinellas  
Plant**

**U.S. Department of Energy**

## **WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS PLAN**

**Environmental Protection/Waste Management**

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**May 3, 1991**

**Revision A**

**MASTER**

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## 1.0 INTRODUCTION/BACKGROUND

1.1 Purpose of Plan. The purpose of this plan is to establish the Pinellas Plant Waste Minimization and Pollution Prevention Awareness Program. The plan specifies those activities and methods that will be employed to reduce the quantity and toxicity of wastes generated at the site. It is intended to satisfy the Department of Energy (DOE) and other legal requirements that are discussed in Section 1.3. The Pollution Prevention Awareness Program is included with the Waste Minimization Program as permitted by DOE Order 5400.1.

1.2 Scope of Plan. A Waste Minimization Program is an organized, comprehensive, and continual effort to systematically reduce waste generation. The Waste Minimization and Pollution Prevention Awareness Program is designed to eliminate or minimize pollutant releases to all environmental media from all aspects of the site's operations. These efforts offer increased protection of public health and the environment. They will also yield the following additional benefits:

- Reduce waste management and compliance costs,
- Reduce resource usage,
- Improve product yields,
- Reduce or eliminate inventories and releases of hazardous chemicals reportable under the Emergency Planning and Community Right-to-Know Act, and
- Reduce or eliminate civil and criminal liabilities under environmental laws.

1.2.1 The program reflects the goals and policies for waste minimization of this organization and represents an ongoing effort to make pollution prevention/waste minimization part of the site's operating philosophy. In accordance with DOE policy, a hierarchical approach to waste reduction has been adopted and is applied to all types of waste.

1.2.2 Waste minimization will be accomplished by eliminating or minimizing the generation of waste through source reduction. Those potential waste materials that cannot be eliminated or minimized will be recycled (e.g., used, reused, or reclaimed). If any waste is generated it will be treated to reduce volume, toxicity, or mobility before storage or disposal.



- 1.2.3 The scope of this plan is confined to source reduction, material substitution, and environmentally sound recycling. Methods for treatment of waste are covered in other directives.
  - 1.2.4 This plan is a reference tool and guidance document for managers, operations personnel, and support staff. It contains the policy, objectives, strategy, and support activities of the Waste Minimization and Pollution Prevention Awareness Program. Waste minimization goals, the development of waste generation baseline information through waste minimization assessments, and a process for continual evaluation of the program are primary elements of the plan. Various waste minimization techniques will be implemented, with the support of employee training and awareness programs. This will reduce waste and still meet the requirements for quality, productivity, safety, and environmental protection.
  - 1.2.5 This plan applies to all site operations and associated support operations. Requirements for site contractors are discussed in Section 3.4. This plan will be reviewed annually and revised as necessary. At a minimum, the plan will be updated every three years.
  - 1.2.6 The plan will be distributed to all affected employees and site contractors; and the policy, goals, objectives, and strategy of the plan will be explained to them.
- 1.3 Legal and Policy Background. The Resource Conservation and Recovery Act (RCRA) requires hazardous waste generators to establish a program to reduce the volume and/or toxicity of waste to the degree determined by the generator to be "economically practicable." Hazardous waste generators must certify in their waste manifest that this requirement has been fulfilled. Generators must also identify in their biennial reports to the Environmental Protection Agency (EPA) and the Florida Department of Environmental Regulations the efforts undertaken during the year to reduce the volume and toxicity actually achieved. Waste generators also have the option to report waste minimization results in their annual submission of toxic chemical release inventories to EPA.
- 1.3.1 DOE Orders 5400.1, 5400.3, and 5820.2A mandate that the management of radioactive wastes and other pollutants shall be accomplished in a manner that minimizes the generation of such wastes.

- 1.3.2 DOE Order 5400.1 establishes environmental protection program requirements and responsibilities for ensuring compliance with environmental protection laws. The Order requires the establishment of a Waste Minimization Program "that will contain goals for minimizing the volume and toxicity of all wastes that are generated" and a Pollution Prevention Awareness Program. The Waste Minimization Program and the Pollution Prevention Awareness Program have been consolidated through the issuance of this plan.
- 1.3.3. DOE Order 5400.3 establishes DOE hazardous and radioactive mixed waste policies and requirements, and implements the requirements of RCRA within the framework of the environmental programs established under DOE Order 5400.1. The Order states that it is DOE policy to "implement waste minimization measures as specified in RCRA for hazardous and radioactive mixed wastes." The Order requires the Heads of Field Organizations to "implement a Waste Minimization Program for hazardous and radioactive mixed wastes."
- 1.3.4 DOE Order 5820.2A establishes policies, guidelines, and minimum requirements by which DOE manages its radioactive waste, mixed waste and contaminated facilities. It states that the "generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements." The Order requires the preparation of a Waste Management Plan for each site that generates, treats, stores, or disposes of DOE wastes. The elements of the Waste Management Plan are incorporated into the Site-Specific Plan, which "will indicate actions to minimize hazardous waste generation" as specified in the Order.

The Order also contains specific waste minimization requirements for management of high-level, transuranic, and low-level waste. These requirements include process modification, process optimization, and materials substitution.

1.3.5 DOE's "Waste Reduction Policy Statement" requires all DOE Program Offices and Field Operations to "institute a waste reduction policy to reduce the total amount of waste that is generated and disposed of by DOE operating facilities through waste minimization (source reduction and recycling) and waste treatment." The policy consolidates the requirements of DOE Orders 5400.1, 5400.3, and 5820.2A for either a Waste Minimization or a Waste Reduction Plan and attaches guidance for satisfying the reporting requirements of those orders. The statement adopts the hierarchical approach to waste reduction and applies the policy to all types of waste. The policy requires waste reduction to be a "prime consideration" in research activities, process design, and facility design and operations.

1.4 Mission and Site Description. The Pinellas Plant is owned by the U.S. Government and is operated by G.E. Aerospace, Neutron Devices Department under a prime operating contract with the U.S. Department of Energy (DOE). The prime contract is administered by the DOE Albuquerque Operations Office through the Pinellas Area Office.

1.4.1 The site, approximately 100 acres, is located in Pinellas County, Florida, near St. Petersburg. The site employs approximately 1700 people. A layout of the site is shown in Attachment A. The Pinellas Plant was built in 1956 and manufactures neutron generators, a principal component in nuclear weapons.

1.4.2 As by-products of production, research and development, and environmental restoration activities, the site generates a variety of waste materials that are carefully controlled during site operations and regulated by the Federal government and State and local agencies. The intent of this plan is to respond to, and comply with, the Department's policy and guidelines concerning the need for pollution prevention.

## 2.0 RESOURCES

- 2.1 Program Budget. In Attachment B, the budget for the Waste Minimization and Pollution Prevention Awareness Program itemizes the funds allocated to the various activities in the program.
- 2.2 Personnel. The number of full-time and part-time employees assigned to the Waste Minimization and Pollution Prevention Awareness Program is described in Attachment B.

## 3.0 POLICY

- 3.1 Statement of Management Support/Commitment. The General Manager and the Management Team are totally committed to minimizing the generation of waste at the Pinellas Plant. Preference will be given to source reduction, material substitution, and environmentally sound recycling rather than the treatment, control and disposal of such wastes. Top management will take appropriate action to provide adequate personnel, budget, training, and material on a continuing basis to ensure that the objectives of the Waste Minimization and Pollution Prevention Awareness Program are met.
- 3.2 Policy Statement. The General Manager has issued a written Waste Minimization Policy Statement, GOP A.1.20. This GOP establishes a directive for all sections to reduce or eliminate the amount of waste generated, where achievable.
- 3.3 Relevant Site Directives or Guidance. The following Pinellas Plant General Operating Procedures (GOPs) and ES&H Standards govern the implementation of this plan and provide additional guidance:
  - GOP G.1.20 "Hazardous Waste Management"
  - GOP A.5.02 "Product Quality"
  - GOP A.3.03 "Employee and Plant Environmental Health and Safety"
  - GOP A.5.03 "Non-Weapons Quality Assurance"
  - GOP G.1.22 "Hazardous Substance Spill Response and Reporting"
  - GOP A.6.11 "Implementation of Requirements of the Toxic Substances Control Act"

### 3.3 Continued...

- GOP G.1.03 "Environmental Protection"
- GOP G.1.09 "Procurement of Chemical & Radioactive Material and Ionizing Radiation Producing Equipment"
- ES&H Std. 4.7 "Hazardous Material Container Identification"
- ES&H Std. 4.8 "Storage, Handling, and Use of Hazardous Materials"
- ES&H Std. 5.6 "Control of Potentially Contaminated Hazardous Wastes"
- ES&H Std. 4.2 "Work on Chemical/Radioactive Exhaust Ventilation and Waste Drain Systems"
- ES&H Std. 5.9 "Radioactive Waste Handling"
- ES&H Std. 8.1 "Chemical Waste Disposal"

- 3.4 Contractor Waste Minimization and Pollution Prevention Awareness Programs. All contractors that exceed the EPA criteria for small-quantity generators will establish a Waste Minimization and Pollution Prevention Awareness Program. The Program will be implemented by a Waste Minimization and Pollution Prevention Awareness Plan that follows the format and guidance established by DOE. Contractor Implementation Plans will ensure that Waste Minimization Plans are in accordance with Federal, State, and local environmental laws and regulations, and DOE Orders. Contractors will develop internal guidance and instructions consistent with this plan, which will be included in their respective Waste Minimization Plans. Contractors will also be responsible for administering the guidance, instructions, and procedures applicable to the operations of any subcontractors temporarily working on site.

## 4.0 STRATEGY, OBJECTIVES, AND GOALS

4.1 Strategy. A Waste Minimization Program will be developed to obtain accurate and current information on waste stream generation and waste management costs, which will provide the basis for the implementation of specific waste minimization techniques and technologies. The Program will develop procedures for collecting information, evaluating options, and identifying cost-effective waste minimization techniques. Essential line and staff representatives will: (1) develop and administer the Waste Minimization Program, (2) define targets of waste to reduce, and (3) develop a method for tracking the performance and progress of the Program.

4.2 Program Objectives. The objectives of the Waste Minimization and Pollution Prevention Awareness Program are to:

- Foster a philosophy to conserve resources and create a minimum of waste and pollution in achieving site strategic objectives,
- Promote the use of nonhazardous materials in plant operations to minimize the potential risks to human health and the environment,
- Reduce or eliminate the generation of waste materials through input substitution, product reformulation, process modification, improved housekeeping, and on-site closed-loop recycling to achieve minimal adverse effects on the air, water and land,
- Enhance communication of waste minimization objectives, goals and ideas laterally and vertically among site organizations,
- Promote integration and coordination between the waste generators and the waste manager regarding waste minimization matters,
- Characterize waste streams and develop a baseline of waste generation data,
- Identify and implement methods and technologies for achieving waste minimization,
- Target policies, procedures, and/or practices that may be barriers to waste minimization,

#### 4.2 Continued...

- Create incentives for pollution prevention,
- Develop and implement employee pollution prevention awareness and occupational training programs,
- Collect and exchange waste minimization information through technology transfer, outreach, and educational networks,
- Develop mechanisms for fully disseminating current technical information to site users,
- Enhance employee awareness of pollution prevention goals, objectives, and methods,
- Develop specific goals and schedules for waste minimization activities, and
- Comply with Federal and State regulations and DOE requirements for waste minimization.

4.3 Goals. Numerical goals for the minimization of the types of wastes generated at the site are contained in Attachment C. These goals, which may be revised after the performance of comprehensive assessments of waste generating operations, are expressed in mass and in annual percentage reductions.

4.4 Schedule of Activities. A detailed schedule of waste minimization activities is presented in Attachment D.

### 5.0 ORGANIZATION AND STAFF RESPONSIBILITIES

5.1 Description of the Waste Minimization Organization. The General Manager and the staff, in support of the DOE Field or Operations Office, will serve as a General Management Oversight Board (GMOB) that will administer, provide support for, and generate employee awareness of the Waste Minimization and Pollution Prevention Awareness Program. The General Manager will also designate a Waste Minimization Coordinator, a senior manager within the line production organization, who shall serve as the Chairperson of the Waste Minimization Committee.

5.1.1 The Program organizational structure is designed to maximize the dissemination and collection of waste minimization information. It will also provide waste generating organizations with managerial responsibility for the development, design, construction, and implementation of waste minimization projects.

5.2 Waste Minimization Committee. A permanent committee has been established to define an effective Waste Minimization System and to administer the Waste Minimization Program. The committee is composed of senior representatives from line and staff organizations that have a significant interest in the results of the Program. The members of the committee were selected by the Waste Minimization Coordinator (Committee Chairman).

5.2.1 The primary functions of the Waste Minimization Committee are to: (1) introduce the Waste Minimization and Pollution Prevention Awareness Program to the Plant, (2) identify tasks to implement the program, and (3) provide a mechanism for communication within the site and with outside communities on waste minimization matters.

5.2.2 The responsibilities of the Waste Minimization Committee will include:

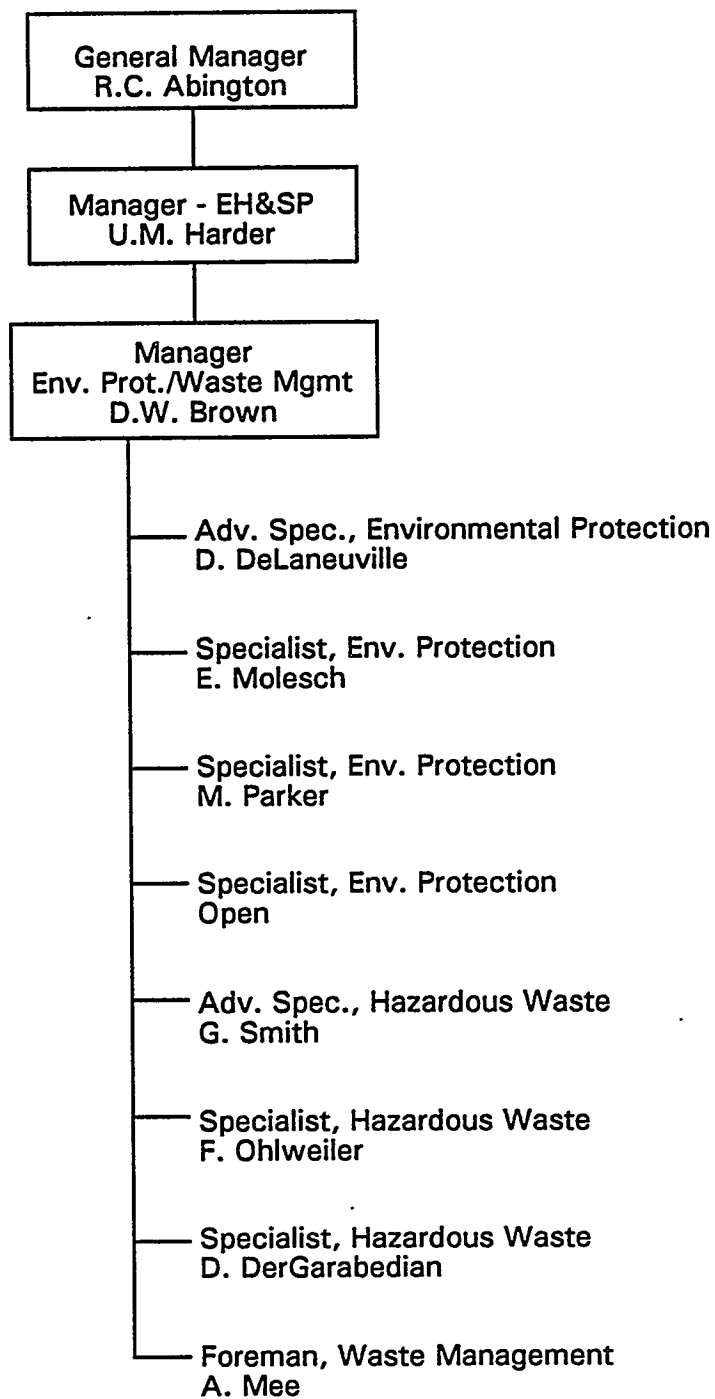
- Defining the objectives of the Waste Minimization Program in accordance with this plan,
- Communicating program objectives to the site,
- Obtaining waste generator support and input for the program,
- Facilitating integration and coordinated interaction between waste generators and waste managers on waste minimization matters,
- Establishing waste minimization goals (in accordance with DOE Order 5400.1) and objectives,
- Sponsoring ongoing employee awareness and training,
- Coordinating program participation in represented areas by establishing a Waste Tracking and Reporting System,



### 5.2.2 Continued...

- Prioritizing waste streams or facility areas for assessment,
- Selecting teams to conduct process waste assessments,
- Evaluating the technical and economic feasibility of options to reduce waste generation,
- Recommending and ranking options for management implementation,
- Monitoring performance of waste minimization options that have been implemented and evaluating performance according to success criteria,
- Monitoring and reporting progress of the Waste Minimization Program utilizing audits and monthly reviews,
- Recommending personnel for achievement and incentive awards, and
- Facilitating technology transfer and pollution prevention awareness.

### 5.3 Organization Chart.



## **6.0 COST ACCOUNTING**

- 6.1** A Cost Accounting System exists that tracks the cost of treating, disposing, storing, managing and minimizing the total hazardous waste generated at the Pinellas Plant. This includes payroll, materials, equipment, non-payroll miscellaneous, and overhead costs by cost center.
- 6.2** The costs derived from the cost accounting system are included in proposals, planning, and budgeting.

## **7.0 WASTE ASSESSMENTS**

- 7.1** Process Waste Assessments will be conducted as part of an ongoing program to identify, screen, and analyze options to reduce the generation of waste. A Process Waste Assessment determines the amount of material in a workplace that is disposed of as waste during work operations. It provides a summary of hazardous materials usage and waste production, and identifies those processes and operations that need to be improved or replaced to promote waste minimization. The Assessment provides a basis for prioritizing the specific modifications to site processes or other waste minimization options that are developed during the assessment.
  - 7.1.2** Assessments of all waste-generating operations at the site will be conducted by Waste Assessment Teams organized by the Waste Minimization Committee. The leader of each Waste Assessment Team will be an intermediate-level manager who has line responsibility, familiarity with the site's production and waste management operations, and proven technical and problem-solving abilities.
  - 7.1.3** The remainder of each assessment team will be drawn from line, staff, or subcontractor organizations who can furnish the types of specialized expertise that will be needed to conduct the Assessment.

7.1.4 Each Waste Assessment Team will consist of a small core of individuals familiar with the site's production operations who will direct the focus of the Assessment efforts and guide the data-gathering. Other personnel, with specialized expertise, will be used on a part-time basis as the need for that particular expertise arises. Each team will include members who have knowledge in the following areas:

- Federal, State, and local hazardous waste statutes and regulations,
- Production and waste minimization principles and techniques,
- Quality control requirements, and
- Purchasing and material control/inventory.

7.2 The Waste Minimization Committee will determine the order and areas of site operations to be assessed. Each Waste Assessment Team will develop process area flow diagrams, material balances, process descriptions, and waste stream characterizations for the assigned Assessment area. Guidance found in the Waste Minimization Guidance for Process Waste Assessments and EPA Manual for Waste Minimization Opportunity Assessments will be used in conducting the Assessments.

7.2.1 Completion of the flow diagrams, material balances, and related narratives will permit the identification of process inefficiencies that may be modified or corrected to reduce waste generation. These waste minimization opportunities will be evaluated and identified with specific projects, which when implemented will reduce the volume and toxicity of the waste streams. Each team will report the data and findings from its assessment and recommend options for waste minimization. In identifying waste minimization options, the Waste Assessment Teams will concentrate first on source reduction options followed by recycling technologies.

7.2.2. The Waste Minimization Committee will evaluate waste minimization opportunities recommended by the Waste Assessment Teams. The Committee will screen the options, using criteria suggested in the DOE Process Assessment Guide, to identify those that require careful evaluation. The results of the screening process will be a list of options that are candidates for technical and economic evaluation.

7.2.3 The Waste Minimization Committee will evaluate the potential technical success and economic cost/benefit of each option resulting from the screening. The options will then be ranked in order of preferred implementation. The highest priority normally will be given to projects that reduce waste generation at the source, after which projects that recycle all or part of a waste stream will be considered. The Waste Minimization Committee will report the results of its evaluation, including final rankings and ranking criteria, in its report.

7.3 A schedule for conducting waste assessments and evaluating waste minimization options is in Attachment D. Waste assessments will be conducted on a recurring basis during the life of the Waste Minimization and Pollution Prevention Awareness Program.

## 8.0 WASTE MINIMIZATION TECHNIQUES

8.1 Scope. Waste minimization includes those activities that minimize or eliminate the generation of waste, as well as recycling processes that use, reuse, or reclaim a material from a waste stream. Some activities commonly thought to be waste minimization are actually waste treatments. The following activities are not considered waste minimization:

- Transfer of hazardous constituents from one environmental medium to another,
- Concentration conducted solely for reducing volume, and
- Dilution as a means of toxicity reduction, unless later recycling steps are involved.

8.1.1 If the activity is to make the material more amenable for disposal (i.e., reduce volume or toxicity before storage or disposal) then the waste is being treated, not minimized.

- 8.2 Waste Minimization Methods. Techniques that are appropriate for particular types of waste are described in Attachment E. The following waste minimization techniques will also be employed to minimize the generation of waste:

8.2.1 Inventory Management

Current methods to control the types and quantities of materials in the site inventory will be reviewed. Where necessary, inventory control techniques will be revised or expanded to reduce inventory size and hazardous chemical use, while increasing inventory turnover. In particular, inventory control techniques will be used to reduce waste resulting from excess, out-of-date, and no-longer-used raw materials. Similarly, material control will be revised or expanded to reduce raw material and finished product loss and damage during handling, production, and storage.

The inventory management techniques will be applied to waste material as well as to raw materials and finished products.

The review of inventory management techniques will include:

- (1) A study of how existing inventory management procedures can be applied more effectively,
- (2) Whether new techniques should be added to or substituted for current procedures,
- (3) The need for review and evaluation approval procedures for the purchase of materials, and
- (4) The need for additional employee training.

8.2.2 Operational Procedures

The production processes within the site will be examined to determine whether significant reduction of waste at its source can be achieved by improvements in process efficiency. Operating procedures will be examined to determine whether the elimination or revisions of GOPs and EH&S Standards can contribute to the reduction of waste. The revision and review of operating procedures will be fully documented and incorporated as part of the site's Employee Training Program.

### 8.2.3 Maintenance Program

The site Equipment Maintenance Program will be reviewed to determine whether improvements in corrective and preventive methods for maintenance cost tracking and preventive maintenance scheduling and monitoring can be achieved.

A determination will be made as to whether maintenance procedures are contributing to the production of waste in the form of process materials, scrap, and cleanup residue. The need for the revision of Operating Procedures (OP), equipment modification, source segregation, and recovery as they apply to maintenance will be examined.

### 8.2.4 Material Change and Process Equipment Modification

The replacement, reformulation, reduction, or elimination of hazardous materials in production, maintenance, and cleaning processes will be examined. The effect of waste reduction by the installation of new equipment or the modification of existing equipment will be considered. Techniques, such as segregation, to separate hazardous wastes and recoverable wastes from the total waste stream will be explored.

### 8.2.5 Recycling and Reuse

The recovery of wastes will be used as an option in the Waste Minimization Program after first considering reducing the amount of waste generated at the source. Opportunities for reclamation and reuse of waste materials will be explored whenever feasible. Decontamination of tools, equipment, and materials for reuse, or recycle, will be used to the extent practicable to minimize the amount of waste for disposal.

## 9.0 TRAINING, AWARENESS AND INCENTIVES

- 9.1 Training Goals. One of the most important elements of the Waste Minimization and Pollution Prevention Awareness Program is training. The Training Program will include all levels of personnel within the site. The goal of the Training Program will be to make each employee aware of waste generation, its impact on the site and the environment, and ways that waste can be reduced and pollution prevented.

9.2 Employee Orientation Program. A Waste Minimization and Pollution Prevention Awareness Orientation Program will be established and will be integrated into a General Orientation Program for all employees. The Orientation Program will include the following elements:

- The need for, and benefits to be derived from, waste minimization and pollution prevention,
- The contribution each employee can make to an improved working and living environment,
- Management commitment to waste minimization and the Site Waste Minimization Policy,
- Overview of policy and regulations,
- Improved operation practices for reducing waste generation, and
- Solicitation of waste minimization and pollution prevention ideas, and the discussion of solutions to identified problems.

9.3 Specialized Training Program. Specialized training sessions on Pollution Prevention Policy and Procedures; and Waste Minimization Techniques will be tailored for management, line, and staff positions. These sessions will be incorporated into the regularly scheduled training program. The adequacy of training procedures and of any special equipment needed for waste minimization functions will be evaluated annually by the Waste Minimization Committee.

9.4 Procedures Qualification. As part of Quality Assurance (QA), certain employees are required to be trained and examined on their knowledge of site GOPs prior to performing work. Waste minimization will be incorporated into operating, administrative, and waste procedures requiring documentation using data sheets or forms. Training on waste minimization, therefore, will also be conducted as part of the QA procedures qualification process.

9.5 Performance Evaluations. Waste minimization goals, objectives, and accomplishments will be incorporated into annual evaluations of job performance for those persons who have waste minimization responsibilities.



**9.6 Pollution Prevention Awareness.** The Pollution Prevention Awareness Program required by DOE Order 5400.1 has been incorporated into the Waste Minimization Program. The purpose of the Pollution Prevention Awareness Program is to foster the philosophy that prevention is preferred to remediation. The goal of the Program is to incorporate pollution prevention into the decision-making process at every level throughout the organization.

**9.6.1** The Pollution Prevention Awareness Program has the following objectives:

- Make employees aware of general environmental activities and hazards, waste minimization program requirements, goals, and accomplishments at the site,
- Inform employees of specific environmental issues,
- Train employees on their responsibilities in pollution prevention,
- Recognize employees for efforts to improve environmental conditions through pollution prevention,
- Encourage employees to participate in pollution prevention, and
- Publicize success stories.

**9.6.2** The program consists of four elements: (1) pollution prevention awareness campaign, (2) awards and recognition, (3) information exchange, and (4) training.

**9.6.3** The pollution prevention awareness campaign will be conducted at least once each year. It will be developed by the Waste Minimization Committee.

**9.6.4** The campaign will make extensive use of site newsletters, seminars, bulletin boards, signs, and slogans to enhance employee awareness of and participation in pollution prevention at the site.

9.6.5 The remaining elements of the Pollution Prevention Awareness Program are described in other sections of this plan. Incentive Awards and Recognition are discussed in Paragraph 9.7. Information exchange is discussed in Section 12.0. Training has been discussed in Section 9.0.

9.7 Incentive Awards and Recognition. Award programs will be used to recognize individual and team Waste Minimization and Pollution Prevention achievements. Potential award candidates are listed in Attachment D.

## 10.0 TRACKING AND REPORTING SYSTEMS

10.1 Tracking From Point of Generation to Point of Disposition. A computerized tracking system will be developed to identify waste reduction opportunities and provide essential feedback to successfully guide future efforts. The system will identify program resource requirements and report cost benefits realized from implementation of waste reduction projects. The data collected by the system will be used for internal reporting and to meet external reporting requirements discussed in Paragraph 10.4.

10.1.1 The system will track waste from point of generation to point of final disposition. The system will also permit the tracking of hazardous materials from point-of-site entry to final disposition ("cradle to grave") to comply with environmental regulation and reporting requirements. The system will collect data on input material, material usage, type of waste, volume, hazardous constituents, generating system, generation date, waste management costs, and other relevant information. A method will also be developed to trace materials that are being recycled or reclaimed and volumes of wastes eliminated due to waste minimization efforts.

10.2 Procurement Control System. Procedures for control and purchase of hazardous chemicals, or other materials, will be reviewed to determine whether improvements in those procedures will aid in the achievement of waste minimization goals. The tracking system described in Paragraph 10.1.1 will be used to track the purchase and usage of hazardous materials.

- 10.3 Program Activity Tracking. A computerized system will be developed to provide feedback on the progress of the Waste Minimization and Pollution Prevention Awareness Program, including the results of waste minimization technologies and other implemented waste minimization options.
- 10.4 Federal and State Reporting Requirements. Tracking systems developed under this program will be designed to facilitate reporting waste minimization data and accomplishments to the Department of Energy, Environmental Protection Agency, and applicable State of Florida agencies.

## 11.0 QUALITY ASSURANCE

Guidance for implementing DOE Order 5820.2A stresses the requirement and need for quality assurance in conducting waste reduction activities. It indicates that waste reduction programs are required to "retain an appropriate level of documentation and accountability. The documentation of these programs should be designed to satisfy all requirements of the Waste Operations Quality Assurance Program at each field office."

- 11.1 Quality Assurance Program Plan. The proper documentation of waste minimization activities is critical to attaining an adequate level of confidence that the requirements of the DOE Orders requiring minimization of waste are being met. The QA Program Plan will be developed for the Waste Minimization and Pollution Prevention Awareness Program as required for all programs by DOE Order 5700.6B, QPP NDPP-OSP-0021 "General (Non-Weapons) Operations" and QPP NDPP-OSP-0022 "Environmental, Health and Safety Program." The plan will be consistent with the Waste Operations Quality Assurance Program of PAO. The plan will specify documentation that will enable verification of data reported in manifests and biennial reports, and ensure that the character of all wastes can be verified and traced to their source.
- 11.2 Quality Assurance Training. Site QA training will be revised to include waste minimization procedures and documentation. As discussed in Section 9.0, the QA procedures qualification process will include training and qualification on waste minimization procedures.

## **12.0 INFORMATION EXCHANGE AND OUTREACH**

All program staff are encouraged to make regular use of the EPA data base (PIES) and the WIN system. The Waste Minimization Committee will encourage participation in business, education, and government forums that are designed to provide technical assistance and exchange waste minimization information. The Chairman of the Waste Minimization Committee will designate representatives to attend the semiannual DOE Workshop on Waste Minimization and to regularly participate in other waste minimization forums.

## **13.0 TECHNOLOGY TRANSFER**

The transfer of Federally developed technology between laboratories and potential users is a contractual responsibility of DOE facilities and laboratories. Activities involving technology transfer should be coordinated through the office or committee within the facility that has been designated to represent the facility on the Federal Laboratory Consortium (FLC) for Technology Transfer. The Consortium promotes technology transfer through links to the public and private sectors and through support services such as training and assistance in implementing partnership opportunities (e.g., cooperative agreements and patent licensing). Opportunities for transfer of technologies specific to waste minimization programs may develop from information exchange systems, workshops, or topical conferences. Direct exchanges of process technology between facilities are encouraged, but the support services of FLC should be used where appropriate. Technology projects that are identified and implemented should be coordinated with the Headquarter's Office of Technology Development. A list of proposed technology projects at the Pinellas Plant is given in Attachment F.

## **14.0 RESEARCH AND DEVELOPMENT**

Proposals for Research and Development (R&D) are expected to arise from the Waste Minimization Committee's evaluation and ranking of waste minimization options. Some options may require development work before being implemented. The assessment may also identify process inefficiencies that offer the potential for significant waste reduction, but specific process modifications may require R&D work before implementation can be scheduled. Budget requests should include support for appropriate R&D. Specific proposals for R&D work would be coordinated through Operations Offices and the Office of Technology Development at DOE Headquarters to ensure effective allocation of resources.

## **15.0 PROGRAM EVALUATION**

The Waste Minimization and Pollution Prevention Awareness Program will be evaluated annually. All major activities will be reviewed. The evaluation will document Program achievements and identify potential areas for improvement. Achievements and milestones of the Program will be a consideration during the contractor's performance evaluation and determination of award fees.

**15.1** The following success criteria will be used to demonstrate the effectiveness of waste minimization efforts:

- Reduced amount of hazardous waste,
- Reduced amount of all waste,
- Reduced waste management costs,
- Improved regulatory compliance,
- Reduced health risks,
- Increased production efficiency,
- Reduced accident risk, and
- Improved public relations.

**15.2** The Waste Minimization Committee will address these criteria when evaluating the success of process or other changes to achieve waste volume or toxicity reductions. An accurate assessment for each of the appropriate criterion will be provided in evaluating the success of each waste minimization option that has been implemented.

**15.3** An annual report will be made to the General Manager and will contain current year data, performance trends, forecasts and measures used to gauge the performance of waste minimization activities. The evaluation report will be used to establish future waste minimization goals and program objectives. The report will also be used to determine changes to this plan.

## 16.0 REFERENCES

- 16.1 U.S. Department of Energy, DOE Order 5400.1, General Environmental Protection Program (November 9, 1988).
- 16.2 U.S. Department of Energy, DOE Order 5400.3, Hazardous and Radioactive Mixed Waste Program (February 22, 1989).
- 16.3 U.S. Department of Energy, DOE Order 5700.6B, Quality Assurance (September 23, 1986).
- 16.4 U.S. Department of Energy, DOE Order 5820.2A, Radioactive Waste Management (September 26, 1988).
- 16.5 Memorandum from John C. Tuck, Under Secretary of Energy; Peter N. Brush, Acting Assistant Secretary, Environment, Safety and Health; Leo P. Duffy, Director, Office of Environmental Restoration and Waste Management; to distribution [all elements of the Department of Energy], "Waste Reduction Policy" (June 27, 1990).
- 16.6 U.S. Department of Energy, Waste Minimization Plan and Waste Reduction Reporting of DOE Hazardous, Radioactive, and Radioactive Mixed Wastes, Implementation Guidance for DOE Order 5400.1 (March 1990).
- 16.7 U.S. Department of Energy, Implementation Guidance for DOE Order 5820.2A (October 24, 1988).
- 16.8 U.S. Department of Energy, DOE/S-0070, Environmental Restoration and Waste Management Five-Year Plan (1989).
- 16.9 U.S. Environmental Protection Agency, 40 CFR Subchapter I (1989).
- 16.10 U.S. Environmental Protection Agency, Draft Guidance to Hazardous Waste Generators on the Elements of a Waste Minimization Program, 54 FR 25056 (1989).
- 16.11 U.S. Environmental Protection Agency, EPA Proposed Policy Statement on Source Reduction and Recycling, 54 FR 3845 (1989).
- 16.12 U.S. Environmental Protection Agency, EPA/625/7-003, Waste Minimization Opportunity Assessment Manual (July 1989).

- 16.13** Executive Office of the President, Office of Management and Budget (OMB) Circular No. A-106, Reporting Requirements in Connection with the Prevention, Control, and Abatement of Environmental Pollution of Existing Federal Facilities (December 31, 1974).
- 16.14** U.S. Department of Energy, Waste Minimization Guidance for Process Waste Assessments (November 1990) (Draft).

## **17.0 • DISTRIBUTION**

### **DOE**

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Technical Information Center  
Operation Programs  
(1 + Reproduction Masters)



## **ATTACHMENTS**



## ATTACHMENT B

### WASTE MINIMIZATION AND POLLUTION PREVENTION (WMPP) AWARENESS PROGRAM

#### FY 1991 BUDGET AND PERSONAL RESOURCES

ACTIVITY	FUNDING (\$k)	PERCENT OF TOTAL WMPP BUDGET	PERCENT OF FACILITY BUDGET	PERSONNEL (FTE)
Process Waste Assessment	340	92	.0003	2.2
Waste Minimization (ERWM 5 Year Plan)	30	8	.00002	0.30
<b>TOTAL</b>	<b>370</b>	<b>100</b>		

**NOTE:** Facility Budget % based on FY 1991 gross operating budget.

## ATTACHMENT C

### WASTE REDUCTION GOALS

<u>WASTE TYPE</u>	<u>1991 %MASS</u>	<u>1992 %MASS</u>	<u>1993 %MASS</u>
RCRA HAZARDOUS WASTE	10	10	10
RADIOACTIVE WASTE	10	10	5
MIXED WASTE	N/A	N/A	N/A
TSCA (PCBs)	N/A	N/A	N/A
INDUSTRIAL WASTE	20	10	10
OTHER SOLID WASTE	10	5	5

### 1990 WASTE REDUCTION ACCOMPLISHMENTS

<u>WASTE TYPE</u>	<u>COST SAVINGS</u>
TRIM COOLANT TREATMENT	\$44,000
RETURN IRON DISULFIDE TO VENDOR	\$72,000
RETURN BLDG 400 CHEMICALS TO VENDOR	\$21,000

#### NOTE

Reduction from specific sources such as wastewater, waste organics, other liquids, classified trash and debris, and other solids must be considered in developing goals for each waste type.

## ATTACHMENT D-1

### PROCESS WASTE ASSESSMENT COMMITTEE

<u>DESCRIPTION</u>	<u>RESPONSIBILITY</u>	<u>SCHEDULED COMPLETION</u>
Establish Team	Program Section	10/8/90
Develop Initial Methodology	Waste Minimization Committee	10/25/90
Evaluate/Select Data Base System	Computer Services	1/15/91
Develop Training Plan	Training & Education Section	11/25/90
Establish 3 Pilot Processes	Operational Surety Facility Mgrs.	11/29/90
Identify Pilot Participants	Operational Surety Facility Mgrs.	11/29/90
Establish Training Course	Training & Education Section	2/1/91
Train Pilot Participants	Training & Education Section	2/12/91
Revise Plan	Program Section	3/1/91
Implement Pilot Areas	Process Waste Assessment Team	4/15/91
Evaluate Pilot Results	Waste Minimization Committee	7/1/91
Incorporate Lessons Learned in Methodology/Training	Waste Minimization Committee	8/1/91
Prioritize Processes for Characterization	Waste Minimization Committee	8/1/91
Identify & Train Process Investigators	Operational Surety Facility Mgrs./ Training & Education Section	8/1/91
Assess Critical Processes	Process Waste Assessment Team	12/1/91
Identify Waste Streams & Characterize	Waste Minimization Committee	3/92
Treatability and Waste Minimization	Process Waste Assessment Team	12/92
Less Critical Area Assessment	Process Waste Assessment Team	6/93
Waste Minimization	Plant Wide	Ongoing

## ATTACHMENT D-2

### WASTE MINIMIZATION COMMITTEE

<u>ACTION ITEM</u>	<u>RESPONSIBILITY</u>	<u>SCHEDULED COMPLETION</u>
Include waste minimization in plant policy.	Manager, EH&SP	Complete
Review all EH&SP GOPs and standards, and add waste minimization concepts where appropriate. <sup>2</sup>	Manager, EH&SP	7/91
Develop a Waste Minimization Program Quality Assurance Plan. <sup>2</sup>	Manager, EH&SP	9/91
Update functional organization manual to include waste minimization concepts where appropriate.	Manager, Human Resources	9/91
Review/revise performance appraisal Plans to reflect waste minimization objectives where appropriate.	All plant management	9/91
Update all position guides/job descriptions to include waste minimization responsibilities where appropriate. <sup>1</sup>	All plant management	9/93
Develop guidelines for waste minimization program evaluation.	Manager, EH&SP	7/91
Perform detailed process evaluation in tritium handling areas to identify alternatives that reduce the amount of tritium entering the liquid waste stream. <sup>2</sup>	Manager, EH&SP	7/91

#### NOTE:

1. All position guides are being reviewed by Human Resources. Training requirements and waste minimization responsibilities will be included in the revised job descriptions.
2. Milestone dates were changed to correlate with Process Waste Assessment/Waste Minimization Committee milestones.

# ATTACHMENT E

## WASTE MINIMIZATION METHODS APPLICABLE TO SITE WASTES

WASTE TYPE	DECONTAMINATION	HOUSEKEEPING	MATERIAL SUBSTITUTION	PROCESS MODIFICATION	INVENTORY CONTROL	RECLAIM	RECYCLE	REUSE	SEGREGATE
Radioactive	X	X	X	X				X	X
Hazardous				X	X		X	X	
Batteries		X		X					
Contam. Soils		X	X	X	X	X	X	X	
Excess Chem.		X	X	X					
Excess Paint		X	X	X					
Lab. Samples		X	X	X					
Lab. Wastes		X	X	X					
Lead	X	X	X	X					
Mercury	X	X	X	X					
Munitions		X	X	X					
Oxidizers		X	X	X					
Paint Thinner		X	X	X					
Photo Chemicals		X	X	X					
Pyrophoric Met.		X	X	X					
RCRA Met-Contam.	X	X	X	X					
Solvent Rags	X	X	X	X					
Solvents	X	X	X	X					
Hydraulic Fluid		X	X	X					
Solid, Nonhazard.		X	X	X					
Alum. Bev. Cans		X	X	X					
Cardboard		X	X	X					
Glass		X	X	X					
Masonry		X	X	X					
Metal		X	X	X					
Office Paper		X	X	X					
Old Fuel		X	X	X					
Packg. Material		X	X	X					
Used Oil		X	X	X					
Wood		X	X	X					
Mixed Waste	X		X	X					

**ATTACHMENT F**  
**WASTE MINIMIZATION TECHNOLOGY PROJECTS**

- Substitute aqueous based degreasers for chlorinated degreasers.
- Utilize treated industrial wastewater as make-up water for cooling towers.
- Develop computer based communication systems to eliminate paper waste.
- Develop closed loop plating bath systems to eliminate plating wastes.
- Purchase dry system vacuum pumps to eliminate radioactive contaminated oil.
- Evaluate and document manufacturing processes to identify waste minimization opportunities.
- Control on-site stock of chemicals to eliminate shelf life rejects.
- Utilize waste exchange to sell excess chemicals.