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TAG POLICY LETTER 00-12 14 July 2000

USE OF PREPARED POLLUTION PREVENTION PLAN

1. The New Jersey Army National Guard's (NJARNG) greatest environmental priority is to prevent pollution. The NJARNG Pollution Prevention Program has been established in accordance with the Pollution Prevention Act of 1990 and other applicable state and federal policies. Pollution Prevention focuses on the efficient use of resources with the intent of reducing waste by products that have an adverse impact on the environment and public health.

2. This policy letter implements the NJARNG Pollution Prevention Plan dated May 2000. The Plan contains specific responsibilities for various directorates and personnel. You are directed to become familiar with, and adhere to, these responsibilities to ensure the success of this plan.

(ID)

PAUL J. GLAZAR
Major General, NJARNG
The Adjutant General

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Chapter 1

MANAGEMENT OVERVIEW

The New Jersey Army National Guard's (NJARNG) greatest environmental priority is to prevent pollution. Pollution Prevention (P2) reduces the amount of hazardous substances, pollutants, or contaminants at the source before recycling and reuse, treatment, or disposal. It also reduces the dangers to public health and the environment caused by the release of hazardous substances. P2 differs from the traditional approach to waste management because it addresses the connections between processes and the inputs and outputs linked to those processes.

This chapter covers the following aspects of the NJARNG P2 program:

Purpose and Scope

This Pollution Prevention Plan documents the NJARNG's plan for using P2 efforts to minimize materials used and waste generated. It both establishes a statewide pollution prevention program for the NJARNG and implements the following P2 strategies into daily operations:

- *Reduction*: reducing the amount of solid and hazardous waste through product substitution, equipment modifications, and process changes
- *Recycling*: collecting, separating, and processing materials from the solid waste stream for use as raw materials in manufacturing new products; also includes reusing materials that would otherwise enter the waste stream

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NOTE

Refer to the Recycling Plan for items to be eliminated from the solid waste stream.

- *Affirmative Procurement*: implementing cost-effective procurement programs that promote the purchase of environmentally preferable products and services

These P2 strategies were defined in the Pollution Prevention Act of 1990, as well as by presidential mandates (executive orders).

In addition, the P2 program is integrated with the hazardous material and waste management programs, stressing the importance of managing the processes that use hazardous materials and generate waste.

This P2 plan applies to all activities and units under the command of the NJARNG.

Applicable Regulations

Federal Policies

Pollution Prevention Act of 1990

The Pollution Prevention Act (PPA) defined Pollution Prevention as--

"...any practice which reduces the amount of a hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and

any practice which reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants."

It focused attention on reducing the amount of pollution through cost-effective changes in producing, operating, and using raw materials, and established source reduction as a more desirable solution than waste management or pollution control. Of course, P2 also includes other practices that increase efficient use of energy, water, and other natural resources.

Federal facilities, including army installations, were subjected to the requirements of the Pollution Prevention Act when President Clinton signed EO 12856, setting the federal government's policy on pollution prevention. The President noted that

"...Federal facilities will set the example for the rest of the country and become the leader in applying pollution prevention to daily operations, purchasing decisions and policies. In the process, federal facilities will reduce toxic emissions, which helps avoid cleanup costs and promotes clean technologies."

EPCRA and TRI Reporting

Executive Order (EO) 12856, Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, requires federal facilities to

- Develop a facility-wide pollution prevention plan
- By December 31, 1999, reduce releases and transport of toxic chemicals by at least 50% from the 1994 baseline

The goal is to reduce or eliminate the acquisition, manufacture, processing, or use of toxic chemicals and extremely hazardous substances throughout the DOD. EO 12856 also requires facilities to make these reports and Toxic Release Inventory (TRI) reports available to the public.

EO 12856 was revoked on September 14, 1998 and replaced by EO 13101, Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition. EO 13101 requires federal facilities to

- Procure environmentally preferable and recyclable products and services
- Implement an affirmative procurement program
- Establish and achieve long-range goals for recycling or solid waste diversion by the years 2005 and 2010

Affirmative Procurement

As required by EO 12873, Federal Acquisition, Recycling, and Waste Prevention and RCRA, Subtitle F, Section 6002, federal agencies must establish programs

to encourage purchase of supplies and services using recycled products. Purchasing products that contain recycled materials offers several benefits:

- Creates a market for collected materials
- Promotes the production of recycled products
- Reduces the amount of waste generated

The United States Environmental Protection Agency (EPA) has specified that the following items should be purchased as recycled products:

- Lubricating oils (re-refined)
- Retread tires
- Cement and concrete (containing fly ash)
- Insulation products
- Paper/paper products

Ozone Depleting Chemicals

EO 12843, Procurement Requirements and Policies for Federal Agencies for Ozone Depleting Substances, directs federal agencies to modify their procurement policies to reduce the use of ozone-depleting substances. Federal agencies are directed to adjust specifications and contracts to substitute non-ozone-depleting substance to the extent economically feasible.

EPA periodically publishes a list of approved substitutes for ozone depleting chemicals (e.g., refrigerants) in the Federal Register under the Significant New Alternatives Policy Program (SNAP). The rationale for the substitution product is also provided.

State/Territorial Regulations

Region II of the U.S. Environmental Protection Agency (EPA) enforces chemical management and waste generation regulations for New Jersey. Additional environmental regulations are enforced by the New Jersey Department of Environmental Protection.

Military Regulations

The NJARNG must comply with the Army Environmental Protection and Enhancement Regulation (AR 200-1), which sets Army policy for minimizing hazardous waste. Specifically, this P2 Plan provides procedures for complying with Chapter 10 (Pollution Prevention) of AR 200-1.

The table on the following page cross references the major program requirements of AR-200-1 and DA PAM 200-1 with this plan.

Table 1: Major Program Requirements of AR 200-1

AR 200-1 Reference	*DA PAM 200-1*	*Major Program Requirement*	*Plan Reference*
10-3 a	10-3 a	Establish Pollution Prevention Plan and Program	Chapter 1
	10-3 b	Pollution Prevention Policy Statement	Chapter 1
	10-3 c	Management Structure	Chapter 2
	10-3 d	Baseline	Chapter 3
	10-3 e	Baseline Tracking	Chapter 3
	10-3 f	Periodic P2 Opportunity Assessments	Chapter 3
	10-3 g	Pollution Prevention Goals	Chapter 3
	10-3 h	Pollution Prevention Plan	All
	10-3 i	Training and Awards	Chapter 2
	10-3 j	Affirmative Procurement	Chapter 3
	10-3 l	Implementation and Evaluation	Chapter 2 and 3
	10-3 n	Energy and Water Conservation	Chapter 3
	10-3 o	Hazardous Material Management Program	Chapter 2[1]

1 NJARNG Desktop Guidebook for Environmental Compliance (June 1, 2000)

Local Regulations, Ordinances, and Codes

AR 200-1 requires compliance with local environmental regulations. Consult the Environmental Program Manager (EPM) regarding local regulations. In the absence of specific regulations, use best management practices to minimize the amount of hazardous chemicals released to the environment.

Regulatory Agency Contacts

Contact the Hazardous Waste Manager/P2 Coordinator for a list of regulatory agency contacts.

Contractual Obligations

The NJARNG routinely contracts for services related to environmental compliance, such as waste cleanup, transportation, and disposal. These contracts may include requirements that are more stringent than the regulations. The NJARNG will comply with all hazardous waste disposal contractor restrictions that do not violate any regulation, order, ordinance, code, or other regulatory requirement.

Benefits of Pollution Prevention

A successful P2 program presents many economic, health, and environmental benefits.

Economic Benefits

A P2 program reduces a facility's overall operating costs by--

- Decreasing use of energy, water, and other resources
- Reducing the amount of raw material purchased and waste disposed of
- Lowering costs associated with reporting, compliance, penalties, and environmental liability
- Avoiding costly future retrofits to a facility (by introducing P2 early in the design phase of a project)

Health Benefits

Minimizing the use of hazardous materials creates a safer work environment, reducing the need for high-priced safety equipment and worker training.

Environmental Benefits

An active P2 program demonstrates to the surrounding communities that the NJARNG is dedicated to a cleaner environment for New Jersey. In addition, a proactive approach to P2 improves NJARNG's relationship with regulators, other government agencies, stakeholders, and the public.

Policy Statement

A P2 program must be dynamic and aggressive, requiring a commitment from the entire organization. Altering attitudes toward resource conservation and waste reduction is fundamental.

The NJARNG is committed to reducing the environmental effects of its operations through an active P2 program. In support of this commitment, the NJARNG pollution prevention policy statement displayed on the following page has been prepared and given to all personnel:

THE NEW JERSEY ARMY NATIONAL GUARD
Pollution Prevention Policy Statement

The New Jersey Army National Guard is committed to an active policy of protecting the environment in all of our facilities. This pollution prevention policy statement is based on our commitment to:

- Providing a clean and safe environment in our community
- Ensuring a safe and healthy workplace for our staff
- Complying with all applicable laws and regulations
- Efficiently accomplishing our mission
- Reducing future liability for waste disposal
- Reducing waste management costs

To accomplish these objectives, we will implement programs for reducing or eliminating generation of waste through source reduction and other pollution prevention methodologies. This policy extends to air, wastewater, and solid and hazardous wastes. In addition to meeting the objectives, there are other important benefits related to pollution prevention.

The New Jersey Army National Guard is committed to reducing the volume and toxicity of generated wastes. As part of this commitment, the New Jersey Army National Guard gives priority to source reduction. Where source reduction is not feasible, other pollution prevention methods, such as recycling, will be implemented. The wastes that cannot be prevented will be converted to useful products or used beneficially, where feasible. Remaining wastes for which no pollution prevention option is warranted will be effectively treated and responsibly managed. The New Jersey Army National Guard will select waste management methods that minimize present and future effects on human health and the environment.

Pollution prevention is the responsibility of *all* of our staff. The New Jersey Army National Guard is committed to identifying and implementing pollution prevention opportunities through solicitation, encouragement, and involvement of all employees.

Responsibilities

The Adjutant General (TAG)

- Ensures that NJARNG complies with this Plan
- Designates a chairperson for the Environmental Quality Control Committee (EQCC)

Chief of Staff

- Provides regulatory agency personnel access to activities, except for reasons of national security or personal safety

Director of Logistics

- Participates as a member of the EQCC
- Appoints a representative to the Hazardous Substance Control Group (HSCG)
- Reviews ongoing NJARNG logistical plans, operation activities, and any proposed changes for compliance with this Plan
- Coordinates NJARNG logistical regulations and Standard Operating Procedures (SOP) to ensure that logistical polices and procedures are compatible with this Plan
- Promotes recycling and pollution prevention

Surface Maintenance Office

- Participates as a member of the EQCC
- Reviews ongoing NJARNG surface maintenance program plans, operations, activities, and facilities for compliance with this Plan
- Reviews any proposed changes to ongoing NJARNG surface maintenance program plans, operations, activities, and facilities for compliance with this Plan
- Ensures that NJARNG vehicle maintenance facilities comply with this Plan
- Promotes recycling and pollution prevention

Director of Plans, Operations, and Training

- Participates as a member of the EQCC
- Reviews NJARNG SOPs and training plans for compliance with this Plan
- Ensures that all NJARNG training sites, ranges, facilities, and schools operate in compliance with this Plan

Construction and Facilities Management Officer

- Executes this Plan
- Participates as a member of the EQCC

Chief, Office of Environmental Compliance

- Participates as a primary member of the EQCC
- Serves as chairperson of the HSCG
- Directs and monitors implementation of this Plan
- Serves as advisor to the Adjutant General, the Chief of Staff, and the NJARNG on this Plan
- Reviews and approves chemicals on the Authorized Use List (AUL)
- Advises the Unit Environmental Compliance Officer (UECO) of local regulations or contractor requirements that may be more stringent than the requirements of this Plan
- Periodically reviews chemical purchases by the United States Property and Fiscal Office Records and IMPAC purchase records to identify opportunities to substitute less hazardous or non-hazardous chemicals when practical

Pollution Prevention Coordinator

- Serves as an advisor to the EQCC
- Serves as a member of the HSCG
- As a member of the HSCG, reviews and approves chemicals on the AUL
- Works directly with the UECO to provide technical assistance for this plan
- Organizes and implements P2 methods and programs
- Prepares all P2 reports required by federal, state, and local regulations and by NJARNG policies
- Establishes policies for identifying, procuring, and tracking hazardous materials
- Evaluates and recommends substitution of less hazardous or non-hazardous chemicals when practical
- Reviews the types and quantities of waste generated and evaluates the potential for reducing waste toxicity and quantity
- Before executing service contracts (including those for parts-cleaning solvents and parts washers), reviews the contracts for hazardous chemical procurement
- Updates this plan as needed

Safety and Occupational Health Officer

- As a member of the HSCG, reviews and approves chemicals on the AUL
- Assists the UECO with the safety aspects of this plan

United States Property & Fiscal Officer

- Participates as a member of the EQCC
- Appoints a representative to the HSCG
- With the HSCG, establishes and maintains an AUL of chemicals approved for purchase and use

Troop Commanders

- Ensures subordinate units comply with this Plan
- Participates as a member of the EQCC

Activity and Unit Commanders

- Ensures that the UECO assigned under the Environmental Compliance Management Plan implements this P2 Plan
- Ensures personnel receive annual Environmental Awareness Training
- Promotes recycling of cardboard, paper, aluminum cans, and other items identified in the Facility Recycling Plan

Unit Environmental Compliance Officer

- Ensures NJARNG military organizations and activities implement the procedures established by this Plan
- Functions as a liaison on all P2 issues between the military units and the P2 Manager
- Provides periodic briefings to unit personnel regarding this Plan
- Ensures compliance with local environmental regulations, if any
- Promotes recycling and pollution prevention in managing hazardous waste and hazardous materials

Chief, Facilities Property Bureau

- Ensures the State Maintenance Force under his/her control implements this P2 Plan
- Reviews ongoing State Maintenance Force program plans, operations, activities, and facilities for compliance with this plan's P2 opportunities
- Reviews proposed changes to ongoing State Maintenance Force program plans, operations, activities, and facilities for compliance with this plan's P2 opportunities
- Ensures all users of NJARNG Interactive Community Resource Centers comply with this plan
- Promotes recycling and P2
- Participates as a member of the EQCC

Chapter 2

OVERVIEW OF THE POLLUTION PREVENTION PROGRAM

This chapter provides an overview of the NJARNG P2 program and covers the following topics:

Program Strategy

This Pollution Prevention Plan establishes P2 as the preferred method for Hazardous Material and Hazardous Waste management. It provides a "living" plan for establishing a statewide P2 program. By analyzing inputs, processes, and waste streams, a feedback loop can be developed that will encourage regular improvements throughout the system.

P2's primary objective is to reduce negative environmental impacts by reducing hazardous materials used and wastes generated, leading to a more efficient, cost-effective, and safe facility. The following steps help to accomplish this objective:

1. Identify the operational processes common throughout the NJARNG
2. Track hazardous material use for each process at NJARNG activities and units
3. Identify and track waste generation for each process at NJARNG activities and units
4. Conduct periodic Pollution Prevention Opportunity Assessments (PPOAs)
5. Review the P2 program to provide feedback and identify potential areas for improvement

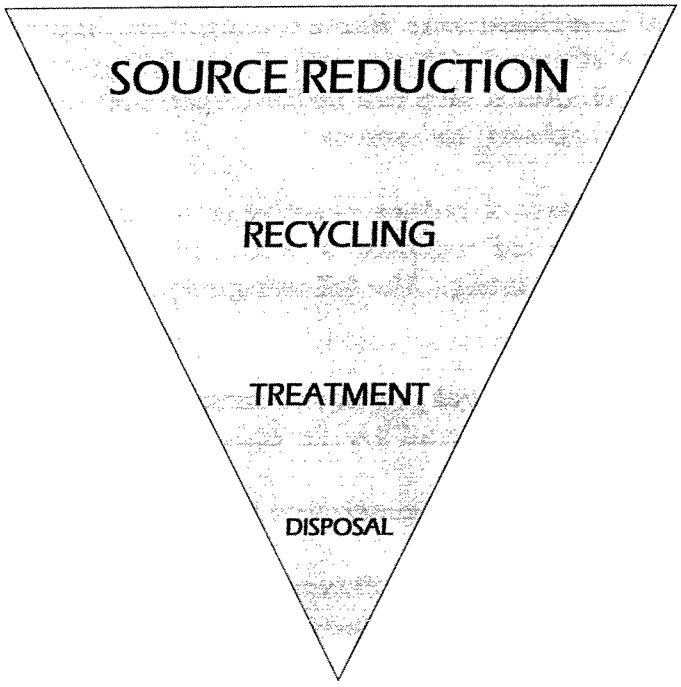
This Pollution Prevention program will have the following benefits:

- Demonstrates top management support to ensure that P2 becomes an installation effort
- Accounts for waste management costs by maintaining a bookkeeping system to track the types and amounts of hazardous wastes and materials used
- Where feasible, develops a cost allocation system to identify the true costs of waste management and the activities responsible for generating the waste in the first place

Pollution Prevention Hierarchy

Established in the Pollution Prevention Act of 1990 and further developed in the National Strategy set forth by the EPA, the Pollution Prevention Hierarchy presents a preferred order for managing wastes and preventing pollution. As shown below, the hierarchy includes four elements:

- Source reduction
- Recycling and reuse
- Treatment
- Disposal



Source reduction is the highest priority within the hierarchy because it eliminates or reduces wastes at the source of generation. When source reduction cannot be achieved, recycling and reuse are preferred over treatment or disposal. Treatment and disposal are viewed as last-resort measures because these methods do not reduce or reuse waste.

When evaluating pollution prevention options, the NJARNG needs to consider the hazard and liability concerns associated with transporting and disposing of wastes.

Management Structure

The P2 management structure consists of a guiding body (the Environmental Quality Control Committee), working groups, and a Pollution Prevention Coordinator.

Environmental Quality Control Committee

The NJARNG Environmental Quality Control Committee (EQCC) performs the following functions:

- Gives policy guidance to the Pollution Prevention Coordinator and coordinates between other organizational elements
- Advises the Adjutant General on environmental priorities, policies, strategies, and programs

It consists of members representing operational, engineering, planning, supply, logistics, major commands, environmental, resource management, legal, medical, and safety interests.

Polluting processes should be reassessed every 3 years; more often if changes occur in production levels or mission [AR 200-1, Chapter 10-3(5)]. The EQCC meets at least quarterly, or more often as needed to coordinate environmental program activities covered in AR 200-1.

Responsibilities of the EQCC include--

- Briefing the Adjutant General on all actions needed to make the P2 program successful
- Establishing overall P2 policies and procedures
- Establishing P2 goals
- Establishing priorities for implementing P2 projects
- Obtaining funding and establishing schedules for implementing P2 projects
- Monitoring or directing progress toward implementing the P2 program

Hazardous Substance Control Group

The Hazardous Substance Control Group (HSCG) is a working group of the EQCC that seeks to improve management of hazardous material (HM) within the NJARNG. This involves implementing an integrated management approach to obtain "cradle-to-grave" visibility of hazardous material and hazardous waste throughout its life cycle of procurement, storage, handling, use, and ultimate disposition in accordance with AR 200-1, Chapter 10-3(o).

Responsibilities of the HSCG include

- Directing the Hazardous Material Management Program (HMMP)
- Developing an Authorized Use List (AUL) for chemicals
- Reviewing and updating HM and hazardous waste (HW) management practices
- Establishing Pollution Prevention Assessment Teams

Pollution Prevention Assessment Teams

Pollution Prevention Assessment Teams (PPATs) and other working groups are formed as necessary to identify P2 opportunities and to evaluate a particular waste generation process or hazardous material use. Specific responsibilities include the following:

- Perform Pollution Prevention Opportunity Assessments (PPOAs)
- Present PPOA recommendations to the HSCG
- Implement P2 initiatives and projects
- Monitor the performance of P2 projects

PPATs may review statewide issues or issues at a local activity or unit.

PPATs vary in size, depending on the nature of the activity. In order to gain different perspectives and approaches to problem identification and solving, PPATs should include personnel with a variety of backgrounds. In addition, they should include people who work directly with the process or materials of interest, as they are the ones most familiar with the practices and will be the ones to carry out changes. Members may include--

- Environmental specialists
- Logistics personnel
- The facility director
- Senior management
- The public affairs department
- Shop level personnel
- Hazardous materials management staff
- Procurement and supply personnel

The team should also include personnel from other organizational elements that may be affected by changes in procedures and should involve and seek advice from suppliers or potential suppliers.

PPATs include a leader (such as the UECO) who has technical and practical knowledge of the activity. This person is responsible for seeing that opportunities are identified, the PPOA worksheets are completed, and cost-effective alternatives are implemented.

KEYS TO SUCCESS
Seek commitment of site personnel
Solicit assistance from staff that operates process
Build consensus
Create a positive attitude
Explain purpose and benefit of assessment
Use common sense and creativity
Give examples of how P2 will make their jobs easier

Pollution Prevention Coordinator

The Pollution Prevention Coordinator has overall responsibility to develop and implement the P2 program. The P2 Coordinator serves as a primary advisor to the EQCC and as Chairperson of the HSCG. The Coordinator also assists working groups and PPATs to achieve their P2 objectives.

Responsibilities of the P2 Coordinator include--

- Coordinating PPOAs to identify procedural changes, projects, and equipment
- Recommending priorities for funding P2 projects and equipment
- Developing P2 training programs

Hazardous Materials Management Program

Reducing or eliminating hazardous materials from NJARNG training and surface maintenance prevents those materials from entering the waste stream as hazardous waste. Because minimizing the use of hazardous materials is the primary source reduction technique in the NJARNG Hazardous Material Management Program (HMMP), hazardous materials management is an integral part of the NJARNG P2 program.

The HMMP is directed by the HSCG, which seeks to implement an integrated management approach to hazardous material management throughout its life cycle of procurement, storage, handling, use, and ultimate disposition. The HSCG will regularly review and update HM management practices to ensure that hazardous material use is reduced as much as possible without jeopardizing mission requirements.

Refer to the NJARNG Desktop Guidebook for Environmental Compliance (June 1, 2000) for the complete HMMP.

Implementation and Feedback

The EQCC sets the goals and criteria used to measure improvement: for example, pounds of chemicals eliminated for disposal or percent of supplies used that contain recycled materials. Then the data, including the Hazardous Material inventories and Hazardous Waste generation reports, is forwarded to the State P2 Coordinator to compile and track using a spreadsheet or database. The resulting information indicates the program's successes and failures or the need for further data collection.

Evaluation and feedback activities can also be performed at the program or project level. To evaluate a particular P2 project, the activity or unit should set clear milestones that can be achieved in a measurable amount of time. Examples of project milestones include performing a specified PPOA, choosing a pollution prevention option, or purchasing a piece of equipment needed to fulfill the P2 initiative. Also, any additional data requirement must be identified, such as waste generation statistics, chemical release rates, production rates, and power and water use statistics.

Achievements and Awards

Success of P2 requires that NJARNG personnel be encouraged to do their part in fulfilling the program and achieving the goals. Awards and bonuses for individual and command achievements encourage personnel to strive to meet further goals. To encourage positive actions and behaviors from the NJARNG personnel, incentives and programs include:

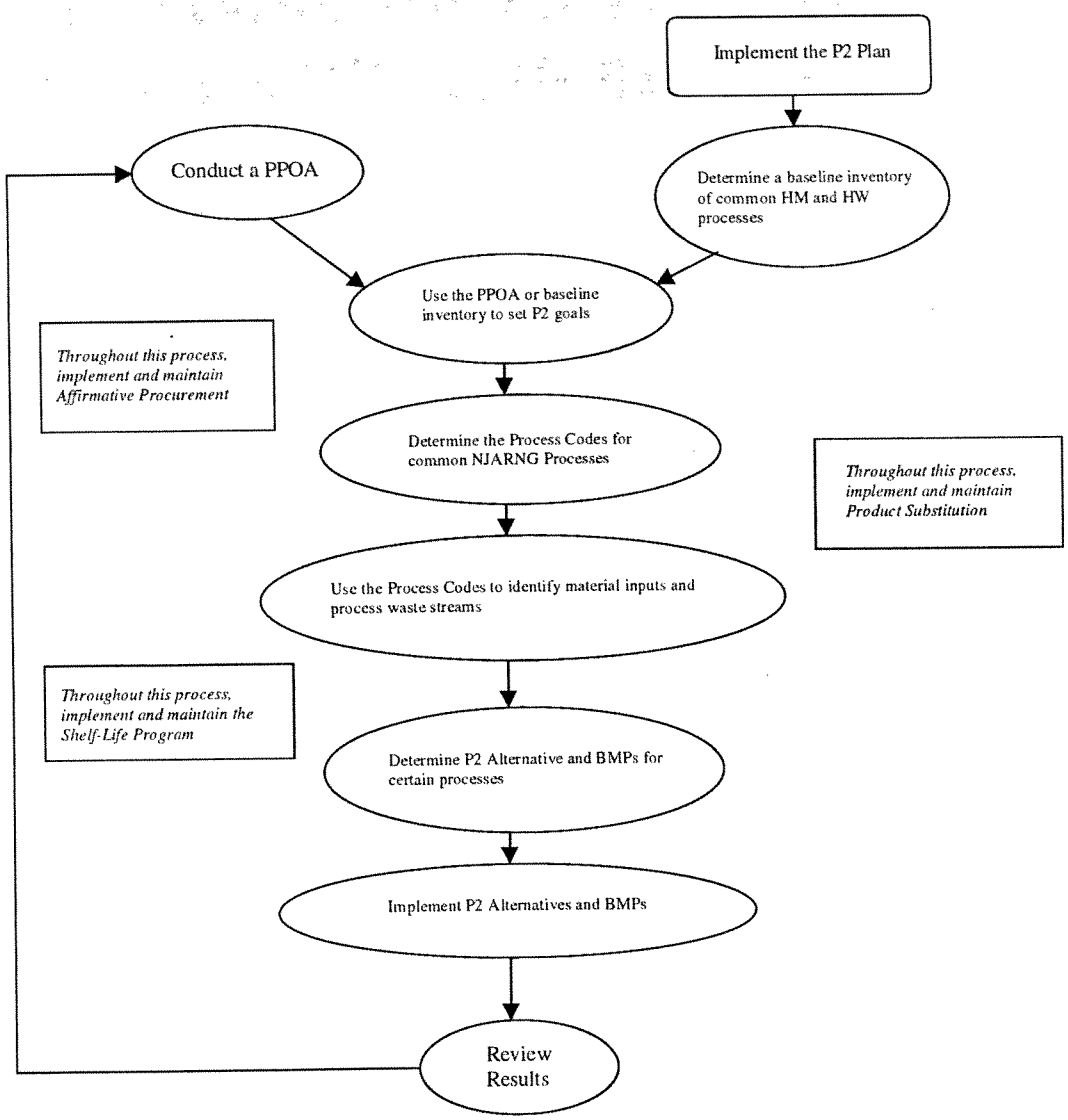
- Contests and recognition programs
- Publicizing progress made to prevent or reduce pollution
- An annual Pollution Prevention Day or Week
- Cash awards for beneficial suggestions in source reduction or waste elimination

Chapter 3

POLLUTION PREVENTION MANAGEMENT PROGRAM

This chapter covers the following topics:

NJARNG P2 Program Flowchart



Baseline Survey

Before implementing the strategies identified in this P2 Plan, NJARNG activities must begin the P2 planning process by assessing their current status and establishing baselines for HM use and HW generation throughout NJARNG. These baselines will help you identify areas to focus on for P2 and source reductions, as well as provide a benchmark from which to measure progress. Therefore, they are key to measuring success in the P2 program.

Specific details for conducting baseline surveys and measuring progress are further described later in this chapter. In general, establishing an environmental baseline involves developing a picture of material use patterns, waste-generating processes, and environmental problems associated with these processes. Developing a baseline of purchasing information requires quantifying the amounts and costs of the materials purchased, as well as identifying the locations and processes where they are being used.

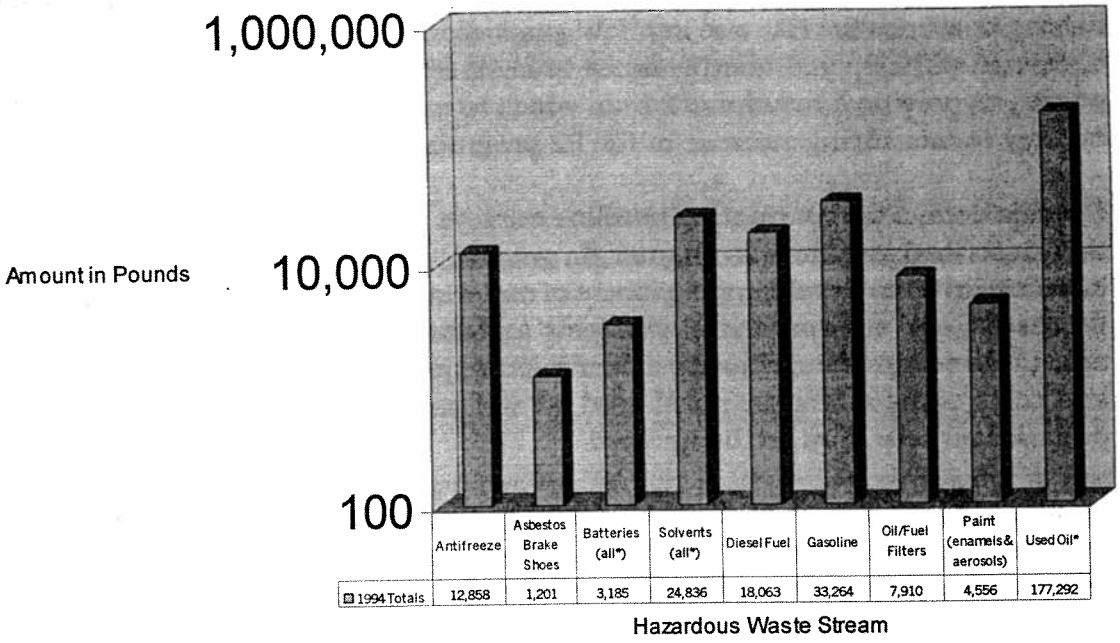
An initial baseline survey of selected waste streams for calendar year 1994 was conducted on February 24, 1995. Since then, several measures to minimize waste and reduce costs have been implemented. For example, a recycling program initiated January 1, 1996, has had multiple benefits:

- Reduced costs through recycling many regulated and non-regulated waste items, including used oil, oil filters, antifreeze, batteries, fluorescent bulbs, mercury vapor lamps, and tires
- Reduced the amount of solid waste generated--
  - ✓ In 1994-1996, approximately 800 tons of solid waste was generated each year
  - ✓ In 1996-1997, this amount decreased by 15% through recycling of such items as cardboard and paper products, aluminum cans, plastics, fired brass, glass, and scrap metal containing steel
  - ✓ In 1997-1998, solid waste production decreased another 51%, due to the large amount of scrap metal that was generated and recycled as part of several remedial projects
  - ✓ In 1998-1999, a 12% reduction in solid wastes was achieved

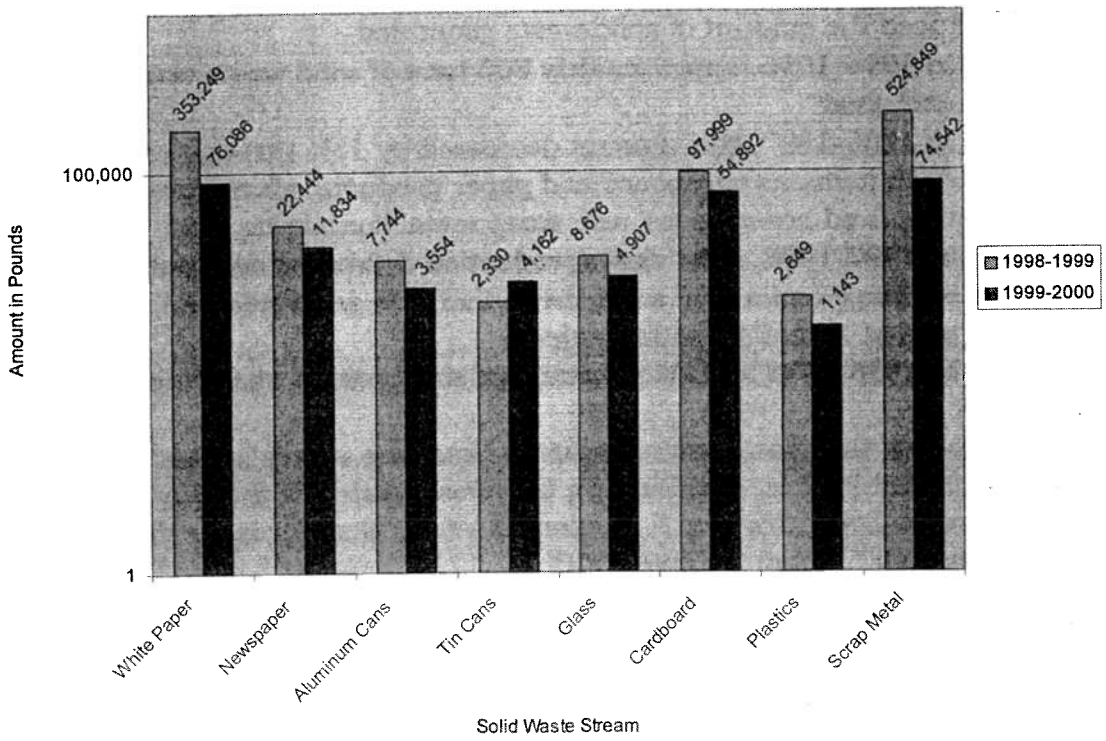
Another change that has occurred since the baseline survey is that used oil is no longer regulated (that is, considered a universal waste per the New Jersey Administrative Code, Chapter 7, Section 26A-6.1, "Standards for the Management of Used Oil", dated October 1996).

The charts on the following page summarize the results of the baseline survey.

1994 Baseline Survey Results



Recycled Solid Waste Stream Data 1998-2000



Goals

The EQCC will set clear, quantifiable goals to reduce the use of specific hazardous materials and the volume and toxicity of waste generated. The following table presents a sample format by which goals may be tracked.

Waste Type	*Baseline (lbs/year)*	*Current (lbs/year)*	*Current Reduction (%)*	*Reduction Goal (%)*	*Target Year*
Antifreeze	12,858			40%	2005
Asbestos (Brake Shoes)	1,201			20%	2005
Batteries (aggregate total)	3,185			20%	2005
Solvents (aggregate total)	248,336			40%	2005
Diesel Fuel	18,063			20%	2005
Gasoline	33,264			20%	2005
Oil Filters	7,910			50%	2005
Paints (aggregate total)	4,556			40%	2005
Used Oil (aggregate total)	177,292			20%	2005

NJARNG Operations

The New Jersey Army National Guard provides organized, trained, and equipped units to execute assigned state and federal missions. The NJARNG's federal mission is to provide combat-ready forces to mobilize in support of the National Military Strategy. Second, the NJARNG protects life and property and preserves peace, order, and public safety under state or territory authorities.

The NJARNG manages ARNG training sites and maintains military vehicles and equipment. This includes operating surface maintenance facilities (UTES, CSMS, and OMS), aviation maintenance facilities (AASF), armories, and other facilities throughout the state. The hazardous waste generator status and EPA ID numbers for New Jersey are maintained on file in the Office of Environmental Compliance.

Process Codes and Descriptions

All NJARNG operations are processes that control what is done and how it gets accomplished. The key to minimizing hazardous materials and waste is to manage processes in the most efficient way. To simplify matters, processes are defined in manageable elements. For example, operations are divided into Training Exercises and Surface Maintenance. Surface Maintenance is subdivided into Brake Maintenance, Tire Maintenance, Battery Maintenance, and others.

The following process codes and descriptions, along with the waste stream and material input table, will be used for the hazardous materials and hazardous wastes inventories.

PC01 - Training and Unit Exercises: Includes activities that would occur during routine training exercises (excluding NBC activities and weapons cleaning). Includes battery replacement in small battery-operated equipment such as radios and flashlights. MREs are commonly eaten during field training exercises.

PC02 - NBC Activities: Includes routine Nuclear, Biological, and Chemical (NBC) training exercises, decontaminating equipment and gear, and replacing gas mask filters.

PC03 - Weapons Cleaning and Repair: Includes cleaning, lubricating, and preserving weaponry. Weapons may be cleaned at unit locations during routine training exercises, and may be repaired at a Small Arms Repair Shop. Weapons cleaning may generate rags and swabs contaminated with cleaning solvent.

PC04 - Fueling Operations: Includes refueling of equipment, surface vehicles and aircraft using fuels stored on site or contracted from venders. May include any operation associated with vehicle fueling, on-site fuel supplies, and storing

fuel or vehicles containing fuel. Fueling operations may result in incidental spills of fuels from vehicles.

PC05 - Vehicle and Aircraft Washing: Includes surface vehicle and airframe washing using either hot or cold water, with or without detergent. May be performed at facilities equipped with oil/water separators or at commercial car washes. Also includes aircraft engine cleaning.

PC06 - Oil Changes: Includes all routine oil replacement conducted on surface vehicles and equipment (excluding brake fluids, hydraulic fluids, and transmission fluids).

PC07 - Brake Maintenance: Includes routine brake maintenance and repair, such as replacing hydraulic fluid, brake shoes and brake pads. Brake shoes and pads may contain asbestos.

PC08 - Tire Maintenance: Includes replacing worn vehicle or aircraft tires.

PC09 - Battery Maintenance: Includes any activity involving servicing or replacing surface vehicle or aircraft batteries. Also includes replacing batteries in small equipment. It may result in waste batteries, recyclable batteries, or batteries turned in on a 1-for-1 exchange.

PC10 - Radiator Flushing: Includes replacing spent antifreeze and treating corrosion in surface vehicle radiators.

PC11 - Parts Washing: Includes cleaning and degreasing mechanical components during routine maintenance or repair. Can be done using various techniques such as steam, solvents, acids, bases, detergents, or hot water.

PC12 - Mechanical Work: Includes any mechanical component repair (other than brakes, tires, batteries, radiators or parts washing), such as engine overhauling or aircraft turbine repair, drive train work, or transmission overhauls. May be performed on surface vehicles and equipment or aircraft.

PC13 - Paint and Rust Removal: Includes either chemical (paint strippers) or mechanical removal of paint and rust. Mechanical means involve the use of high velocity abrasive media such as plastic beads or sand.

PC14 - Large-scale Painting: Include high volume painting on surface vehicles and equipment and aircraft. Usually done in a paint booth equipped with a wet or dry filter system. Paint is applied via spray paint guns or aerosol cans.

PC15 - Spot Painting: Includes touch-up painting, corrosion control, and stenciling on surface vehicles, aircraft, and miscellaneous equipment. Minimal quantities of paint are used and may be applied via brushes or aerosol cans.

PC16 - Metal Fabrication: Includes manufacturing and/or modifying sheet metal for vehicles and aircraft frames and cutting, machining, and welding metal parts.

PC17 - Electronics Maintenance: Includes testing, cleaning, repairing, or replacing electronic components, such as circuit boards. Components are often cleaned with solvents or environmentally friendly chemicals such as denatured alcohol.

PC18 - Shop and Spill Cleanup: Includes routine shop cleanup measures or emergency and non-emergency spill cleanup measures.

PC19 - Facility/ Building Maintenance: Includes repair and routine maintenance of building interiors and exteriors, janitorial work, cleaning and waxing floors, carpentry work, plumbing, electrical repairs, fluorescent light bulb and ballast replacement, and facility painting. May also include performing structural repairs as needed.

PC20 - Building Equipment Maintenance: Maintaining and repairing plant equipment such as coolers, heat exchangers, cooling towers, air conditioners, air handlers, and electrical transformers.

PC21 - Pest Management: Includes pest control measures for facilities and buildings.

PC22 - Grounds Maintenance: Includes maintaining facility grounds through activities such as landscaping, mowing, and mulching.

PC23 - Fire Department Operations: Includes firefighter training, eliminating fires, and minor equipment maintenance.

PC24 - Procurement Operations: Includes shipping, receiving and warehousing purchased materials.

PC25 - Carbon Removal Aircraft Operations: Includes gas path helicopter turbine engine cleaning, collecting a sample for characterization, and determining the proper method of disposal based on the analytical results.

PC26 - Fuel testing for Aircraft Operations: Includes collecting samples, draining sampled fuel to a collection point, and adding to heating oil or returning to bulk fuel dispensers.

The table below shows the material inputs and waste streams for these processes.

Material Inputs and Waste Streams

Process Code	*Process*	*Material Inputs*	*Waste Streams*
PC01	Training and Unit Exercises	• New batteries • MRE Heaters	• Spent batteries • MRE Heaters
PC02	NBC Activities	• Gas mask canisters • Gas mask filters • Decon kits • DS2 Decon Liquid • Aluminum packaging	• Gas mask canisters • Gas mask filters • Decon kits
PC03	Weapons Cleaning/ Repair	• Cleaning patches • Grease/lubricants • Rags • CLP Chlorinated • CLP Non-Chlorinated	• Cleaning patches • Grease/lubricants • Waste rags • CLP Chlorinated • CLP Non-Chlorinated
PC04	Fueling Operations	• Clean fuel • Absorbents	• Off-spec fuel • Absorbents • Recovered fuel • Contaminated soil • Contaminated fuel
PC05	Vehicle/Aircraft Washing	• Gas path • Water • Cleaning compound • Rags	• Spent gas path • Oily Sludge • Engine Wash • Cleaning Compound • Waste Rags • Waste Water
PC06	Oil Changes	• New oil • Oil filters • Rags • Recycled oil	• Used Oil • Oil Filters • Waste Rags

Material Inputs and Waste Streams (Continued)

Process Code	Process	Material Inputs	Waste Streams
PC07	Brake Maintenance	• Grease/Lubricants • Asbestos brake pads • Non-asbestos brake pads • Brake fluid • Solvent-based brake cleaner • Aerosol brake cleaner • Rags	• Brake Shoes • Asbestos • Grease/ Lubricants • Brake Fluid • Waste Rags
PC08	Tire Maintenance	• New tires • Rags • Grease/lubricants	• Worn Tires • Waste Rags • Grease/lubricants
PC09	Battery Maintenance	• Sulfuric acid • Tin alloy solder • Aerosol solvent • Baking soda • New sealed batteries • Water • Rags	• Spent Batteries • Waste Rags
PC10	Radiator Flushing	• Water • Rags • New antifreeze • Recycled antifreeze	• Waste Water • Spent Antifreeze • Waste Rags
PC11	Parts Washing	• Solvent • Water • Rags • Brushes	• Sludge • Waste Water • Waste Rags
PC12	Mechanical Work	• Grease/lubricants • Hydraulic fluid • Transmission fluid • Carburetor cleaner • Power steering fluid • Liquid solvents • Engine oils • Fuel filters	• Junk Parts • Solvents • Hydraulic Fluid • Transmission Fluid • Grease/lubricants • Waste Rags • Used Oil • Fuel Filters

Material Inputs and Waste Streams (Continued)

Process Code	Process	Material Inputs	Waste Streams
PC13	Paint and Rust Removal	• Solvents • Sand paper • Blasting media • Chemical paint remover • Rags • Water	• Solvents • Paint Chips • Abrasive Media • Paint Sludge • Waste Rags • Waste Water
PC14	Large-Scale Painting	• Paint thinners • Solvents • Primer paint • Paint booth filters • Aerosol paints • Rags • Brushes, rollers, paint cans	• Paint Thinners • Solvents • Primer/Paint Waste • Paint Booth Filters • Empty Aerosol Cans • Waste Rags
PC15	Spot Painting	• Paint thinners • Primer paint • Aerosol paints • Rags • Unused paint • Brushes	• Waste Rags • Primer/Paint Waste • Empty Aerosol Cans
PC16	Metal Fabrication	• Sheet metal • Cutting oil • Grease/Lubricants • Solvents • Rags	• Metal Scrap • Cutting Oil • Grease/Lubricants • Solvents • Empty Aerosol Cans • Waste Rags • Metal Shavings
PC17	Electronics Maintenance	• Solvents • Adhesives • Vacuum-filled tubes • Circuit boards • Batteries • Swabs • Solder • Clean Rags and Swabs	• Solvents • Adhesives • Vacuum-filled Tubes • Circuit Boards • Batteries • Swabs • Solder • Waste Rags

Material Inputs and Waste Streams (Continued)

Process Code	*Process*	*Material Inputs*	*Waste Streams*
PC18	Shop and Spill Cleanup	• Absorbent • Alkali Floor Cleaner • Absorbent "Kitty Litter" • Rags • Water	• Absorbent • Alkali Floor Cleaner • Waste Water • Waste Rags
PC19	Facility/ Building Maintenance	• Air Filters • Adhesives • Fluorescent Bulbs/ Ballasts • Mercury Vapor Lamps • Sand Paper • Solvents • Paint • Cleaning Supplies • Rags	• Air Filters • Adhesives • Fluorescent Bulbs/ Ballasts • Sand Paper • Solvents • Paint Waste • Cleaning Supplies • Waste Rags • Saw Dust
PC20	Building Equipment Maintenance	• Adhesives • Paint • Refrigerants • Lubricants/ Grease • New Parts • Rags • Solvents	• Adhesives • Solvents • Paint Waste • Refrigerants • Lubricants/Grease • Waste Rags • Empty Aerosol Cans • Junk Parts • PCB
PC21	Pest Management	• Pesticides • Baits/Traps	• Pesticides • Waste Rags • Empty Aerosol Cans
PC22	Grounds Maintenance	• Gas/Oil • Herbicides • Fertilizers • Filters	• Yard Waste • Herbicides

Material Inputs and Waste Streams (Continued)

Process Code	*Process*	*Material Inputs*	*Waste Streams*
PC23	Fire Department Operations	• Clean fuel • Grease and Lubricants • Rags • Dry chemical • Primer paint	• Waste Fuel • Grease/Lubricants • Empty Aerosol Cans • Excess Dry Chemical • Primer/Paint Waste • Waste Rags • Dust Control
PC24	Procurement Operations	• Review requirements • New materials	• Excess Materials • Expired Materials
PC25	Maintenance Operations	• Gas path • Engine cleaner	• Waste Metals and Hydrocarbons in Air • Rags
PC26	Maintenance Operations	• Clean fuel • Heating oil	• Waste Fuel • Rags

P2 Alternatives and Best Management Practices

This section is a primer for some of the most common P2 Alternatives and Pollution Prevention Best Management Practices (BMPs) used within the Department of Defense (DOD) that apply to the NJARNG operations and processes.

P2 Alternatives typically involve a change in the way a process is done or introduces an intermediate action to the process, such as installing equipment on site to recycle used antifreeze. P2 Alternatives frequently involve considerable initial investments in equipment or personnel training, but offer a high cost return. By implementing a suggested P2 Alternative, for example, a hazardous material use may be drastically reduced or even eliminated, as will the subsequent disposal costs.

A P2 BMP improves a process to reduce material inputs, and in turn, reduce the amount of wastes produced from that process. A P2 BMP can easily be incorporated into the everyday practices of the shop, such as keeping the cover to the parts washer closed as to minimize the amount of solvent evaporated and being wasted. P2 BMPs are further addressed on the P2 Protocol sheets later in this section. These protocol sheets can be pulled from this Plan and displayed in the shop for easy reference.

The index on the following page lists P2 Alternatives and BMPs that can be implemented in the NJARNG. Brief descriptions of the suggested P2 Alternatives and BMPs follow the index and are grouped according to the Processes and Waste Streams in the previous section. Additional P2 resources and references are provided in Chapter 4 of this Plan.

P2 Alternatives and BMPs

Process Waste	*P2 Alternative*	*P2 Best Management Practice*
Aerosol Cans	Aerosol Can Puncturer	
Antifreeze	On-site Antifreeze Recycling	Extend Antifreeze Change Interval
Batteries	Battery Exchange/ Maintenance Program	
	Battery Desulfation	
Brake Fluid		Top-off Fluids Rather Than Change-out
Brake Pads/Shoes	Return Brake Pads/Shoes to Manufacturer	Recycle Shavings, Pads and Shoes
Excess Materials and Expired Shelf Life Items	Hazardous Material Pharmacy	
Fluorescent Lights	Fluorescent Light Tube Crusher	
Fuels	Filter Contaminated Fuels	
General Debris		Waste Segregation and Recycling
Hydraulic Fluid		Top-off Fluids Rather Than Change-out
Oil	Engine Oil Analysis	Used Oil Segregation
	Engine Oil Bypass Filters	Blend Used Oil with Diesel Fuel
	Used Oil Re-refining	Use Oil Caddies or Drip Pans
Oil/Fuel Filters	Oil/Fuel Filter Crushers	Drain Filters and Recycle
Paint Debris	Dry Filter Paint Booths	
	Vacuum Sanders with HEPA Filters	
	Media Blasting	

P2 Alternatives and BMPs (Continued)

Process Waste	*P2 Alternative*	*P2 Best Management Practice*
Paint Waste	HVLP Paint Guns	Use Excess Paint as Base or Undercoat
	Paint Gun Cleaner	Schedule Painting By Color
	Paint Pot Liners	
Parts Washing Waste	Hot Water Aqueous Parts Washers	Wipe Off Heavy Grease Before Washing
		Keep Parts Washer Cover Closed
Pesticides		Minimize
Rags	Waste Rag Reduction	
Refrigerants	Recover and Reuse	
Solvents	Solvent Filtration	Solvent Substitution
Tires	Sell Used Tires to Road Paver	
Transmission Fluid		Top-off Fluids Rather than Change-out
Used Absorbent	Use Lightweight Absorbents	Segregate Used Absorbent
	Compact Absorbent Pads Before Disposal	Use Three-tiered Storage
	"Dry" Absorbent Pads in Cyclone and Reuse	Wring-out Pads and Reuse
Vehicle Wash Water		Properly Maintain Wash Rack
		Use Non-Phosphate, Biodegradable Detergents
Weapons Cleaning Waste	Small Equipment Steam Cleaner	Solvent Substitution
Yard Waste		Mulch/Compost

Pollution Prevention Alternatives

Aerosol Can Puncturing

Aerosol can puncturing and recycling systems provide a safe, efficient, and inexpensive way to relieve pressure in aerosol cans and drain the residual contents. The system typically threads directly into the 2-inch bung of any standard drum. A power source is not needed to operate the unit. Residual liquids are easily and efficiently collected for appropriate disposal, and the can be disposed of or crushed and recycled as scrap metal.

Antifreeze Recycling

Regardless of which technology is selected, antifreeze recycling can be performed either "in-line" or in bulk. In-line recycling involves connecting the recycling unit directly to the vehicle, recycling that single vehicle's original antifreeze by itself, and returning it to the vehicle. Bulk recycling is done by accumulating used antifreeze from multiple vehicles and recycling it collectively. The recycled antifreeze generated from bulk recycling should be returned to the bulk antifreeze distribution system used in the shop.

Battery Exchange/Maintenance Program

Programs are arranged with a local battery vendor to exchange spent batteries one-to-one with new sealed batteries. Many shops now use "maintenance-free" sealed lead acid batteries. The spent batteries can either be refreshed with new electrolyte by the vendor or sent to a battery recycling facility. Under these programs, shop personnel only charge and recharge batteries; no acid or water is added.

Although lead-acid battery recycling does not reduce the number of used batteries generated, it does reduce the number of batteries disposed of. This helps conserve hazardous waste landfill space as well as conserve resources because the lead from the batteries is recovered and used to manufacture other products. In addition, under most state regulations, the used batteries no longer have to be manifested as a hazardous waste because they will be collected for reuse.

Battery Desulfation

One of the leading causes of "dead" lead acid batteries (will no longer accept charge) is buildup of sulfates on the electrode plates. Sulfate buildup prevents a battery from performing at its optimal level and ultimately prevents it from accepting charge. A desulfation unit (Solargizerä by PulseTech, Inc.) was found to double a battery's life span. In some cases, it cleaned previously discarded batteries of sulfate scale and returned them to operation.

Note that these units are not battery chargers; separate battery charging is required.

Single vehicle desulfation units attach directly to individual vehicles, which remain in service. They use solar energy to provide the electrical pulses needed to prevent and reverse sulfation. In the battery shop, a system can be installed that can handle up to 12 batteries at once. Batteries are taken out of vehicles and attached to the unit until desulfation is complete. Then the batteries are returned to service.

Return Brake Shoes to Manufacturer/Distributor

Manufacturers and/or distributors of brake shoes may offer a one-for one exchange program with a shop purchasing new brake shoes. These programs often require that only used brake shoes originally purchased from the manufacturer/distributor can be turned in. A reduced price on the purchase of the new brake shoe (with a turn in) may also be a part of the program. Contact your brake shoe supplier to determine if this program exists.

Hazardous Material Pharmacy

A hazardous material pharmacy is a centralized procurement, storage and issue operation. In DOD, Hazardous Material Pharmacies are typically established at large installations with multiple tenants. However, stand-alone vehicle maintenance shops may establish a pseudo pharmacy system to ensure the most efficient use of hazardous materials within the shop.

For example, centralized procurement with a central hazardous material storage area at a CSMS would minimize the on-hand quantities of materials needed within the various shops. Controlling the issue of hazardous materials reduces the quantities, toxicity, and types of hazardous materials while reducing the quantities of unused materials being disposed as hazardous waste. Unused materials may also be returned to central storage to be reissued to other shops.

Fluorescent Light Tube Crusher

Spent fluorescent light tubes are crushed in a fluorescent lamp disposer fitted with a filter cartridge and a polyurethane sleeve to trap mercury vapor. Crushers are designed to prevent exposure to mercury vapors.

After crushing, the tubes are recycled or disposed of as hazardous waste. Handling costs are reduced because spent tubes do not have to be boxed and labeled.

Filter Contaminated Fuel

Contaminated fuel can be filtered and reused in non-mission critical vehicles. The fuel can be put back into the tanker, and the on-board filtering system will decontaminate it as it is being re-dispensed.

Engine Oil Analysis

Extending the time between oil changes reduces the amount of used oil generated. The current oil change standards are based on service-wide policy; however, the performance characteristics and life of motor oil varies depending on the conditions under which the equipment is operated.

Commercially available equipment for in-shop oil testing can measure oil degradation, contamination, and machine wear. A viscometer can indicate any change in viscosity, such as from fuel dilution, misapplication, or mixing of oils. An optical particle counter can indicate failed or defective filters and other problems.

Oil samples can also be sent to a commercial or DOD laboratory for comprehensive oil analysis. Laboratory analysis can provide more complete identification of contaminants, possibly identifying more specific engine problems such as antifreeze leaking into the engine oil.

Engine Oil Bypass Filters

Engine oil bypass filters are installed and used in conjunction with a laboratory OAP. Installing bypass filters can significantly extend the life of engine oils. Because its pore size is much smaller than a standard oil filter, a bypass filter handles only a portion of the oil flow at any time (about 10 percent), allowing for more complete filtration. By keeping the engine oil cleaner and removing water entrained in the oil, bypass filters can extend the useful life of oil and better protect the engine from damage.

The bypass filter cartridge is installed on the engine and the filter element is regularly removed and disposed of, typically as hazardous waste. The standard filter and the oil are changed less frequently as a result of oil analysis results.

A bypass filter has its greatest effect when the engine is at operating temperature for a long time. Low mileage vehicles that are used for stop/start operations are therefore less likely to benefit than vehicles that run continuously for longer periods.

Bypass filters should be used only in conjunction with an OAP because oil change intervals should be extended only according to data provided through a comprehensive OAP.

Used Oil Segregation and Re-refining

Used oil segregation will not affect the amount of used oil being generated but, rather, the way in which the used oil is disposed. Used oil recyclers only accept non-contaminated oil: it must be free of other materials such as water, antifreeze, and solvents. The best way to accomplish this is to provide dedicated containers for storing used oil. Then, used oil will be put to beneficial use rather than being disposed of as waste.

Oil/Fuel Filter Crushers and Recycling

Standard operating procedure should be to invert and "hot drain" all filters for at least 24 hours (drain immediately after removal while still warm). A drain rack can be purchased that sits on top of a 55-gallon drum into which the fluid drains. The fluids should be drained into segregated containers for proper disposal depending on the base's POL disposal methods (for example, hydraulic and engine oil may be appropriate for co-mingling, while gasoline will usually need to be segregated from oil).

The filters can be crushed in commercially available electric crushers. Because of potential explosion, most filter crushers are not safe for crushing fuel filters. Check with the manufacturer for fuel filter compatibility.

The fluid released from the crushed filters should be captured, usually in a drum located under the crush unit. The fluid can then be added to the appropriate POL waste stream.

Drained filters can be recycled as scrap metal or disposed of as hazardous waste or solid waste. Solid waste goes to the local landfill or incinerator.

Dry Filter Paint Booth

Painting should be performed in a paint booth to control air emissions generated during the process. Paint booths use large air handlers (fans) to maintain a steady flow of air through the booth. The influent air is filtered using a bank of disposable filter panels composed of paper or other media to provide a dust free painting environment. These filters capture the fugitive paint on their surface where it collects and builds up. Modern dry filter paint booths have a differential pressure gauge to indicate the extent to which the filters are clogged. When exhausted, the used filters are disposed as hazardous waste. Less frequent dry filter changes without compromising air emissions will reduce the volume of waste generated as will the use of dissolvable filters.

Vacuum Sanders with HEPA Filters

Sanding vehicle exteriors in preparation for painting creates a dust containing metals and paints that is dangerous to the shop employees' health and must be swept up. A vacuum unit with a HEPA filter should be used with sanding tools to minimize the release of dust.

Media Blasting

Paint is generally removed using vacuum sanders or abrasive blast media. In general, chemical strippers are no longer used; however, in some cases chemicals are used for non-line of sight areas.

If vacuum sanders are not used to capture sanding residue, some other air vacuum or dust collection method is required. Residue not removed by the sanders

is typically swept up and vacuumed from the floor. The dust and sandpaper produced through the sanding process is generally disposed as hazardous waste.

Bead blasting is accomplished in either walk-in bead blast booths or a glove box. Glove boxes are for small parts; larger parts usually require blasting in a larger, walk-in booth. Glass, plastic, and garnet are typical types of bead blast media.

Used bead blast media is continuously reused in the booth or glove box. Eventually, the particles of blast media become too small to be reused and must be disposed of. Because stripped paint is mixed in with the spent blast media, it is usually disposed as hazardous waste, although there are also options to recycle the spent blast media.

HVLP Paint Guns

There has been a general movement away from "conventional" paint guns to high volume low-pressure (HVLP) guns. In conventional paint guns, the air pressure is approximately 100 psi. Because of this relatively high air pressure, there is a high rate of bounce back and overspray, whereby the paint does not successfully adhere to the substrate. The result is transfer efficiencies of only 15% to 30%, meaning that as much as 85% of the paint used in the process is wasted.

The HVLP paint gun is a highly efficient alternative. It uses a higher volume of air at lower pressure to atomize the paint, minimizing bounce back and overspray and resulting in higher paint/coating transfer efficiencies. Hazardous air pollutants and VOC emissions are reduced significantly, as well as in the volume of solid and hazardous waste generated.

Conventional paint guns are still commercially available, but they cost almost as much as HVLP paint guns. Therefore, whenever new paint guns are needed, HVLP guns should be selected.

Paint Gun Cleaner

Paint guns are placed inside a closed-top paint gun cleaner that runs through a cycle to clean the gun automatically. The gun cleaner recirculates solvent from a reservoir and sprays it at pressure onto the paint gun. Paint removed from the guns collects with the solvent in the reservoir. Either on a set schedule or when the solvent can no longer sufficiently clean the guns, it is removed from the reservoir and disposed as hazardous waste.

A paint gun cleaner can be purchased that will also accommodate paint cans. By cleaning paint out of empty cans, more complete waste segregation can be accomplished and the cans can be recycled as scrap metal.

Some paint gun cleaners also pass the solvent through filters between the reservoir and cleaning chamber. By filtering the solvent, its useful life is extended

considerably, thereby reducing the amount of hazardous waste generated and the amount of new solvent purchased. The useful life of the solvent will vary, but may be two years or more. The spent solvent filters are disposed as hazardous waste and the solvent, once eventually spent, is also disposed as hazardous waste. Some fresh solvent needs to be added to the unit to make up for evaporative losses and drag-out.

Paint Pot Liners

Devilbiss manufactures a plastic paint gun that uses a plastic liner within the paint pot in which the paint is held. After the paint job, the bag is removed and disposed of, typically as hazardous waste. The only part of the gun that requires cleaning is the small tube running from the paint pot, where the bag is connected, to the applicator tip. The amount of solvent needed to clean this small tube, which can be accomplished using the pipe cleaner provided with the gun, is a fraction of that used for conventional paint guns.

Because of the design and construction of these guns, they also improve efficiency and ergonomics and have received good reviews from the many bases that use them. While it may be possible to retrofit paint pot liners into existing paint guns, paint guns that were designed specifically for use with liners will work best.

Hot Water Aqueous Parts Washers

Hot water aqueous parts washer are similar to a dishwasher, combining water and detergent to remove contaminants from parts. Most systems separate oil and solids from the cleaning solution, which allows a batch of detergent to be reused repeatedly before becoming too soiled to be effective.

Hot water parts washers are available in many sizes, from ones that accommodate small parts to those that can contain entire engines.

One possible disadvantage to hot water parts washing is the potential for corrosion. When parts are cleaned in PD680 solvents, a small amount of the solvent remains on the part and protects it from corrosion. When hot water is used, the parts are left completely bare, increasing the potential for corrosion. However, this problem can be eliminated through the use of rust inhibitor compounds that can be added to the water/detergent cleaning solution.

Wastes from this cleaning process include steam, oil, and solids/sludge. By using aqueous (non-solvent) parts washing, the amount of VOC emissions is reduced. Additionally, spent aqueous solutions may be appropriate for disposal as non-hazardous waste, while most solvents will be characterized as hazardous waste. Some aqueous units have oil skimmers and coarse filtration, which will remove suspended solids, increasing the likelihood that the spent solution may

be disposed as non-hazardous waste. Another possibility is that a portable filtration unit be purchased and used to filter aqueous solutions.

Recover All Refrigerant for Reuse

EPA requires that an EPA-certified technician recover all refrigerants for reuse. Refrigerants may be removed from equipment because the equipment is undergoing repair or maintenance or because it has reached the end of its functional life. Refrigeration recovery equipment that can capture the refrigerant without releasing to the environment is available. This capture not only protects the environment (refrigerants have a high ozone- depleting potential), but also saves money (refrigerants such as R-12 are being phased out and their cost is rising).

Refrigeration equipment typically can capture either or both R-12 or R-134a refrigerants. The systems offering both R-12 and R-134a are ideal for retrofits, where you need to replace R-12 with R-134a. The units that recover only one refrigerant cost approximately $5,000, while the dual units cost approximately $7,000.

Waste Rag Reduction

Rags are used throughout most processes to clean up drips and spills, wipe off parts, wipe hands, etc. Many used rags are disposed of as hazardous waste; however, with proper management, most locations could dispose of them as solid waste. In a rag recycling or laundering contract (typically a "red rag" contract), rags are exchanged one-for-one and laundered off-site.

Solvent Filtration

Solvent filtration can double solvent life, reducing hazardous material use and hazardous waste disposal. Shop personnel can either retrofit a filtration unit to an existing solvent parts washer, purchase a new solvent washer with filtration, or use a portable filtration unit on several solvent washers. Only minor amounts of solvent need to be added regularly to make up for evaporation and drag-out.

Spent filters are typically disposed as hazardous waste.

Sell Used Tires to Road Paver

Some tire recycling companies will purchase used tires and grind them for use as a road paving material. Vehicle maintenance shop supervisors should research the availability of this service in the vicinity of their installation. Companies will often purchase the used tires (as opposed to taking them for no fee).

Lightweight Absorbents

Absorbent formulations have varying densities and absorbent capacities (unit weight of liquid absorbed per unit weight of absorbent material). Because weight is a consideration in the cost of solid waste disposal, if possible choose absor-

bent materials to maximize absorption and minimize disposal weight. To clean minor drips and spills, a less dense material is likely the best alternative. However, for large spills in which the absorbent material becomes saturated with the spilled substance, the pound-for-pound absorbing ability of the material used makes a large difference to the final weight of solid waste.

Compact Absorbent Pads Before Disposal

Absorbent pads clean up releases and are then compacted in a drum compactor. The liquids that are compressed out of the absorbent are pumped, via a built-in pumping system, into a separate drum for disposal with the appropriate liquid waste stream.

A small percentage of the absorbent pads will be available for reuse as a result of the evacuation of fluids from the pads. The compacted pads typically are disposed as hazardous waste.

"Dry" Absorbent Pads in a Cyclone and Reuse

Absorbent pads can be "spun dry" in a cyclone and reused. The action of the electric cyclone removes over 90 percent of the liquid in the pad. The liquid is collected in a drum for proper disposal and the pads can be reused several times. Once they are exhausted, the pads typically require disposal as hazardous waste.

The labor required to operate a pad cyclone may be less than that for a wringer, manual or electric, because the cyclone has an automatic shut-off function much like a common cyclonic clothes dryer.

Small Equipment Steam Cleaning (Mini-Max)

Weapons, circuit boards and other small equipment items are cleaned with solvents in aerosol cans. The steam cleaner uses only water (may require distilled water) and delivers the steam through a wand, which is applied to the areas that need to be cleaned. No aerosol solvents are required and the used paper towels are disposed as solid waste.

A variety of steam cleaner sizes are available and should be selected based on the volume of work to be performed. If the steam cleaner is going to be used in more than one location, it may be most effective to store and use it on a small rolling cart. A see-through curtained cleaning cabinet is commercially available, which could sit on top of a rolling cart or be stationary.

Pollution Prevention Best Management Practices

Extend Antifreeze Change Intervals

Antifreeze changes are performed either on a time schedule or pending results of testing, usually every 6000 miles or 400 hours. When changes are performed, new antifreeze is added that complies with the requirements set forth in military specification MIL-A-46153.

Shop personnel test antifreeze while it is still in the vehicle. The need to change out the antifreeze is then dictated by its physical condition, which usually extends the change-out interval beyond the status quo. A three-part test process should be used:

- A reserve alkalinity test, which indicates corrosion protection. Reserve alkalinity (as well as pH and other characteristics) can be determined by using colorimetric test strips. If reserve alkalinity is too low, corrosion inhibitors can be added.
- A freeze point test, which indicates antifreeze protection. Freeze point is measured using a hand-held refractometer. If the freeze point is outside of the acceptable range, pure ethylene glycol can be added.
- A visual inspection, in which a small amount of antifreeze is transferred into a clear container. If excess rust, sediment, or suspended particles are observed, the antifreeze should be changed out.

These methods are appropriate for most forms of antifreeze, including MIL-A 46153, which is the military standard.

Top-off Fluids Rather than Change-out

Fluid is sometimes completely replaced when it only needs to be topped off. Fluid does not need to be replaced unless it is demonstrably losing viability. If fluid level is low but testing shows the fluid to be viable, then add new fluid until the system is full.

Recycle Shavings, Shoes, and Pads

All metal parts associated with brakes can be recycled with other scrap metal from the installation. A container should be placed near the brake maintenance operation to collect metal parts. Check with the point of contact at your qualified recycling program (QRP) to determine how to transfer the scrap metal to the installation's centralized recycling facility.

Waste Segregation and Recycling

Most DOD activities must have a QRP. Through the QRP, the activity collects recyclables such as aluminum, glass, plastic, paper, scrap metal, and cardboard. Vehicle maintenance shops can generate a number of these recyclable waste streams through their daily operations.

Used Oil Segregation

To assure viability of the used oil for recycling and for burning with diesel fuel, keep dirt, water, antifreeze, and other foreign materials from contaminating used oil. If the viability of the used products is compromised, then the used oil will probably have to be disposed as hazardous waste, creating unnecessary cost and representing inefficient use of resources and energy. To prevent contamination of used oil,

- Clearly label all containers intended for used oil transfer and storage
- Use the containers exclusively for used oil transfer and storage
- Keep used oil receptacles securely closed when not in use
- Keep used oil storage tanks and storage areas securely locked when unattended by responsible personnel
- Install a used oil collection system (spill prevention)

Blend Used Oil with Diesel Fuel

For situations in which re-refining used oil is not practical, blending uncontaminated used oil into diesel fuel for burning in diesel engines is an alternative. This eliminates costs associated with off-site disposal and incineration, constituting, in effect, on-site incineration of the used oil at no additional cost.

Oil Caddies and Drip Pans

Drips and spills are almost unavoidable when draining oil from vehicles during changes. Such spills require frequently having to take time to use adsorbent material on spills and creating the possibility of generating needless solid waste.

To prevent many of these spills, use an "Oil Caddy" or similar device. The Oil Caddy is a catch pan equipped with a diffusing screen across the top and a drip guard around the edge. The Caddy holds 16 gallons and is designed with two wheels and a long handle so it can be moved easily between vehicles and storage drums. It comes with eight feet of hose for easy, air-powered transfer of liquid directly into drums or other storage containers with no spills.

If you cannot procure an Oil Caddy, use drip pans instead.

Drain Filters and Recycle with Scrap Metal

Oil filters removed from the vehicle during oil changes should be drained for at least 24 hours before crushing, recycling, and/or disposing. The used oil filters can be placed on a drip pan or drum funnel system that includes a screen and funnel and drains into a 55-gallon drum. The residual oil collected from draining should be combined with the oil removed during the oil change process and then recycled.

Some scrap metal recyclers require that the filter paper be removed before pickup.

Use Excess Paint as Base or Undercoat

Excess paint from jobs typically gets set aside and later disposed of as waste. This practice often constitutes needless generation of waste and inefficient use of waste disposal dollars. Excess paints should be used for base coats or undercoats whenever possible, thereby putting to good use what would otherwise become a waste product.

Schedule Painting by Color

In developing a schedule for paint booth use, job order is often determined on a first-come first-served basis or on a priority-by-need basis. While in certain situations priority must be given to specific jobs, whenever possible order should be set so that same-color vehicles are painted in succession. This type of scheduling reduces the amount of gun cleaning required between jobs, thereby reducing the amount of waste produced and the associated cost of disposal.

Wipe Off Heavy Grease Before Washing

Heavy grease and solids can be removed from parts before washing them simply by wiping with a clean rag before using a parts cleaner. There will be less heavy grime to remove from the parts and the aqueous solution or solvent in the parts washer will become less soiled and need to be replaced less frequently.

Keep Parts Washer Cover Closed When Not in Use

Keeping the parts washer cover closed when not in use prevents grime, dirt, and other unwanted foreign material from entering. In this way, a potential source of cleaning solution contamination is prevented, possibly making the difference between hazardous and nonhazardous wastewater.

Keeping the parts washer lid closed also keeps solvent or aqueous solution from evaporating. Additionally, solvent releases volatile organic compounds (VOCs) into the air, which are harmful to human ingestion.

Solvent Substitution

Waste solvents, particularly RCRA-coded solvents, is a major waste stream. In many cases, water and citrus-based detergents can replace hazardous solvents. These detergents are effective for many heavy-duty cleaning applications, such as removing greases and oils from parts, and they work as effectively as solvents when used with high pressure hot or cold water or steam. These detergents are also excellent for general housekeeping duties and many of them are biodegradable.

Minimize Pesticide Use

Good housekeeping is essential to keeping insect populations down:

- Keep break rooms and kitchens free of exposed food and close trash cans tightly
- Repair sources of water or moisture, such as a leaking faucet, which attract insects
- Keep pests out of facilities or buildings by caulking holes and using screens

Substitute sticky traps and pyrethrin-containing products (organic) for the more toxic chemical pesticides. Monitoring pest populations (i.e. with sticky traps) will indicate if and when a pesticide treatment is necessary.

Consult with the Office of Environmental Compliance and the Pest Management Coordinator for the preferred treatment of pests at your facility.

Segregate Used Absorbents

Used absorbents have typically been combined into one waste bin. Consequently, wastes of varying hazard and classification — some not hazardous — tend to be dealt with under a worst case scenario. This practice leads to needless disposal cost and waste. A preferable procedure is to keep separate storage containers for absorbents according to the substance absorbed (for example, ethylene glycol coolant for one, propylene glycol coolant for another, hydraulic fluid for the third, etc.). In this way, various classes of waste can be distinguished and dealt with efficiently, appropriately, and cost effectively.

Absorbent Clay Three-Tier Storage

A three tier storage system may used for absorbent clay: one drum for new clay, one for clay that has been used but can still be reused, and one for clay that is ready for disposal.

Wring Out Absorbent Pads and Reuse

Reusable absorbent materials clean up releases. A wringer removes liquid from all the pads and from absorbent socks. The recovered liquid is segregated for disposal with the appropriate waste stream and the pads are reused. Each pad used can be wrung-out and reused several times. Once they are exhausted, the pads typically require disposal as hazardous waste.

Many DOD facilities use manual pad wringers with good results. The process is labor intensive but can be managed reasonably within shop personnel's additional duties. Another option is to purchase an electric wringer, which still requires labor for operation but may be less difficult and faster to use.

Properly Maintain Wash Racks

Wash racks must be properly maintained; for example, grit and sludge must be removed regularly. This maintenance will prevent any unnecessary discharge of pollutants into the sewer system.

Non-Phosphate Biodegradable Detergents

Phosphates in many detergents can cause algae blooms, which can lead to eutrophication when discharged to water bodies. Eutrophication can cause the "death" of a lake or other water bodies. Many non-phosphate detergents work as well as their traditional counterparts and are comparable in price.

Mulch/Compost

Landscaping debris such as grass clippings, leaves, pine straw, and pruning debris can be used as mulch. Mulching lessens the amount of material going into the landfill and conserves water by reducing soil evaporation.

Compost is a mixture of decayed plant material used to improve soil quality and add nutrients. Compost is produced by piling grass clippings, leaves, and chipped wood together, then turning and watering it regularly. Kitchen scraps such as fruits and vegetables (no animal products) are an excellent addition to the compost pile. The smaller the ingredients, the sooner the compost will be usable.

Food waste may also be collected and used by local swine farmers.

Radiation Dials

Vehicle and aircraft instruments may contain radioactive materials. When you have such instruments to dispose of, contact the NJARNG Radiation Safety Officer. Radioactive materials must be managed and stored IAW Army TM-38-410, "Storage and Handling of Hazardous Materials."

P2 Protocol Sheets

P2 Protocol Sheets are designed for NJARNG facility processes. Each Protocol Sheet includes the process, process code, material inputs, waste streams, waste reduction tips, and corresponding hazardous waste profile sheets that are located in the Office of Environmental Compliance. Copy the P2 Protocol Sheets from this document and place them at the appropriate process area. For example, place the Oil Changes P2 Protocol Sheet where oil changes occur, so employees can implement pollution prevention initiatives.

This section includes the following Pollution Prevention (P2) Protocol Sheets:

- PC11 Parts Washing
- PC04 Fueling Operations
- PC06 Oil Changes
- PC10 Radiator Flushing
- PC13, PC15 Painting Operations
- PC01 Training/Unit Exercises , PC02 NBC Activities, PC03 Weapons Cleaning
- PC18 Shop and Spill Clean-up
- PC05 Vehicle/Aircraft Washing
- PC07 Brake Maintenance
- PC09 Battery Maintenance
- PC12 Mechanical Work
- PC16 Metal Fabrication
- PC17 Electronics Maintenance
- PC21 Pest Management
- PC25/26 Maintenance Operations

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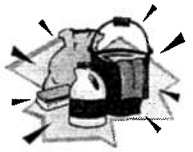
P² PROTOCOL SHEET: PC11 PARTS WASHING

WASTE REDUCTION TIPS:

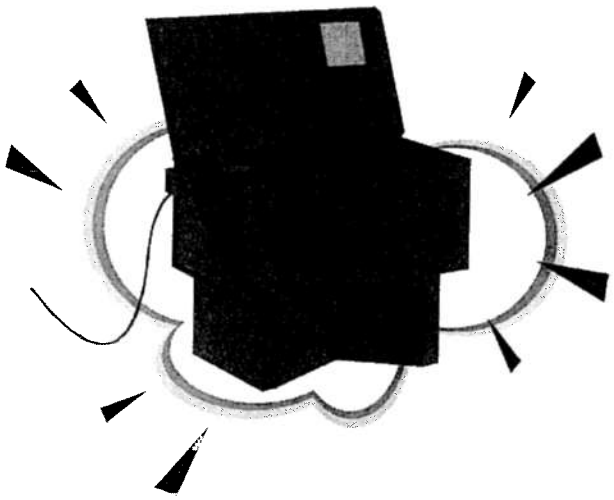
1. Remove heavy grease and dirt with a rag.
2. Keep parts washer closed when not in use.
3. Change parts washer filter regularly.
4. Remove sludge from the parts washer regularly.
5. Skim oil and other floating materials from wash water.
6. Use water or citrus-based cleaners.

PARTS WASHING



MATERIALS

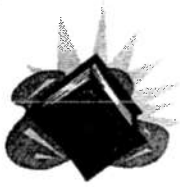
SOLVENT
DETERGENT
RAGS
WATER



WASTES

SLUDGE
USED FILTERS
DIRTY RAGS
USED SOLVENT
AIR EMISSIONS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 008 (Oil Filters)
NJARNG 009 (Grease: Auto/Artillery)
NJARNG 010 (Cleaning Compound Solvent)
NJARNG 010A (Mineral Spirits, Stoddard)
NJARNG 012 (Dry Cleaning Solvent)
NJARNG 035 (Waste Cleaning Compound)

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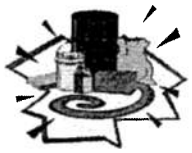
P^2 PROTOCOL SHEET: PC04 Fueling Operations

WASTE REDUCTION TIPS:

1. Prevent accidental mixing of fuels.
2. Filter contaminated fuel and use in non-mission critical vehicles.

FUELING OPERATIONS



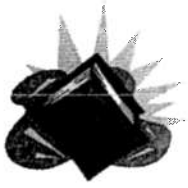
MATERIALS

FUEL
ABSORBENT

WASTES

OFF-SPEC FUEL
USED ABSORBENT
RECOVERED FUEL
CONTAMINATED FUEL
CONTAMINATED SOIL

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 001 (Engine Oil, Hydraulic and Brake Fluid)
NJARNG 003 (Gasoline, Automatic Fuel)
NJARNG 004 (JP-8 Fuel)
NJARNG 005 (Diesel Fuel)
NJARNG 006 (Oil Saturated Spill Cleanup Material)

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P² PROTOCOL SHEET: PC06 Oil Changes

WASTE REDUCTION TIPS:

1. Segregate used oil.
2. Clearly label all containers intended for used oil.
3. Keep used oil receptacles securely closed when not in use.
4. Do not contaminate used oil (water, contaminated oil, etc.).
5. Keep used oil storage receptacles locked when unattended (nights and weekends).
6. Use oil caddies or drip pans.
7. Hot drain used oil filters and segregate used oil.

OIL CHANGES

MATERIALS

CLEAN OIL
OIL FILTERS
RAGS

WASTES

USED OIL
CONTAMINATED OIL
OIL FILTERS
RAGS

WASTE PROFILE SHEETS:

SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 001 (Engine Oil, Hydraulic and Brake Fluid)
NJARNG 006 (Oil Saturated Spill Cleanup Material)
NJARNG 007 (Oil Soaked Rags)
NJARNG 008 (Oil Filters, Gas Diesel Filters)
NJARNG 016 (Synthetic Brake Fluid)
NJARNG 019 (Asbestos Brake Lining)

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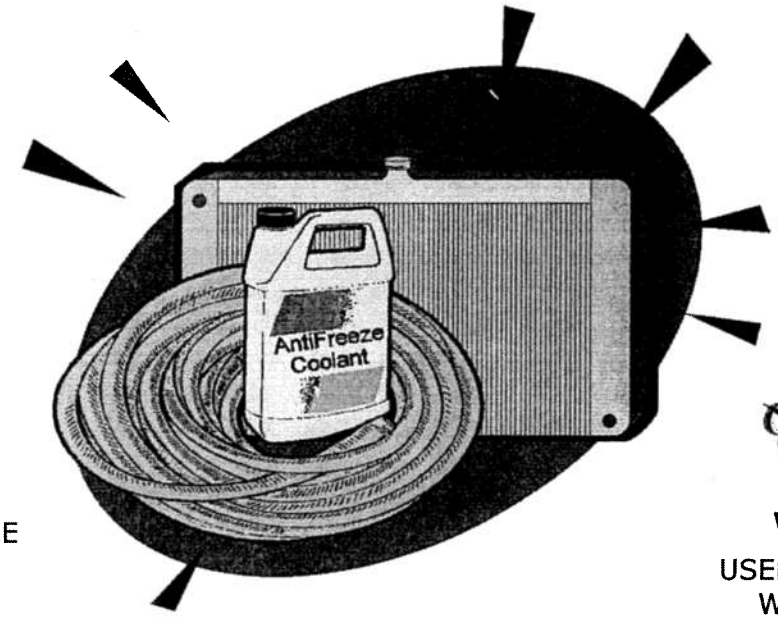
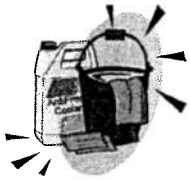
P² PROTOCOL SHEET: PC10 Radiator Flushing

WASTE REDUCTION TIPS:

1. Segregate used antifreeze.
2. Clearly label all containers intended for used antifreeze.
3. Keep used antifreeze receptacles securely closed when not in use.
4. Visually inspect antifreeze; if it is clean, top it off instead of replacing it.
5. Use drip pans.

RADIATOR FLUSHING





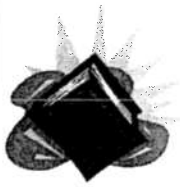
MATERIALS

CLEAN ANTIFREEZE
WATER
RAGS

WASTES

USED ANTIFREEZE
WASH WATER
RAGS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 002 (Antifreeze)

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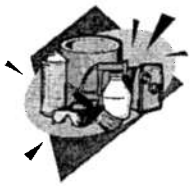
P² PROTOCOL SHEET: PC 13, PC 14 & PC 15 PAINTING OPERATIONS

WASTE REDUCTION TIPS:

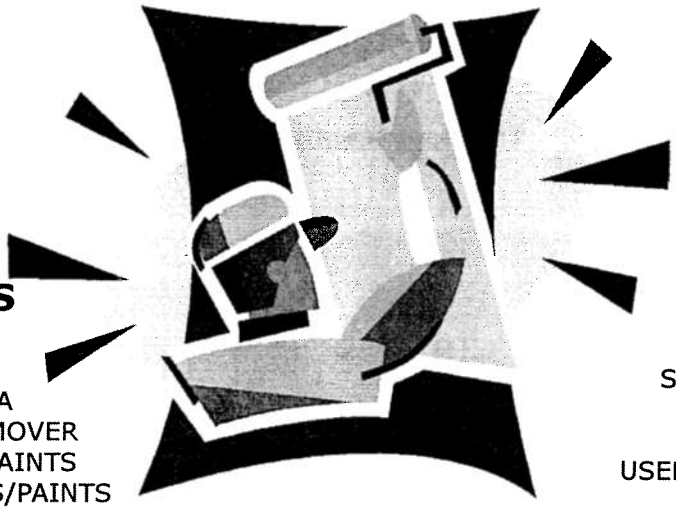
1. Segregate paint & primer waste (latex vs. non-latex, etc.).
2. Schedule painting by color.
3. Use excess paint as base or undercoat.

PAINTING OPERATIONS



MATERIALS

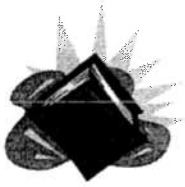
SOLVENTS
SANDPAPER
ABRASIVE MEDIA
CHEMICAL PAINT REMOVER
AEROSOL PRIMERS/PAINTS
NON-AEROSOL PRIMERS/PAINTS
PAINT THINNER
RAGS/BRUSHES



WASTES

SPENT SOLVENTS
PAINT CHIPS
PAINT SLUDGE
USED ABRASIVE MEDIA
THINNERS
EMPTY AEROSOL CANS
EMPTY PAINT CAN
RAGS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 014 (Petroleum Distillates, Naphtha)
NJARNG 017 (Paint Enamel)
NJARNG 023 (Aerosol Paint Cans)

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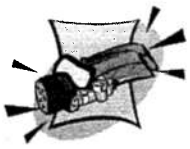
P² PROTOCOL SHEET: PC01 Training/Unit Exercises PC02 NBC Activities PC03 Weapons Cleaning

WASTE REDUCTION TIPS:

1. Segregate waste.
2. Properly label and secure all waste containers.
3. Use drip pans for in-field vehicle repairs.
4. Recycle suitable materials.

Training/Unit Exercises • NBC Activities • Weapons Cleaning



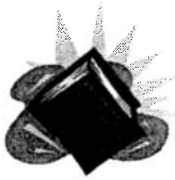
MATERIALS

BATTERIES
MRE HEATERS
GAS MASK CANISTERS
GAS MASK FILTERS
DECON KITS
DS2
DECON LIQUID
WEAPONS CLEANING PATCHES
CLP
RAGS

WASTES

SPENT BATTERIES
SPENT MRE HEATERS
EMPTY GAS MASK CANISTERS
USED GAS MASK FILTERS
SPENT DECON KITS
DS2 DECON LIQUID
WEAPONS CLEANING PATCHES CLP
RAGS
VARIOUS VEHICLE FLUIDS (USED OIL, ANTIFREEZE, TRANSMISSION FLUID, HYDRAULIC FLUID, ETC.)

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 013 (Sulfuric Acid)
NJARNG 018 (Sand/Oil/Water Mix from Vehicle Washing)
NJARNG 020 (Battery 1000 Series)
NJARNG 030 (Gas Mask Training)
NJARNG 032 (DS2 Decon Agent)
NJARNG 033/034 (NiCad Storage/Dry Batteries)
NJARNG 035 (Waste Cleaning Compound and Diesel Fuel)
NJARNG 040 (Hydrochloric Acid)
NJARNG 041 (Ferric Chloride)

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P² PROTOCOL SHEET: PC18 Shop and Spill Clean-up

WASTE REDUCTION TIPS:

1. Used non-phosphate, biodegradable detergents.
2. Use lightweight absorbents.
3. Separate used absorbent by type of material spilled.
4. Compact used absorbent pads before disposal.
5. Wring out absorbent pads and reuse (wring out in appropriate waste container).
6. Use absorbent 3-tiered storage system:

SHOP AND SPILL CLEAN-UP

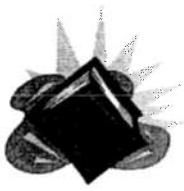
MATERIALS

ABSORBENTS
ALKALI FLOOR CLEANER
ABSORBENT "KITTY LITTER"
RAGS
WATER

WASTES

HAZARDOUS/NON-HAZARDOUS
USED ABSORBENTS
WASTE RAGS
WASTE WATER

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 006 (Oil Saturated Spill Cleanup Material)
NJARNG 029 (Corrosion Fingerprint Remover Preventive)
NJARNG 039 (Oil-Contaminated Soil)

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P² PROTOCOL SHEET: PC05 VEHICLE/ AIRCRAFT WASHING

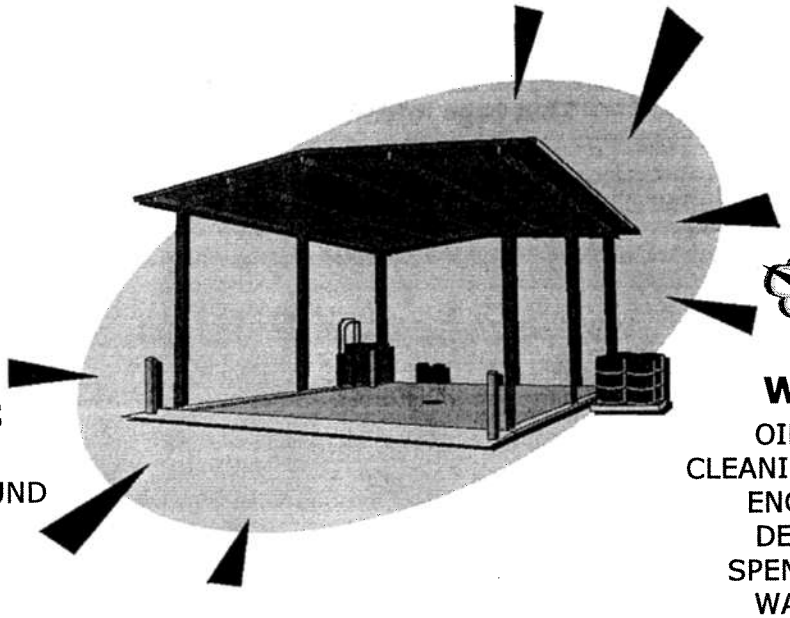
WASTE REDUCTION TIPS:

1. Use only approved wash racks.
2. Use non-phosphate, biodegradable detergents.
3. Use high pressure hoses.
4. Install automatic shut off nozzles.

VEHICLE/AIRCRAFT WASHING

MATERIALS

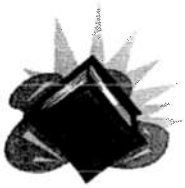
DETERGENTS
CLEANING COMPOUND
RAGS
GAS PATH
WATER



WASTES

OILY SLUDGE
CLEANING COMPOUND
ENGINE WASH
DETERGENTS
SPENT GAS PATH
WASTE RAGS
WASTE WATER

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 035 (Waste cleaning compound)

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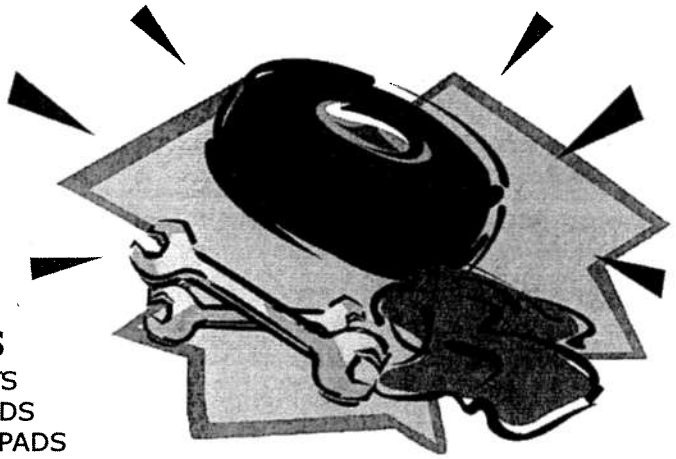
P² PROTOCOL SHEET: PC07 Brake/Maintenance

WASTE REDUCTION TIPS:

1. Remove heavy grease/dirt from brakes with a rag.
2. Replace asbestos brake pads with non-asbestos brake pads.
3. Maintain brake fluid on a regular basis.
4. Use synthetic brake fluid if possible.

BRAKE MAINTENANCE



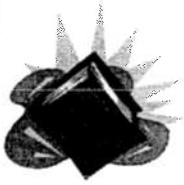
MATERIALS

GREASE/LUBRICANTS
ASBESTOS BRAKE PADS
NON ASBESTOS BRAKE PADS
BRAKE FLUID
SOLVENT-BASED BRAKE CLEANER
AEROSOL BRAKE CLEANER
RAGES

WASTES

BRAKE SHOES
ASBESTOS
GREASE/LUBRICANTS
BRAKE FLUID
WASTE RAGS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 010 (Cleaning compound solvent)
NJARNG 019 (Asbestos brake lining)
NJARNG 016 (Synthetic brake fluid)
NJARNG 001 (Engine oil, hydraulic and brake fluid)

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P² PROTOCOL SHEET: PC09 BATTERY MAINTENANCE

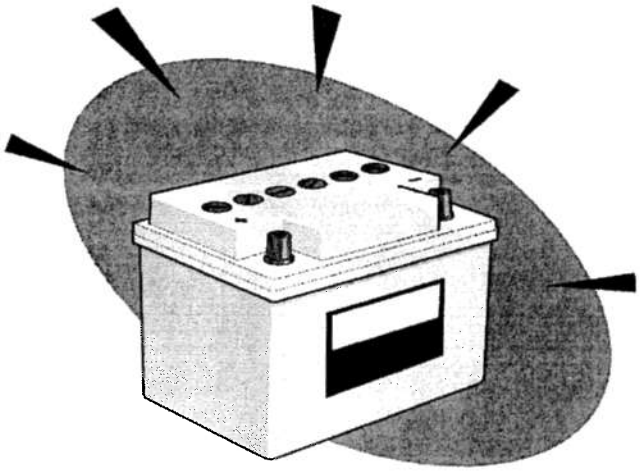
WASTE REDUCTION TIPS:

1. Maintain proper levels of battery solution/acid and keep electrodes clean.
2. Replace old batteries with longer lasting batteries.
3. Properly store new and used batteries.

BATTERY MAINTENANCE

MATERIALS

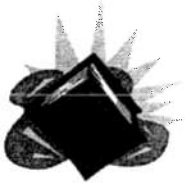
SULFURIC ACID
TIN ALLOY SOLDER
AEROSOL SOLVENT
BAKING SODA
NEW SEALED BATTERIES
WASTE
RAGS



WASTES

SPENT BATTERIES
WASTE RAGS

WASTE PROFILE SHEETS:



See the following HW profile sheets for proper disposal:

NJARNG 013 (Sulfuric Acid)
NJARNG 020 (Battery 1000 Series)
NJARNG 033/034 (NiCad Storage/Dry Batteries)
NJARNG 040 (Hydrochloric Acid)

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P² PROTOCOL SHEET: PC12 MECHANICAL WORK

WASTE REDUCTION TIPS:

1. Remove heavy grease and dirt with a rag.
2. Maintain fluid levels on a regular basis (power steering, engine oil, transmission).
3. Change oil/gas filters regularly.
4. Use water or citrus-based cleaners where possible.
5. Use synthetic engine oil for prolonged use and reduction in oil changes.

MECHANICAL WORK

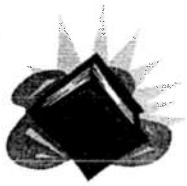
MATERIALS

GREASE/LUBRICANTS
HYDRAULIC FLUID
TRANSMISSION FLUID
CARBURETOR CLEANER
POWER STEERING FLUID
LIQUID SOLVENTS
ENGINE OILS
FUEL FILTERS

WASTES

JUNK PARTS
SOLVENTS
HYDRAULIC FLUID
TRANSMISSION FLUID
GREASE/LUBRICANTS
WASTE RAGS
USED OIL
FUEL FILTERS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 035 (Waste cleaning compound and diesel fuel)
NJARNG 008 (Oil filters)
NJARNG 009 (Grease: auto)
NJARNG 001 (Engine oil, hydraulic and brake fluid)
NJARNG 010 (Cleaning Compound solvent)

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P² PROTOCOL SHEET: PC16 METAL FABRICATION

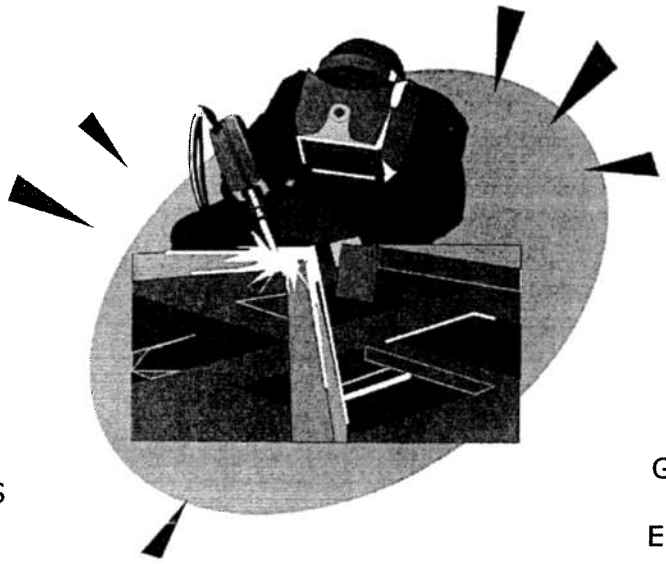
WASTE REDUCTION TIPS:

1. Recycle and reuse as much scrap metal as possible.
2. Use water or citrus-based solvents and cleaners.
3. Crush & empty aerosol cans using the appropriate puncturer.

METAL FABRICATION

MATERIALS

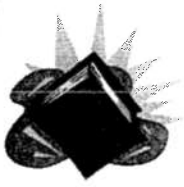
SHEET METAL
CUTTING OIL
GREASE/LUBRICANTS
SOLVENTS
RAGS



WASTES

METAL SCRAP
CUTTING OIL
GREASE/LUBRICATION
SOLVENTS
EMPTY AEROSOL CANS
WASTE RAGS
METAL SHAVINGS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 007 (Oil soaked rags)
NJARNG 010A (Mineral spirits)
NJARNG 023 (Aerosol paint cans)

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P² PROTOCOL SHEET: PC17 ELECTRONICS MAINTENANCE

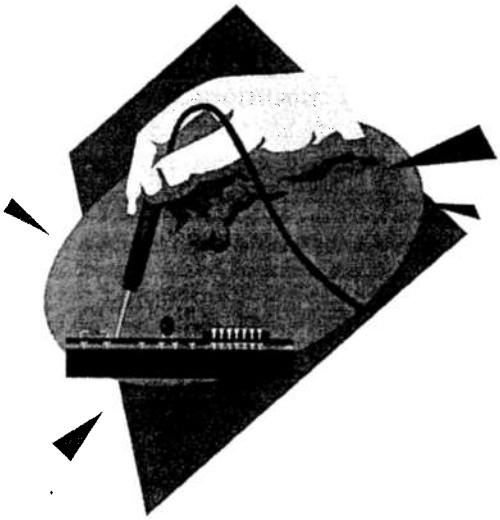
WASTE REDUCTION TIPS:

1. Recycle/reuse solder and other suitable materials as appropriate.
2. Remove dirt and debris with a rag.
3. Use water or citrus-based cleaners/solvents.
4. Properly label and secure all waste containers.

ELECTRONICS MAINTENANCE

MATERIALS

SOLVENTS
ADHESIVES
VACUUM-FILLED TUBES
CIRCUIT BOARDS
BATTERIES
SWABS
SOLDER
CLEAN RAGS/SWABS

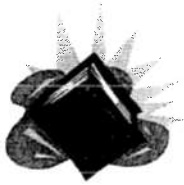


WASTES

SOLVENTS
ADHESIVES
VACUUM-FILLED TUBES
CIRCUIT BOARDS
BATTERIES
SWABS
SOLDER
WASTE RAGS

WASTE PROFILE SHEETS:

SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:



NJARNG 010 (Cleaning compound solvent)
NJARNG 012 (Dry cleaning solvent)
NJARNG 035 (Waste cleaning compound)
NJARNG 013 (Sulfuric acid)
NJARNG 040 (Hydrochloric acid
NJARNG 041 (Ferric chloride)\
NJARNG 032 (Decon agent)
NJARNG 020 (Battery 1000 series)
NJARNG 033/034 (NiCad storage/dry batteries)

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P² PROTOCOL SHEET: PC21 PEST MANAGEMENT

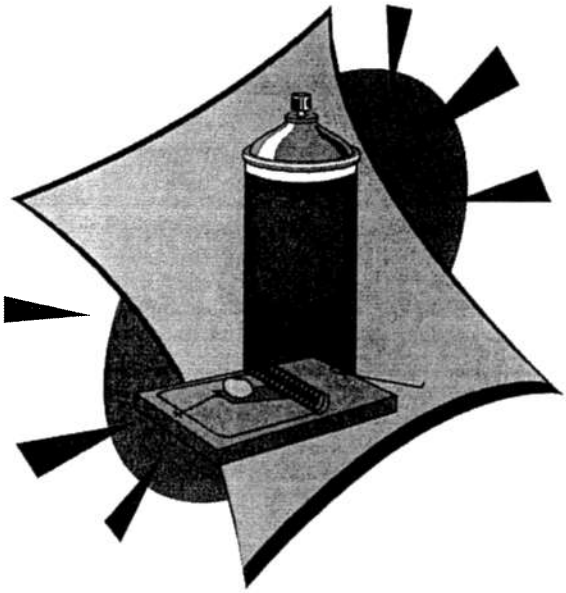
WASTE REDUCTION TIPS:

1. Avoid handling & use of restricted-use pesticides.
2. Use biodegradable baits/traps where possible. Substitute organic-containing products for the more toxic chemicals.
3. Wear appropriate personal protection (e.g. reusable gloves).
4. Rinse equipment with water or citrus-based cleaner.
5. Crush/empty aerosol cans with appropriate puncturer.

PEST MANAGEMENT

MATERIALS

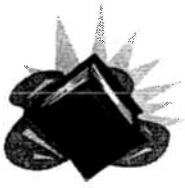
PESTICIDES
BAITS
TRAPS



WASTES

PESTICIDES RESIDUE
EMPTY CONTAINERS
WASTE RAGS
EMPTY AEROSOL CANS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 023 (Aerosol cans)

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P² PROTOCOL SHEET: PC25/26 Maintenance Operations

WASTE REDUCTION TIPS:

1. Use drip pans for engine work.
2. Remove excess dirt and grease with a rag.
3. Use clean fuel and prevent accidental mixing of fuels.
4. Use recycled/used oil for heating oil where possible.
5. Ensure proper ventilation for gas path releases.

MAINTENANCE OPERATIONS

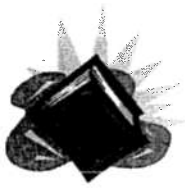
MATERIALS

GAS PATH
ENGINE CLEANER
CLEAN FUEL
HEATING OIL

WASTES

WASTE METAL
HYDROCARBONS IN AIR
RAGS

WASTE PROFILE SHEETS:



SEE THE FOLLOWING HAZARDOUS WASTE PROFILE SHEETS FOR PROPER DISPOSAL:

NJARNG 007 (Oil-soaked rags)
NJARNG 00003 (Gasoline, automatic fuel)
NJARNG 004/005 (JP8, diesel fuel)

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Pollution Prevention Opportunity Assessments

An effective P2 program requires an ongoing search for opportunities to reduce the amount of hazardous materials used and waste generated. New opportunities are sought by continuously evaluating inputs, processes, and outputs of NJARNG operations through Pollution Prevention Opportunity Assessments (PPOA). A PPOA is a systematic approach to identifying and assessing opportunities for waste reduction. To determine the most feasible alternatives for waste reduction, PPOAs include a review by the Pollution Prevention Assessment Team (PPAT) of all the processes at an individual facility and the total waste generated by type (hazardous, non-regulated, etc.) and volume. A PPOA has three goals:

- Reduce hazardous and non-regulated wastes
- Conserve resources such as energy and water
- Prevent or minimize pollutant releases to all environmental media from all operations and site activities

Conducting a Pollution Prevention Opportunity Assessment

New opportunities to reduce the amount of hazardous materials used and wastes generated are sought by continuously evaluating NJARNG operations through PPOAs. Conducting PPOAs regularly will help determine additional opportunities to reduce or minimize waste streams from all pollutant sources throughout the NJARNG.

STEP 1. Select a Process

- Keep the PPOA within a manageable scale.
- Examine existing hazardous materials and/or hazardous waste data. They may reveal a "target of opportunity."
- Consider command priorities (antifreeze, used oil, etc.), regulatory priorities (current compliance issues), and environmental priorities (EPA's ODC or Toxic 17).
- Determine supply practices for the potential opportunity.
- Determine command and technical order requirements and constraints.
- Do not accept "That is the way we have always done it." Check the specifics.

NOTE

Dilution is not the solution to pollution.
In the long run, it is easier to reduce or eliminate waste at the beginning of a process than to treat or clean contaminated material.
Mixing waste streams will make treatment more difficult.
Do not switch pollution from one medium to another, such as air pollution to water pollution or vice versa.

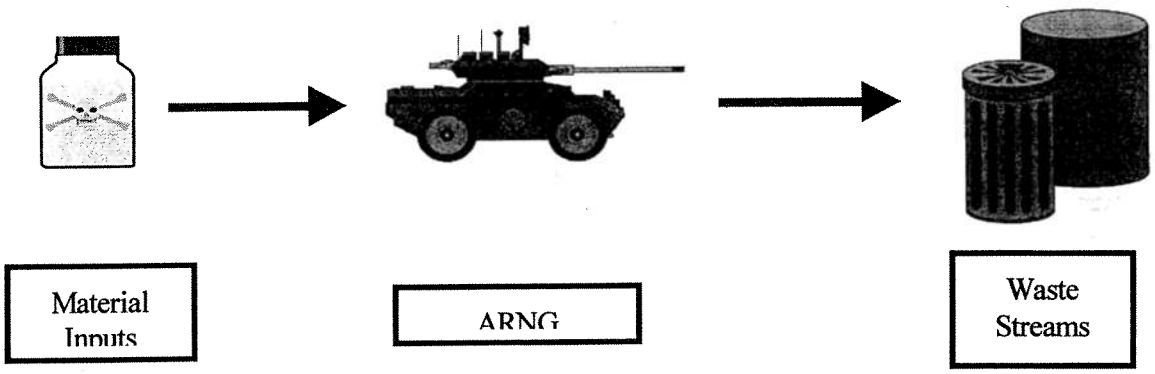
STEP 2. Examine the Process

Process mapping graphically illustrates the input, process, and output of a system:

- *Input* includes materials, manpower, equipment, and other resources
- *Process* represents the work that is accomplished, such as training, painting, or other maintenance items
- *Output* includes the final product, waste streams, and unnecessary use of resources like energy and water

Consult the process descriptions, waste stream matrix, and material inputs matrix as a tool to help examine the process being evaluated.

Process Flow Diagram



To map your processes, follow the steps below:

1. Review available data sources:

   - Regulations and permits (federal, state, and local)
   - Facility/shop inventories
   - Equipment lists
   - Process descriptions
   - Raw material/production information
   - Cost accounting reports
   - Organizational charts

2. Gather information on the process, hazardous materials use, and waste production.

3. Develop a process flow diagram using the PPOA Activity Flow Diagram Worksheet (Worksheet 2) on page 4-15:

   - Show activities and processes
   - Show raw materials (inputs)
   - Show waste (outputs)

4. Quantify material use and waste generation, entering the information on the PPOA Activity Flow Diagram Worksheet (Worksheet 2) on page 4-15.

Step 3. Establish a Baseline

A baseline inventory of HM use and HW generation at an activity is essential for measuring the success of a P2 initiative. Baseline data can target specific waste streams or materials for reduction efforts, and establishes a quantified starting point from which progress is measured.

Collect materials data from the following sources:

- Supply records
- Physical inventories
- Work orders

Use the following sources to identify wastes:

- Hazardous waste manifests
- Solid waste disposal records
- "Dumpster dives"
- TRI data
- Spill data
- Air emissions inventories

Step 4. Identify Opportunities

Some common categories of P2 Opportunities include

- Material reuse
- Inventory control
- Policy changes
- Procedural changes
- Material inventory control
- Material substitution
- Solvent substitution
- Waste stream segregation
- Recycling
- Housekeeping practices
- Training

- Technology needs
- Equipment modifications
- Equipment purchases

Some examples of P2 Opportunities for media such as water, air, hazardous waste, and hazardous materials management include the following generally accepted methods:

Water Conservation

- Recycle process water as much as possible
- Use less water to reduce the amount of wastewater discharged
- Use various treatment methods, such as filtration, to reduce the amount of pollutants that wastewater carries
- Use treated wastewater for other uses, including process water, rather than using drinking water as a primary process water source

Air-Emissions Reduction

- Seal VOC-bearing containers tightly and keep lids on them when not in use
- Switch from diesel fuels to compressed natural gas where possible
- Limit wood burning
- Convert to low-sulfur fuels where possible
- Find ways to drive fewer miles
- Install air pollution control devices on the process for particulate and toxic air pollutants
- Use energy efficient compact fluorescent bulbs instead of the common incandescent light bulb
- Participate in a local utility's energy conservation program
- Avoid spilling gasoline and petroleum products
- Replace refrigerants and air conditioning equipment with EPA-approved ozone-depleting substitutes and refrigeration equipment
- Recycle or reclaim refrigerants where possible

Hazardous Waste Reductions

- Simple improvements for vapor degreasers and metal plating/finishing operations can reduce or minimize hazardous waste generated
- Using techniques such as filtration, carbon adsorption, dialysis, ion exchange, decanting, and micro filtration prolong the life of chemical solutions

Hazardous Material Reductions

- Substitute less hazardous materials when possible
- Recycle and reuse products
- Change products and processes
- Track inventory to use products before they expire
- Handle material carefully to reduce damage

Step 5. Rank and Select Opportunities

Once the PPOA is completed, the PPAT develops priorities and ranks the identified alternatives according to compliance with regulatory issues, impact to mission, environmental benefits, ease of implementation, and cost savings. Other elements to consider include:

- Cost of implementation
- Length of payback period
- Health and safety issues
- Compatibility and availability of other chemicals and/or processes

Before selecting an opportunity, the PPAT needs to consider the following questions:

- How complex is the process?
- Would secondary waste streams require additional processing not now available?
- Does the selected opportunity improve or impact worker health and safety?
- How much will the selected opportunity reduce material use or waste?
- What are the costs and payback periods?
- Is there a trained workforce?
- Will special training be necessary?

Implementing Selected Opportunities

Implementing P2 opportunities is a three-step process:

1. Obtain approval
2. Obtain funding
3. Include training

Obtain Approval

Most processes considered for P2 modification are subject to Lubrication Orders (LOs), Technical Manuals (TMs), or MILSPECS. You must get proper approval before implementing any change.

Obtain Funding

Competition for funding is tough. Know the facts about the selected opportunity. Funds may be available for P2 initiatives from proceeds derived from the recycling program.

Include Worker Training When Necessary.

Adequate training will ease the transition and ensure success.

Reviewing Results

To evaluate the success of a particular P2 project, the activity or unit should set clear milestones that can be achieved in a measurable period of time. Examples of project milestones include performing a specified PPOA, choosing a pollution prevention option, or purchasing a piece of equipment needed to fulfill the P2 initiative. You must also identify any additional data you will need, such as waste generation statistics, chemical release rates, production rates, and power and water use statistics.

Evaluating information from the hazardous material inventories and hazardous waste generation reports will define the overall program's successes and failures or the need for further data collection.

To review results, check the following sources:

- Track data to compare with the baseline
- Compare past performance with current performance
- Document success
- Update baseline and progress towards goals
- Strive for continuous improvement

CONTINUOUS IMPROVEMENT ETHIC

"Improve constantly and forever the system of production and service to improve quality and productivity and thus constantly decrease costs."
Deming

Product Substitution and Affirmative Procurement

An important part of a successful P2 program is incorporating product substitution and affirmative procurement. Product substitution means replacing a chemical with an environmentally preferable alternative, while affirmative procurement means procuring products that contain recycled or reclaimed material.

Product Substitution

The Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act (RCRA) established that hazardous waste be reduced or eliminated to the extent possible. As a result of this, environmentally preferable products have emerged to replace the previously used hazardous material. Product substitution can help reduce hazardous waste, save money, and protect employees.

Many resources are available for finding information, assistance, and guidance on product substitution. Following is a resource table for product substitution involving vehicle maintenance operations.

Resource	*Description*	*Resource Information*
General Services Administration (GSA)	Provides information on environmental products	Ph: 817-978-2604 x 3002 Fax: 817-978-8661 Website: http://www.gsa.gov
EnviroSense	EPA website that has a variety of environmental information	Website: http://www.epa.gov.envirosense
Defense General Supply Center Hazardous Technical Information Service	Provides information on environmentally preferred products	Ph: 800-848-4847 DSN: 695-5168 Website: http://www.dscr.dla.mil
EPA Pollution Prevention Directory	Contains pollution prevention resources, projects, programs, and the Pollution Prevention Information Clearing House (PPICH)	Ph: 202-260-1023 Fax: 202-260-4659 Website: http://www.epa.gov/opptintr/p2home
EPA Solvent Alternative Guide and Solvents Database	Provides guidance for various solvent and process alternatives, products, and substitutes	Website: http://clean.rti.org/altern.cfm

Resource	Description	Resource Information
EPA Significant New Alternatives Policy Program (SNAP)	Contains a list of approved substitutes for ozone-depleting substances and refrigerants	Website: http://www.epa.gov/ozone/title6/snap
Army Acquisition Pollution Prevention Support Office (AAPPSO)	Provides information on the Army ODC Program and Hazardous Material Elimination Program	Ph: 703-617-9488 Website: http://www.aappso.com
DENIX	Provides information, communication, and resources for P2	Website: http://www.denix.osd.mil

Affirmative Procurement

Affirmative procurement means purchasing items that are manufactured from recycled and reclaimed materials, as opposed to items manufactured from virgin materials. Purchasing items made of recycled/reclaimed material lowers the demand for virgin material.

In response to RCRA Section 6002 and EO 13101, EPA produced the Comprehensive Procurement Guide (CPG) or Guideline Items. The CPG outlines 24 items in seven categories that are available with recycled content or can be recycled on-site. In 1996, EPA proposed adding recycled content guidelines for 13 of these items. These content standards are located in EPA's Recovered Materials Advisory Notice (RMAN). EPA's Comprehensive Procurement Guide or Guideline Items provide specific environmental data for products, such as recycled content and environmental impacts, at all stages of the life cycle of the products.

Many resources are available for finding information, assistance, and guidance on affirmative procurement. Following is a resource table for affirmative procurement involving vehicle maintenance operations.

Resources	Description	Resource Information
Environmental Products Guide	GSA Supply Catalog and Federal Supply Schedules that provides information on the acquisition of engine coolant reclamation systems	Ph: 817-334-5215
DLA Environmental Products Catalog	Supply source for environmental products from the DLA	Ph: 800-352-2852 DSN: 695-5699

Resources	*Description*	*Resource Information*
The Official Recycled Products Guide	Directory of recycled-content products, manufacturers, and distributors	Ph: 800-267-0707
EPA's Reduce, Reuse, Recycle...Through Procurement Website	Information on the Comprehensive Procurement Guidelines and the purchase and use of products containing recovered material	RCRA Hotline: 800-424-9346 Website: http://www.epa.gov/epaoswer/non-hw/
Office of the Federal Environmental Executive (OFEE)	Resources to help government agencies learn about CPG designated products	Ph: 202-260-1297

Shelf-Life Program

This section covers the NJARNG shelf-life program and how it is an important part of Pollution Prevention in New Jersey.

Shelf-life is the total period of time that an item may remain in the storage system and still remain suitable for issue. It begins with the date of manufacture, cure assemble, pack, or inspect/test/restorative action.

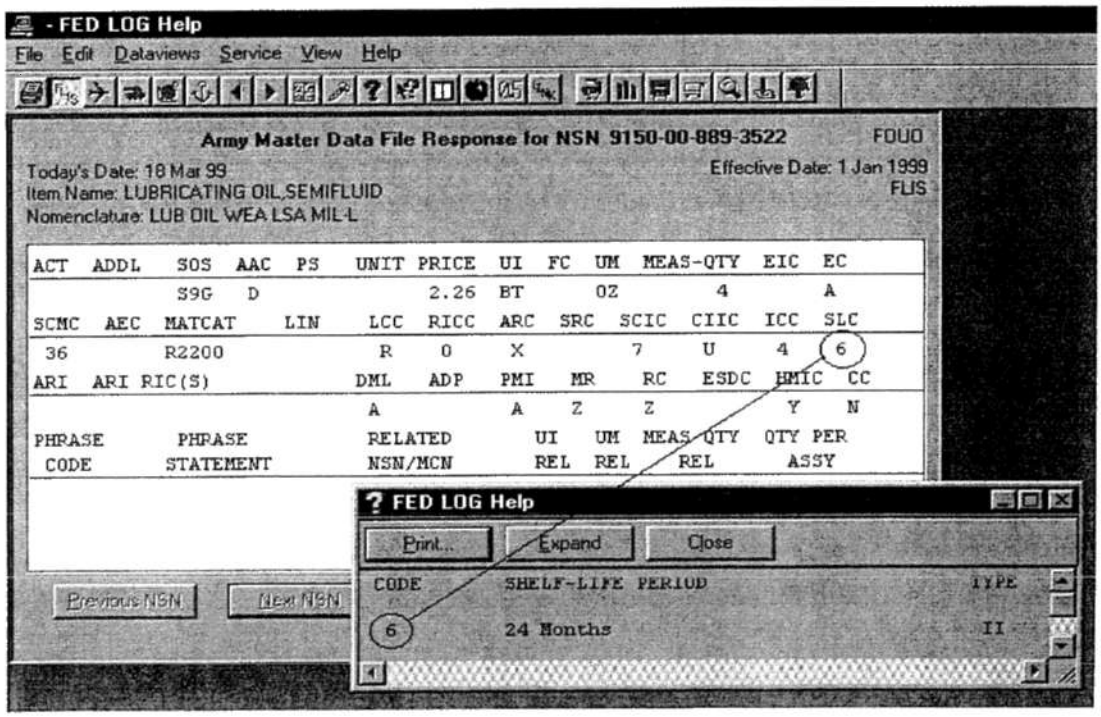
HAZMAT purchased locally usually do not have a published expiration date. Call the manufacturer to establish a shelf-life for these items.

Half of the HMs purchased through the military supply system are non-shelf-life items and can be used indefinitely or until the item becomes unserviceable. Some items were distributed before the shelf-life marking requirements became effective and are still in service.

Shelf-Life or Nonshelf-Life

To determine if an item is a shelf-life or non-shelf-life item,

STEP 1. Access FEDLOG Army Master Data File on Compact Disc.
STEP 2. Enter the National Stock Number (NSN).
STEP 3. Highlight the information in the SLC column and click the right mouse button.



Materials with expiration dates are classified as either Type I or Type II.

Type I Materials

Containers of Type I materials have an alphabetical shelf-life code and an expiration date. These materials are not extendible. DOD policy requires that Type I HAZMAT be used or disposed of within 30 days of the expiration date.

Type II Materials

Containers of Type II materials have a numeric shelf-life code and either a test date or an inspection date. These materials may be extended through visual inspection or laboratory testing:

To extend by	*Consult the*
Visual Inspection	Military Quality Control Storage Standard (MQCSS) at www.shelflife.hq.dla.mil. The MQCSS provides information from the NSN on how to visually inspect an item and how many times an item may be extended.
Laboratory Testing	Quality Status Listing (QSL) at www.shelflife.hq.dla.mil. The QSL provides laboratory testing data for HAZMAT.

NOTE

You must use, extend, or dispose of Type II chemicals within 90 days of their expiration date.

Extending Type II Materials

You must use, extend, or dispose of Type II chemicals within 90 days of their expiration date. To extend Type II materials,

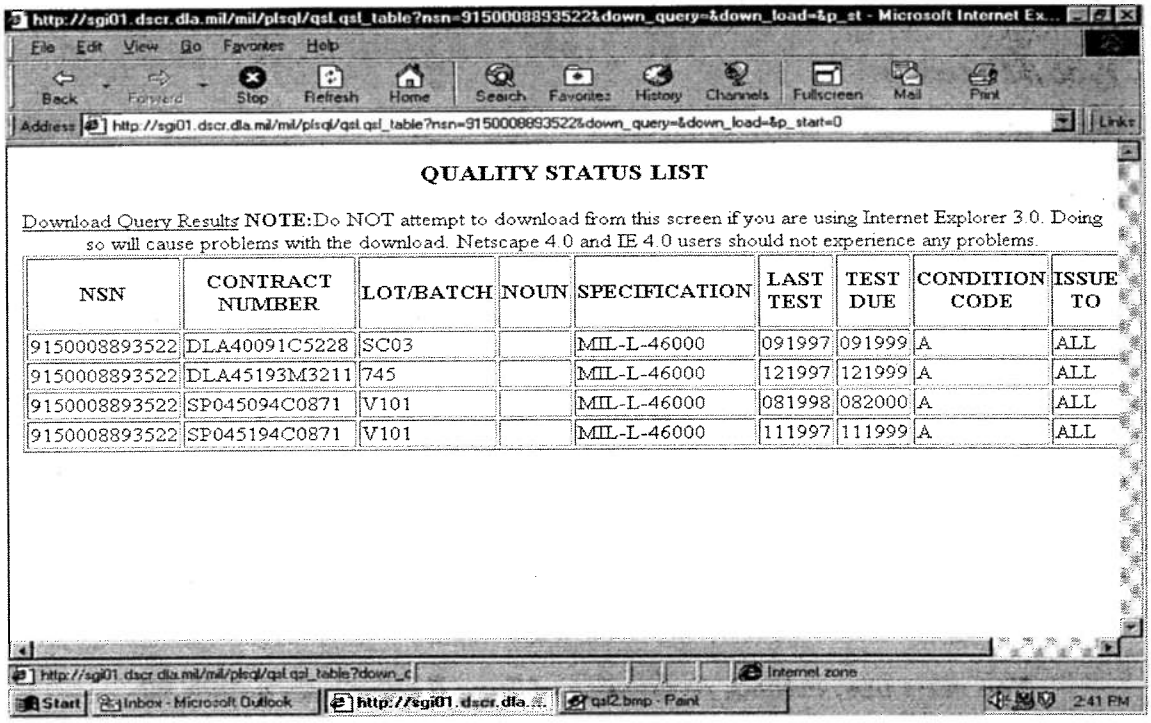
STEP 1. Visually inspect the containers for rust, severe dents, punctures or other signs of mismanagement. From the container label, find the Product Name, NSN, Date Manufactured, and Batch #.

If the containers are in good condition, they are eligible for extension. Continue to STEP 2.

If the containers are not in good condition, process them for disposal IAW the NJARNG Desktop Guidebook for Environmental Compliance.

STEP 2. For DLA items, check the QSL. The QSL provides laboratory testing data for DLA HMs only. The QSL is located at http://www.shelflife.hq.dla.mil. To gain access to this internet site, you must have an internet domain name ending with ".gov" or ".mil."

For non-DLA items, continue to STEP 5.



QUALITY STATUS LIST

Download Query Results NOTE:Do NOT attempt to download from this screen if you are using Internet Explorer 3.0. Doing so will cause problems with the download. Netscape 4.0 and IE 4.0 users should not experience any problems.

NSN	CONTRACT NUMBER	LOT/BATCH	NOUN	SPECIFICATION	LAST TEST	TEST DUE	CONDITION CODE	ISSUE TO
9150008893522	DLA40091C5228	SC03		MIL-L-46000	091997	091999	A	ALL
9150008893522	DLA45193M3211	745		MIL-L-46000	121997	121999	A	ALL
9150008893522	SP045094C0871	V101		MIL-L-46000	081998	082000	A	ALL
9150008893522	SP045194C0871	V101		MIL-L-46000	111997	111999	A	ALL

STEP 3. Enter the item's NSN and click QUERY.

STEP 4. Match the Contract Number and/or the Lot/Batch number located on the container with one of the entries on the screen.

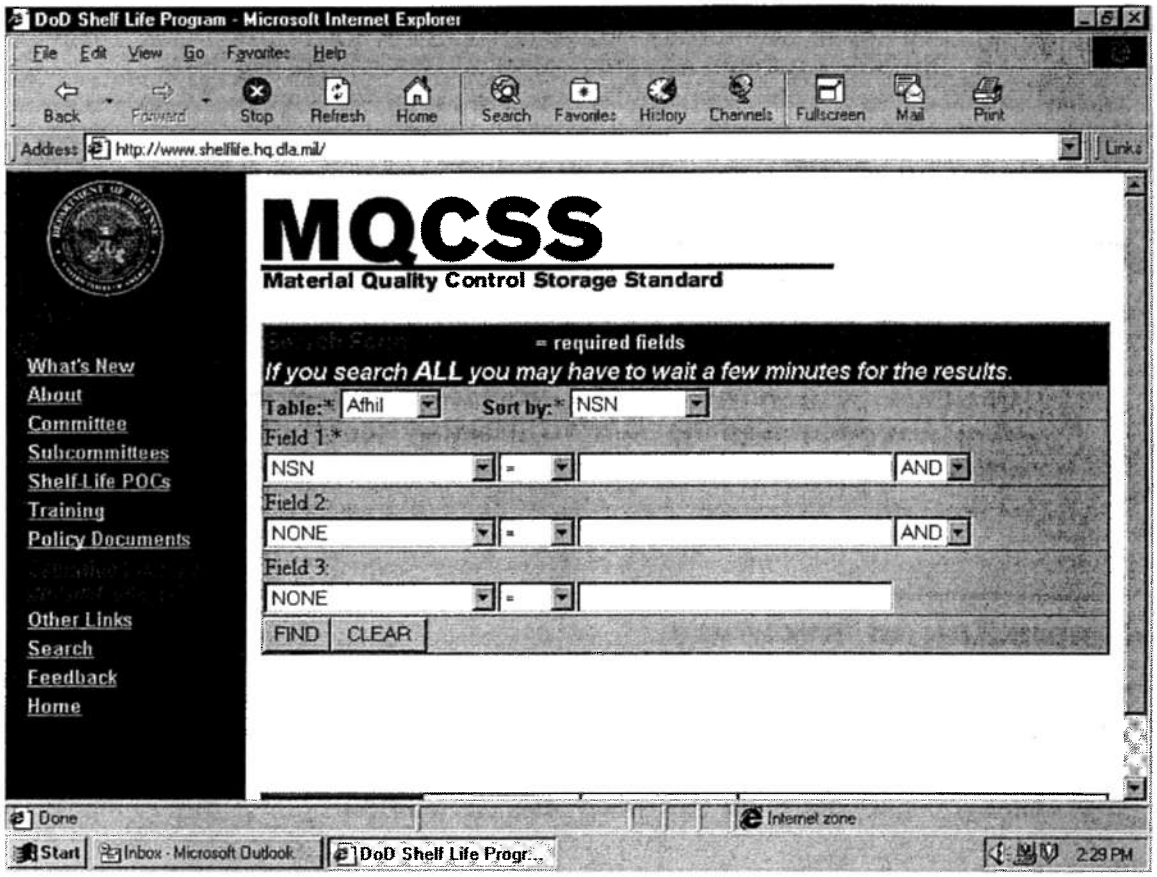
If the item is listed, skip to STEP 7.

If the item is not listed, continue to STEP 5.

STEP 5. Items not listed on the QSL can be found on the Material Quality Control Storage Standard (MQCSS). The MQCSS is also located at http://www.shelflife.hq.dla.mil. To gain access to this internet site, you must have an internet domain name ending in ".gov" or ".mil."

The MQCSS provides the following information:

- SLF LIFE MONTH - shelf-life time limits
- SLF LIFE TYPE - Type I or Type II
- FIRST INSP MONTH - the first inspection month from the time of delivery
- RE INSP MONTH - the next inspection month
- RE INSP LIMIT - how many times an item may be extended



STEP 6. Select ALL in the Table column, enter the item's NSN in the appropriate column, and click FIND:

- If the item is retrieved by the MQCSS, continue to STEP 7
- If the item is not retrieved by MQCSS, contact the Environmental Office for guidance

STEP 7. If the item can be extended, use the data to either complete a Shelf Life Extension Form (DD Form 2477) and attach it to the container, or mark each container with the following information, if not already present:

- NSN
- Lot/Batch Number
- Date Tested (day visually extended or QSL date)
- Next inspection/test date
- Authority (QSL, MQCSS, laboratory name)
- Initials of person who inspected and extended the item

The Shelf-Life Extension Notice is located at http://www.shelflife.hq.dla.mil.

STEP 8. Place the item back into service.

NOTE

If the HM is not useful or cannot be extended for any reason, dispose of it in accordance with the NJARNG Desktop Guidebook for Environmental Compliance.

Conducting an Inventory

To help maintain the Shelf-Life Program, the Shop Supervisor will ensure that an inventory is taken of every storage locker, room, warehouse, and rack once per quarter. This inventory will be turned in to the NJARNG Hazardous Waste Program Manager and posted outside each storage location.

Chapter 4

SUPPORT INFORMATION

This chapter provides the following support information for the NJARNG P2 Plan:

Glossary

The following definitions are specific to this Plan. In some cases, these definitions may vary from those found in the regulations as they are summarized or are a composite of definitions from different regulations.

Affirmative Procurement - Purchasing items that are manufactured from recycled and reclaimed materials, as opposed to items manufactured from virgin materials.

Disposal - Generally refers to land disposal at permitted facilities, but may also include wastewater effluent discharged to surface waters. Least favorable waste management alternative because of the harmful effects these wastes can have on the environment.

Environmental Quality Control Committee (EQCC) - Coordinates activities of the environmental programs covered in AR 200-1. The EQCC, chaired by the OTAG Chief of Staff, advises the Adjutant General on environmental priorities, policies, strategies, and programs. The EQCC consists of members representing the operational, engineering, planning, resource management, legal, medical, and safety interests of the NJARNG.

Hazardous Chemical - Any element, chemical compound, or mixture of elements and compounds that is a physical hazard or a health hazard. Chemicals with physical hazards include combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophoric chemicals that will ignite spontaneously in air, unstable chemicals, and water-reactive chemicals. Chemicals with health hazards are those for which there is significant evidence that the chemical has an acute or chronic effect on the health of exposed people.

See 29 CFR 1910.1200, Appendix A and Appendix B for further definitions, explanations, and criteria for identifying hazardous chemicals.

Hazardous Material (HM or HazMat) - Defined by the U.S. Department of Transportation (DOT) as anything that, due to its chemical, physical, or biological nature, causes safety, public health, or environmental concerns. Hazardous materials include hazardous waste and materials exhibiting explosive, flammable, corrosive, and oxidizing properties

Hazardous Substance - In general, any material that may pose a substantial hazard to human health or the environment. For the purposes of this Plan, a hazardous substance is any of the following:

- Any hazardous waste having the characteristics identified under the RCRA
- Any material regulated as a hazardous material per DOT
- Any material that requires an MSDS per OSHA
- Any substance designated according to CERCLA, CWA, CAA, or TSCA

Hazardous Substance Control Group (HSCG) - Working group of the EQCC that seeks to improve management of HM and HW within the NJARNG. Involves implementing an integrated management approach needed to maintain compliance with environmental regulations and to achieve Pollution Prevention objectives.

Hazardous Waste - A solid waste is a hazardous waste if it meets either of the following criteria and it is not specifically excluded from regulation as a hazardous waste:

- It is ignitable, corrosive, reactive, or toxic as measured by standard test methods or as can be reasonably determined by generators through knowledge of the waste generating process.
- It is a specifically listed as such in 40 CFR 261, Subpart D

HAZMAT Employee - Personnel in the NJARNG who load, unload, or handle hazardous materials or prepare them for shipment; also personnel responsible for hazardous materials transportation safety or who operate a vehicle used to transport hazardous materials.

Material Safety Data Sheet (MSDS) - A collection of information required by the Occupational Safety and Health Administration Hazard Communication Standard. Includes the identity of hazardous chemicals, health and physical hazards, exposure limits, and safety precautions.

Personal Protective Equipment (PPE) - Any protective clothing or device worn by the employee to prevent contact with, and exposure to, hazardous materials

in the work area. Examples include protective aprons, goggles, face splash shields, eye protection, and various types of respiratory protection.

Pollution Prevention (P2) - Source reduction and other practices that reduce or eliminate pollutants by using raw materials and resources efficiently. Also see source reduction.

Product Substitution - Replacing a chemical with an environmentally preferable alternative.

Recycling - Reusing or regenerating materials and wastes into usable products and by-products. Recycling includes material exchange, recovery of materials, and composting of organic waste matter. Also see affirmative procurement.

Release - Under the Emergency Planning and Community Right-to-Know Act (EPCRA), release includes emitting, discharging, dumping or disposing any hazardous chemical or substance into the environment. Does not include chemical shipments off-site to other facilities for disposal, recycling, energy recovery, or treatment.

Solid Waste - All discarded materials including solids, semi-solids, sludges, liquids, and compressed gases, unless excluded by regulation. A discarded material is any material that is abandoned, recycled, or considered inherently waste-like (40 CFR 261.2).

Source Reduction - Using materials, processes, or practices that reduce or eliminate the quantity and toxicity of wastes at the start of a process. Can be achieved by material substitution, preventive equipment maintenance, improved operational processes, and better housekeeping.

Treatment - Any method, technique, or process, including neutralization, that changes the physical, chemical, or biological character of any hazardous waste. Examples of treatment are incineration, biological treatment, thermal oxidation, or compaction. Many treatment technologies reduce the volume of waste or create a less concentrated or toxic waste. Treatment often results in the transfer of hazardous materials from one medium to another.

Unit Environmental Compliance Officer (UECO) - A commissioned or non-commissioned officer designated to implement the environmental program at the unit level.

Waste Stream - Collective waste that may be accumulated, consolidated, or bulked into the same container for disposal or recycling.

Acronyms

Acronym	*Definition*
ACS	Accumulation Consolidation Site
AR 200-1	Army Regulation 200-1
AUL	Authorized Use List
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
DoD	Department of Defense
DOT	Department of Transportation
DRMO	Defense Reutilization Marketing Office
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPM	Environmental Program Manager
EQCC	Environmental Quality Control Committee
HM	Hazardous Materials
HMIS	Hazardous Material Information System
HSCG	Hazardous Substance Control Group
HW	Hazardous Waste
IAW	In accordance with
LDR	Land Disposal Restriction
MQCSS	Military Quality Control Storage Standard
MSDS	Material Safety Data Sheet
NEPA	National Environmental Policy Act
NRC	National Response Center
NSN	National Stock Number
NJARNG	New Jersey Army National Guard
OJT	On-the-Job Training
OSHA	Occupational Safety and Health Administration
P2	Pollution Prevention
POL	Petroleum, Oil and Lubricant
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
SAP	Satellite Accumulation Point
SHWPM	State Hazardous Waste Program Manager
SOP	Standard Operating Procedure
TM	Technical Manual
TSDF	Treatment, Storage and Disposal Facility
UECO	Unit Environmental Compliance Officer
USP&FO	United States Property and Fiscal Office

Additional Information

Organization	Content	Website
Air Force PRO-ACT	Promotes crossfeed of environmental information	www.afcee.brooks.af.mil/pro_act/main/proact4.html
Army Environmental Center Homepage	The AEC integrates, coordinates and oversees implementation of the Army's environmental programs, and provides technical services and products to HQDA, MACOMs and Commanders.	aec-www.apgea.army.mil:8080/
Center for Clean Technology	The Center for Clean Technology web site provides information on the Center's environmental research and associated activities.	cct.seas.ucla.edu/
Center for Technology Transfer and Pollution Prevention: CT2P2	The Center provides tools needed to transfer technical information the environment and pollution prevention worldwide. It develops and evaluates new computer-based pollution prevention and technology transfer opportunities.	ingis.acn.purdue.edu:9999/cttpp/cttpp.html
Coating Alternatives Guide (CAGE)	An expert system and information base designed to recommend low-emitting alternative coating technologies to coatings users.	cage.rti.org/

Organization	Content	Website
Defense Environmental Network & Information eXchange (DENIX)	Interesting success stories can be found under "Public Menu," "Environmental Security," "Pollution Prevention," under Accomplishments and Future Directions choose "P2 Success Stories," "P2 Success Story" and scroll down for the interesting ones.	www.denix.osd.mil/
Defense Standardization Program (DSP)	Acquisition Practices Directorate ODUSD (Industrial Affairs & Installations) Frequently Asked Questions page	www.acq.osd.mil/es/std/faq.htm
Defense Supply Center	This site has information on procurement, suppliers, and links to other environmental procurement sites.	www.dscr.dla.mil
Department of Defense Link	Department of Defense Link is an excellent source for publications and links to other related sites.	www.defenselink.mil
Environmental Security Technology Certification Program	ESTCP's goal is to demonstrate and validate promising, innovative technologies that target DOD environmental needs. These technologies provide a return on investment through cost savings and improved efficiency.	estcp.xservices.com/projects/pollutn/index.htm

Organization	Content	Website
Environmental Technology Office	The ETO oversees the U.S. Army's pollution prevention environmental technology program and the Department of Defense's National Defense Center for Environmental Excellence (NDCEE).	www.epa.gov/envirosense/program/p2dept/defense/army/dodeto.html
Enviroene	Enviroene, funded by the Strategic Environmental Research and Development Program (SEDRP) and the Environmental Protection Agency (EPA), allows for the dissemination of technical pollution prevention material	www.epa.gov/envirosense/index.html
HAP Status Binder	The purpose of this document is to keep the Services up-to-dateon the status of National Emission Standards for Hazardous Air Pollutants, New Source Performance Standards/ Emission Guidelines, and Control Technique Guidelines that affect the Military.	www.denix.osd.mil/denix/DOD/Library/HAP/hapindex.html
Hazardous Technical Information Services	For hazardous material substitutions.	www.dgsc.dla.mil/htis/htis.htm
Information Center for the Environment	ICE is a cooperative effort of an interdepartmental team of environmental scientists at the University of California, and collaborators at over thirty private, state, federal, and international environmental organizations.	ice.ucdavis.edu./

Organization	Content	Website
Joint Service Pollution Prevention Technical Library	Identifies off the shelf P2 technologies, management practices, and process changes.	enviro.nfesc.navy.mil/p2library/
National Pollution Prevention Center for Higher Education	The National Pollution Prevention Center, located at the University of Michigan, was created in 1991 by the U.S. EPA to compile, produce, and distribute educational materials on pollution prevention.	www.snre.umich.edu/nppc/
Naval Facilities Engineering Service Center	One of the Navy's leading environmental centers, helping to solve environmental cleanup, compliance, and pollution prevention	ww.nfesc.navy.mil/enviro/index.html
Navy Environmental Leadership Program	Finding new and innovative ways to manage Navy environmental programs since 1993.	www.nasni.navy.mil/~nelp/nelp.htm
Northeast Business Environmental Network (NBEN)	The NBEN provides access to information about pollution prevention and cleaner production, as well as discussion groups for area businesses.	www.fedworld.gov
P2 Gems	Developed by the Toxics Use Reduction Institute, P2 Gems is an internet search tool for facility planners, engineers, and managers who are looking for technical and process/materials management information on the Web.	www.turi.org/P2GEMS

Organization	Content	Website
SAGE U.S. EPA's Significant New Alternatives Policy Program (SNAP)	Solvents Alternative Guide Information on alternatives to Class I and Class II ODSs.	clean.rti.org/ www.epa.gov/ozone/ title6/snap/
U.S. EPA - Office of Pollution Prevention	Information on pollution prevention	www.epa.gov/oppintr/ index.html

Worksheets

This section contains the following worksheets:

- Brainstorming diagram
- Worksheet 1 - Team and Activity Description
- Worksheet 2 - Activity Flow Diagram
- Worksheet 3 - Pollution Prevention Opportunity Description
- Worksheet 4 - Pollution Prevention Opportunities Summary
- Worksheet 5 - Final Summary

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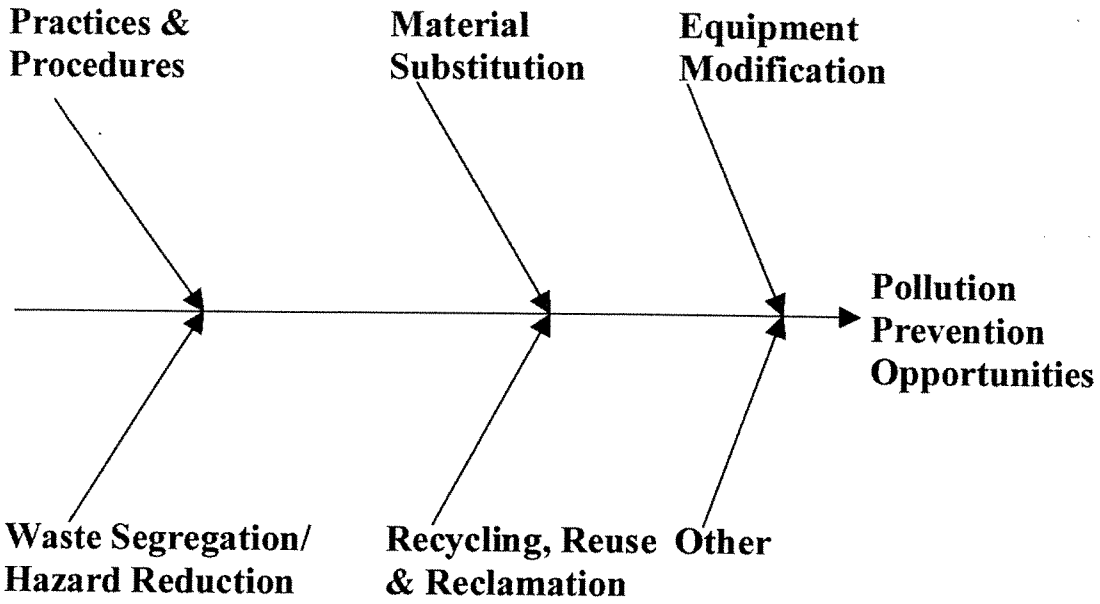
Brainstorming for:
Pollution Prevention Opportunities



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Pollution Prevention Opportunity Assessment
WORKSHEET 1
Team and Activity Description

Date:_____ P2OA ID Code:_____ Facility:_____

Activity:_____

Team Members (*Leader) Telephone E-mail

Description of Activity to be examined in this P2OA:

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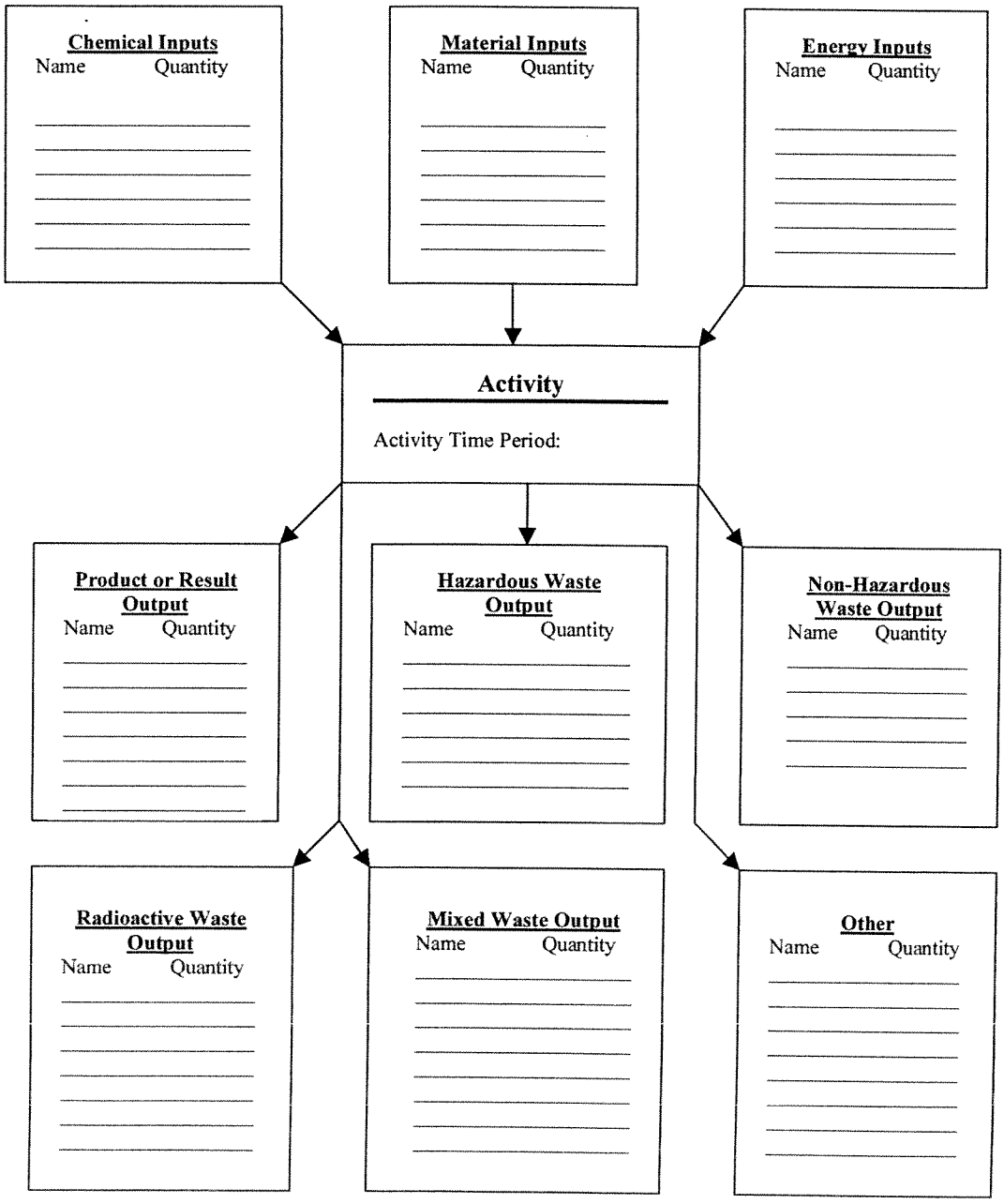
Pollution Prevention Opportunity Assessment
WORKSHEET 2
Activity Flow Diagram

Date:_____ P2OA ID Code:_____ Facility:_____

Activity:_____ Total Input Mass = Total Output Mass



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Pollution Prevention Opportunity Assessment
WORKSHEET 3
Pollution Prevention Opportunity Description

Date:_____ P2OA ID Code:_____ Facility:_____

Activity:_____

P2O No. _____ P2O Title: _____

Current Practice:

_____

_____

_____

_____

_____

Recommended Action:

_____

_____

_____

_____

_____

Calculation of Waste Reduction and/or Energy Savings:

Calculation of Annual Cost Savings:

Calculation of Implementation Cost and Payback:

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Pollution Prevention Opportunity Assessment
WORKSHEET 4
Pollution Prevention Opportunities Summary

Date:_____ P2OA ID Code:_____ Facility:_____

Activity:_____

P2O No.	P2O Title	Waste Class Reduced	Annual Waste Reduction or Energy Savings	Estimated Annual Savings	Estimated Implement. Cost	Payback (years)

Notes and Other Benefits:

_____

_____

_____

_____

_____

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Pollution Prevention Opportunity Assessment
WORKSHEET 5
Final Summary

Date:_____ P2OA ID Code:_____ Facility:_____

Activity:_____

Proposed Opportunities and Discussion:

Recommendations and Schedule for Implementation:

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