



Pollution Prevention and Waste Minimization (P2/WMin) in Environmental Management

Objectives



Terminal Objective

Given the Environmental Laws and Regulations course manual as a reference, you will be able to:

- **Identify pollution prevention requirements for EM projects.**

Objectives

Enabling Objectives

- **State the purpose of the Pollution Prevention (P2) Act**
- **List the P2 requirements mandated by the following laws:**
 - **RCRA, CWA, CAA, CERCLA**
- **Define the following terms:**
 - **Pollution Prevention**
 - **Pollution Prevention Opportunity Assessment**

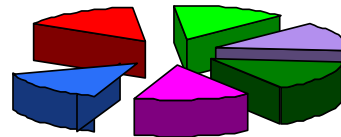
Objectives

Enabling Objectives (continued)

- **State DOE's compliance requirements under**
 - **Executive Order 12856**
 - **Executive Order 13101**
 - **DOE Order 5400.1**
 - **DOE Order 435.1**
 - **DOE 1996 Waste Minimization/ Pollution Prevention Cross-cut Plan**

Guiding Principles

- **Safety First**
- **Risk Reduction**
- **Scientific Orientation**
- **Management Accountability**
- **Decision Transparency**
- **Stewardship**



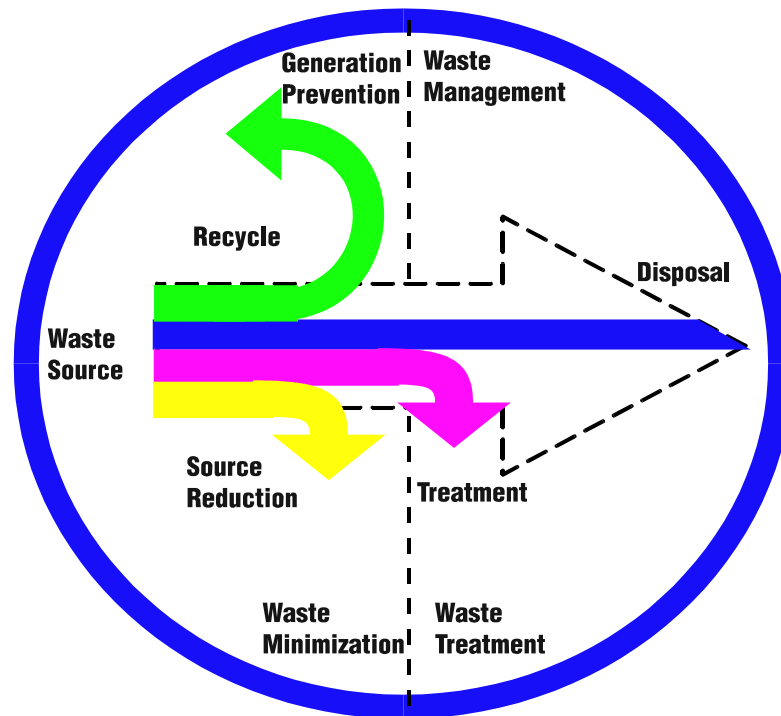
Introduction to P2/WMin



Why minimize?

- **Saves money (treatment and disposal are expensive)**
- **Reduces regulatory paperwork (less waste to manage/document)**
- **Environmentally responsible (avoids using virgin materials)**

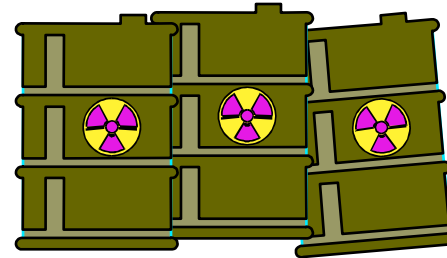
P2/WMin



Introduction to P2/WMin

What can we minimize?

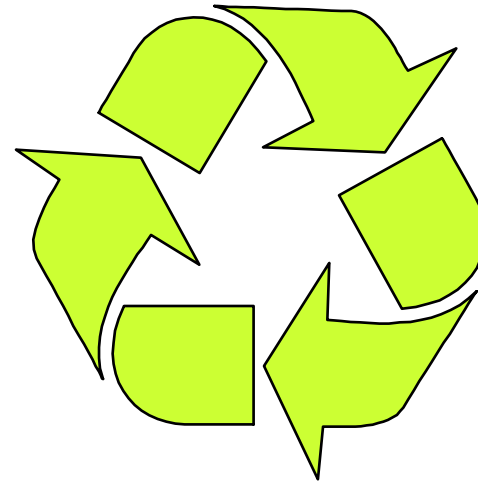
- **Primary Waste (newly generated or stored wastes)**
- **Secondary Waste (drilling cuttings, solvents)**



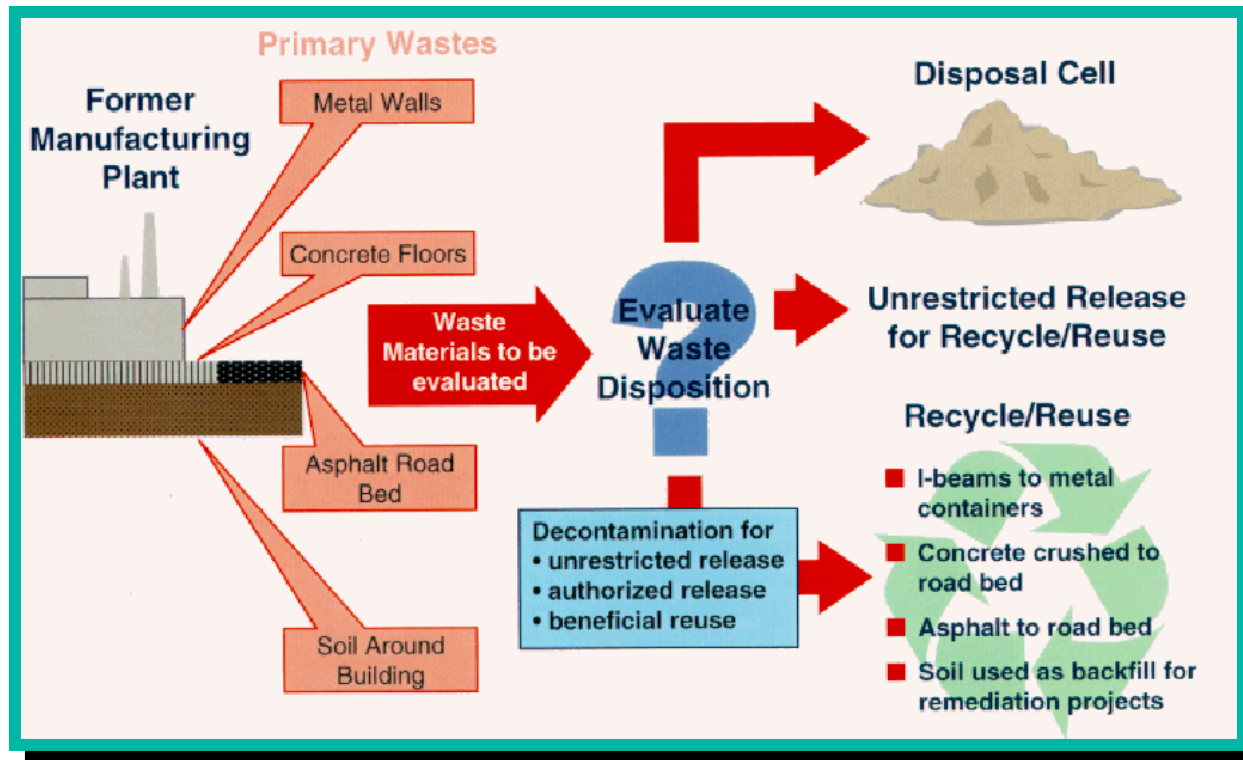
Introduction to P2/WMin

How can we minimize?

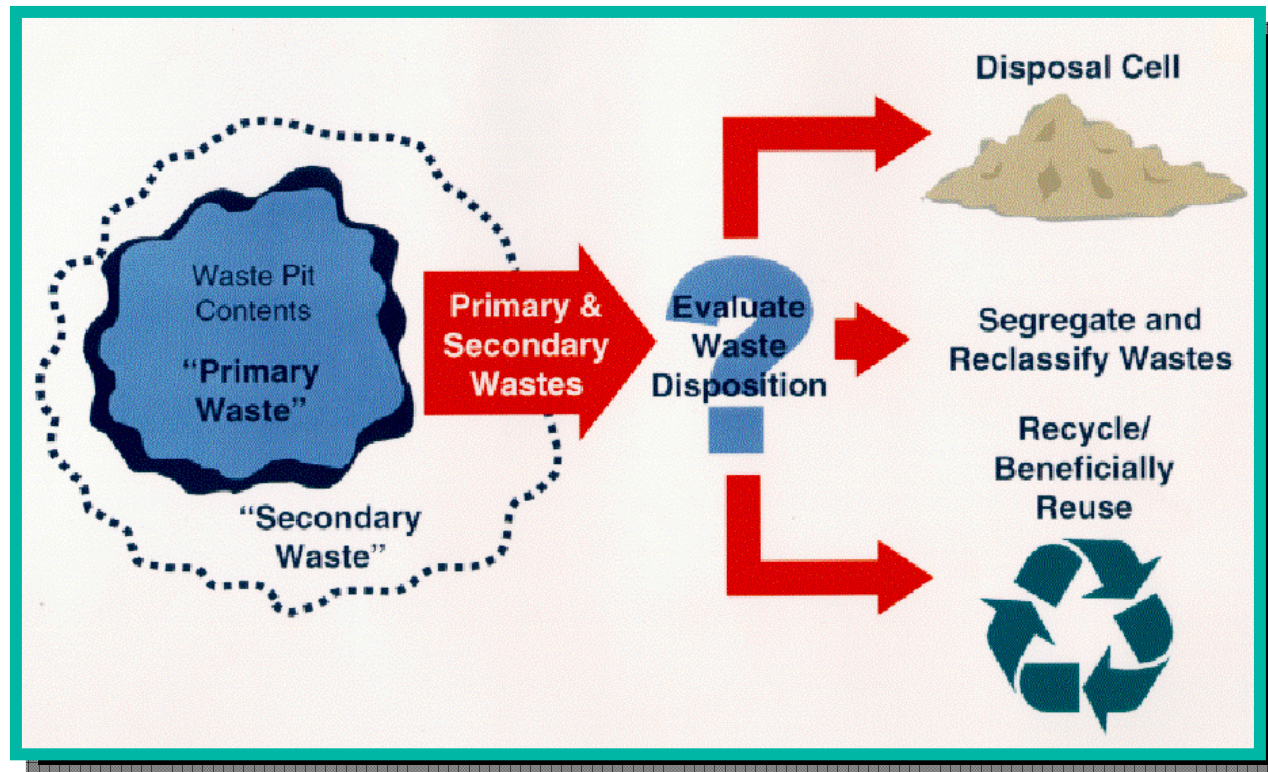
- **Primary Waste**
 - **Recycle**
 - **Reuse**
 - **Segregation**



Applying P2/WMin to D&D Project Wastes



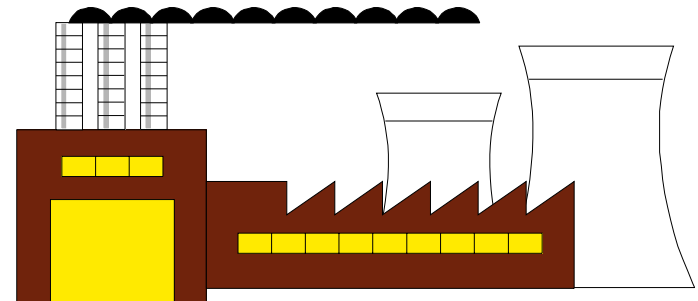
Applying P2/WMin to a Remediation Activity



Applying P2/WMin to a Remediation Activity

How can we minimize?

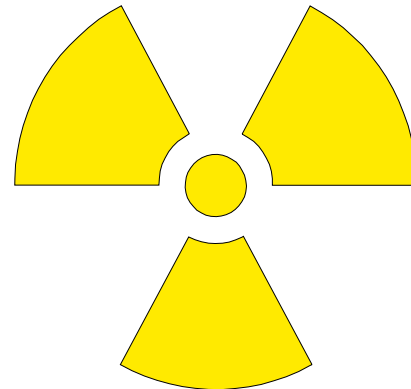
- **Secondary Waste**
 - **Source reduction**
 - **Segregation**



P2/WMin Requirements

Pollution Prevention Act of 1990:

- **Pollution prevention = source reduction**
- **Reducing the amount of hazardous substances**
- **Reducing the hazard**



P2/WMin Requirements



Pollution Prevention Act of 1990:

Pollution Prevention

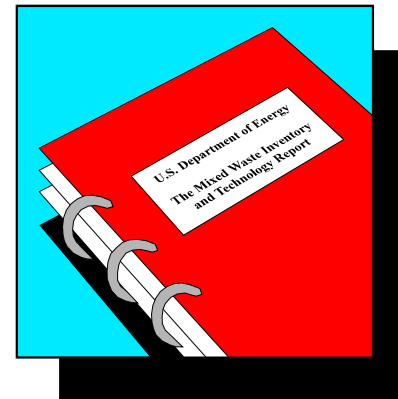
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recycling or treatment

P2/WMin Requirements

RCRA:

- **Hazardous waste generators must have a program to reduce the volume and toxicity of hazardous waste**
- **Annual report to EPA**



P2/WMin Requirements



CERCLA:

- **The “nine criteria” include:**
 - **“reduction in the toxicity, mobility, or volume of waste”**

Executive Order 12856



- *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*
- **Reduce release or off-site transfer of toxic chemicals by 50% by the end of 1999**
- **Develop a pollution prevention plan**

Executive Order 13101



- **Greening the Government through Waste Prevention, Recycling, and Federal Acquisition**
- **Waste prevention and recycling are to be incorporated into agency daily operations**
- **Agencies to develop an affirmative procurement program**

Greening the Government Through Leadership in Environmental Management Executive Order 13148

The President of the United States identified seven goals for Federal Agencies to achieve through his “Greening the Government” initiatives. These seven goals include:

- 1) Environmental Management -Each Agency shall develop and implement environmental management systems that identify strategies to support environmental leadership programs, policies, and procedures.**

Greening the Government Through Leadership in Environmental Management Executive Order 13148

- 2) Environmental Compliance - Each Agency shall implement environmental compliance audit programs and policies that emphasize pollution prevention as a means to both achieve and maintain environmental compliance.**
- 3) Right-to-Know and Pollution Prevention - Federal Facilities will be leaders of their communities by informing the public and their workers of possible sources of pollution resulting from facility operations. Each Agency shall strive to reduce or eliminate releases of pollutants to the environment and when cost effective and feasible prevent or reduce pollution at the source.**

Greening the Government Through Leadership in Environmental Management Executive Order 13148



- 4) Release Reduction - Each Agency shall reduce its reported Toxic Release Inventory releases and off-site transfers of toxic chemicals by 10% annually or 40% overall by 12/31/06.**

- 5) Use Reduction - Each Agency shall reduce its use of selected toxic chemicals, hazardous substances, and pollutants, or its generation of hazardous and radioactive wastes types, by 50% by 12/31/06.**

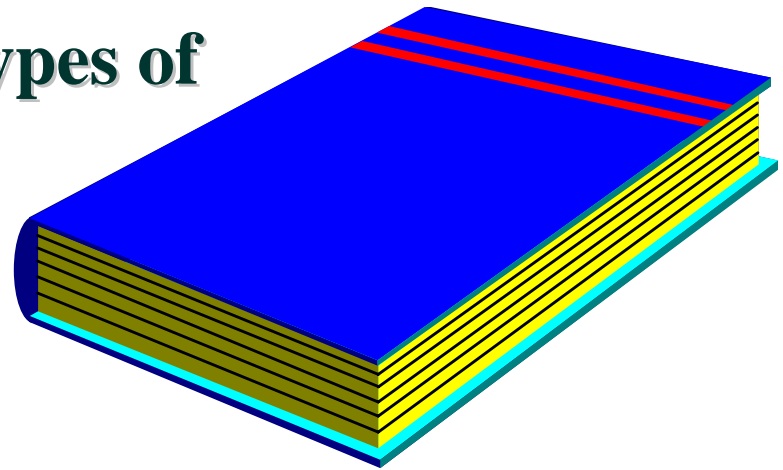
Greening the Government Through Leadership in Environmental Management Executive Order 13148

- 6) Reduction in Ozone-Depleting Substances - Each Agency shall develop a plan to phase out the procurement of Class I ozone-depleting substances for all non-expected uses by 13/31/10.**
- 7) Environmentally and Economically Beneficial Landscaping - Each Agency shall strive to promote the sustainable management of Federal facility lands to reduce adverse impacts to the natural environment.**

DOE Orders

DOE Order 5400.1:

- **Site programs for minimization of all types of waste**
- **Develop pollution prevention plans**



DOE Orders

DOE Order 435.1:

- **Waste minimization and pollution prevention shall be implemented for radioactive waste management facilities, operations, and activities**



DOE Orders



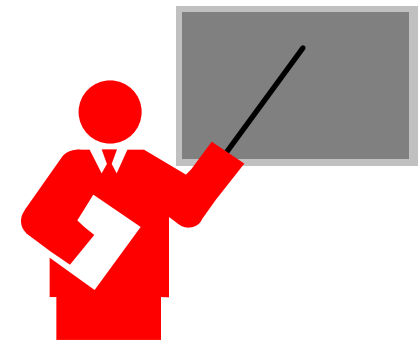
Other requirements:

- **Waste Minimization/Pollution Prevention Crosscut Plan**
 - **Site-wide and generator-specific pollution prevention/waste minimization plan**

Key Attributes of a P2/WMin Program

The pollution prevention/waste minimization plan:

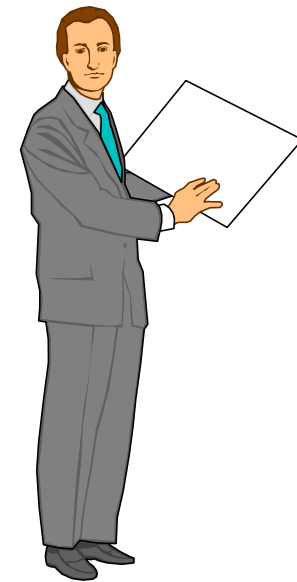
- **Goals and Objectives**
- **Budget/Resource needs**
- **Pollution prevention/waste minimization expertise/training**



Key Attributes of a P2/WMin Program

Pollution Prevention Opportunity Assessment:

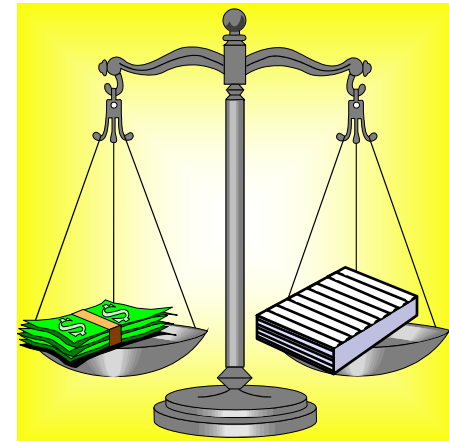
- **Process or activity analysis to identify opportunities to eliminate or reduce waste generation or consumption of raw materials, water, or energy**



Key Attributes of a P2/WMin Program

Opportunity Prioritization:

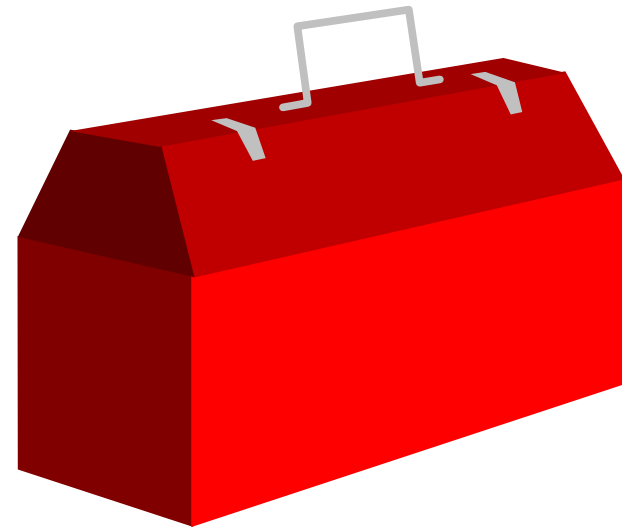
- **Factors to consider:**
 - **Regulatory drivers**
 - **Life cycle costs**
 - **Worker/public/
environmental hazard or risk**



P2/WMin Tools

Operating Practices:

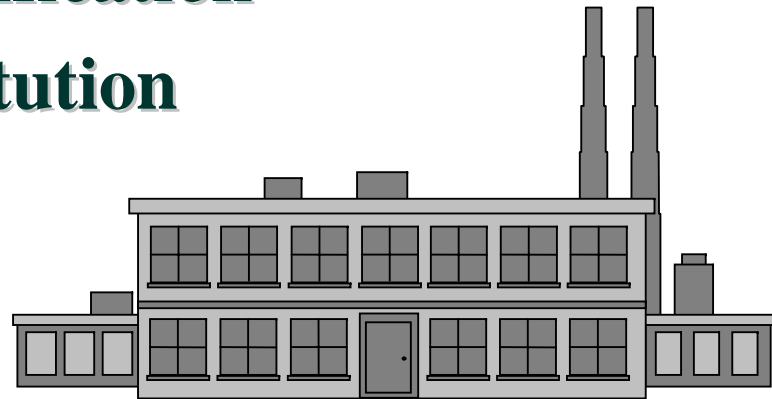
- **Housekeeping**
- **Segregation**
- **Administrative changes**



P2/WMin Tools

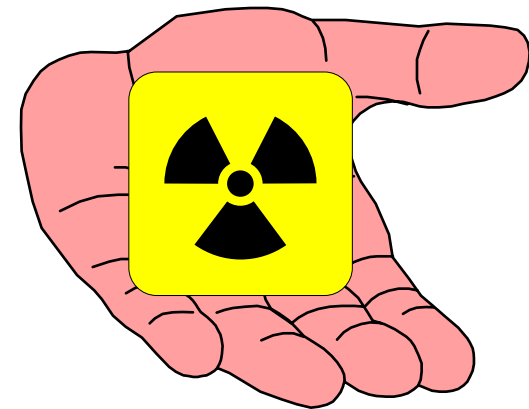
Process Changes:

- **Equipment modification**
- **Materials substitution**



P2/WMin Tools

- **Recovery**
- **Recycling**
- **Reuse**
- **Site waste minimization coordinators**



Review Question

Pollution Prevention and Waste Minimization activities can be used to reduce the volume and/or toxicity of waste streams

- a. True**
- b. False**



Related Courses

- **Pollution Prevention Opportunity Amendment**
- **P2 and Waste Minimization in Environmental Restoration**
- **P2 for Compliance and Enforcement Officers (EPA)**

For more information, ask to see your instructor's copy of the NETO Course Catalog or view the catalog and the online schedule at: www.em.doe.gov/neto/