Environmental Tool Kit

for the

USDA Forest Service

Rocky Mountain Region

USDA Forest Service Rocky Mountain Region
National Park Service Intermountain Region Office
Partnership Project

990600

Environmental Tool Kit

for the

USDA Forest Service

prepared for

USDA Forest Service/National Park Service Partnership Project

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"...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.... By stopping pollution at its source, the Federal government can make a significant contribution to protecting the public health and our environment."

President Clinton

Pollution prevention can be successful only with the commitment of senior managers, supervisors and the participation of all employees!!!

Environmental Tool Kit for the USDA Forest Service and its companion document, *Environmental Resource Manual for the USDA Forest Service* are prepared for use by the Rocky Mountain Region of the USDA Forest Service

Pollution prevention pays...

USDA Forest Service
Rocky Mountain Region

Regional Office
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Post Office Box 25127
Lakewood, Colorado 80225
Denver Colorado

Arapahoe-Roosevelt and Pawnee National Grassland National Forest
Bighorn National Forest
Black Hills National Forest
Grand Mesa-Uncompahgre-Gunnison National Forest
Medicine Bow-Routt National Forest
Nebraska National Forest
Pike-San Isabel National Forest
San Juan National Forest
Rio Grande National Forest
Shoshone National Forest
White River National Forest

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The authors gratefully acknowledge Suzanne Stevenson, U.S. Environmental Protection Agency Region VIII, for her efforts, insights and valuable contributions.

Senior Management Goals...

- Understand pollution prevention concept
- Embrace it as the core of all management/environmental decisions
- Develop full support from all employees

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Environmental Contacts: Hazardous Waste Compliance

1.	Hazardous Materials & Waste Management Division (Colorado) Colorado Department of Public Health and the Environment	(303) 692-3320
2.	Bureau of Waste Management (Kansas) Department of Health and Environment	(913) 296-1608
3.	Customer and Technical Assistance (Nebraska) Department of Environmental Quality	(402) 471-4217
4.	Division of Hazardous Waste Management (North Dakota) Department of Health Management and Special Studies	(701) 328-5166
5.	Division of Environmental Regulation (South Dakota) Environmental Conservation	(605) 733-3153
6.	Solid & Hazardous Waste Division (Wyoming) Department of Environmental Regulation	(307) 777-7752
7.	Environmental Protection Agency, Region 7 (KS, NB) RCRA Branch	(913) 551-7241
8.	Environmental Protection Agency, Region 8 (CO, ND, SD, WY) Hazardous Waste Management Division	(303) 293-1603
9.	General Services Administration for Environmentally Preferable Products	(1-800) 848-8928
10.	CERCLA* National Response Center	(1-800) 424-8802
11.	RCRA** and Superfund Hotline	(1-800) 424-9346
12.	Department of Transportation (DOT) Hotline	(202) 366-4488

* CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act

** RCRA: Resource Conservation and Recovery Act

How to Use This Tool Kit

This tool kit is your road map for addressing environmental issues to conserve the scenery, wildlife, and cultural resources of the forests, while providing for their unimpaired enjoyment by present and future generations.

Use this manual and companion manual(s) as workbooks. They are designed to be incorporated directly into your activities as true "environmental" tool kits, and they include checklists designed to reduce your regulatory exposure and shrink your environmental footprint.

✓ This manual is tailored for the Forest Service Rocky Mountain Region, and brings specific focus to their 15 major waste streams and functions that contribute to waste generation.

✓ Pollution prevention is a full-facility inter-divisional commitment. It begins with the Forest Supervisor and District Ranger and involves employees at all levels. Although this tool kit offers general as well as specific suggestions, be sure to consider the suggestions of each employee.

✓ The *"Environmental Management Checklist"* of each wastestream section, contains recommendations based on the concepts of pollution prevention and waste minimization, with many regulatory flags and tips.

HOW DO I BEGIN?

✓ Start at the beginning of the next section entitled "Pollution Prevention." Work your way straight through this section by moving through the checklist for each of your waste streams.

✓ When you need specific contact information, refer to the *Forest Service Resource Manual*.

✓ If you have regulatory or compliance questions, see the second section of this tool kit beginning on page 75.

✓ If you have questions regarding emergency preparedness and response, refer to the *Forest Service Resource Manual.*

Pollution Prevention is any practice which reduces the amount of a hazardous pollutant, or contaminant entering any waste stream or otherwise released into t ment (including fugitive emissions) prior to recycling, treatment, or disposal; an tice which reduces the hazards to public health and the environment associat release of such substances, pollutants or contaminants.

Achieved at the source through...

- ***material substitution***
- ***product changes***
- ***improved housekeeping***
- ***process changes***
- ***in-line / on-site recycling***

...it also includes practices that reduce the use of non-hazardous and hazardous materials, energy, water, or other natural resources.

Pollution Prevention

in the mid-1700s an English doctor stopped a cholera epidem - dead in its tracks by removing the pump handle from the wn's water supply. He prevented the people from drinking ntaminated water. This is an example of simple, inexpensive, t highly effective pollution prevention. Instead of treating the nesses that resulted from the contaminated water, he stopped e spread of the disease at its source.

e "pump handles" in your activities is what this workbook is all about. How can they ed most cost effectively? Where do I start first? How much will it cost? These ques- be addressed in this tool kit.

e recognize that you are faced with ever-tightening budget challenges. This does not y mean that your activities *avoid* the environmental solutions, or that you *ignore* pol- evention opportunities.

In fact, well-run forests and districts most likely are very conscious of waste generation and environmental problems. In U.S. business a simple law is emerging: Waste equals lost profit. The purpose of this manual is to help you avoid potential environmental problems and become "greener," while paying attention to your facility's financial bottom line.

YOUR GOAL

Your goal as you work through this tool kit is to minimize the amount of solid waste and hazardous waste your facility produces by using sound pollution prevention methods. If you can dramatically reduce the generation of pollution, you can significantly reduce your regulatory and compliance burden. Although complete elimination of waste may not be possible, our goal is to help you arrive as closely as possible to this ideal situation. Records from thousands of facilities in the United States have proven that if you reduce pollution and the generation of waste, you will also realize large savings and benefit the environment.

ADVANTAGES TO YOUR FACILITY

✓ **Pollution Prevention Can:**

- Reduce regulatory burden, recordkeeping, reporting and tracking
- Increase worker and facility safety
- Reduce compliance and long-term liability costs
- Reduce risk of criminal and civil liability

YOUR POLLUTION PREVENTION PROGRAM

❑ **A beginning Has Already Been Made...**

- A forest / district survey will be completed for many forests / districts in the Rocky Mountain Region – an excellent beginning to your pollution prevention and environmental program.

❑ **Begin With The Forest Supervisor...**

- The forest supervisor, district ranger, and all managers must be committed to pollution prevention and pass that commitment on to the employees.
- Post a facility commitment statement in your forest / district; see samples in *Forest Service Resource Manual*.
- Establish incentive programs to encourage employees to contribute ideas to the facility-wide program.
- Provide training programs for employees in pollution prevention, hazardous material management and emergency response.

❑ **Assess All Wastes...**

- Start by reviewing and examining ALL waste streams within the forest and districts. Tabulate a complete list.
- Use this information to pinpoint wastes that can be minimized or eliminated.

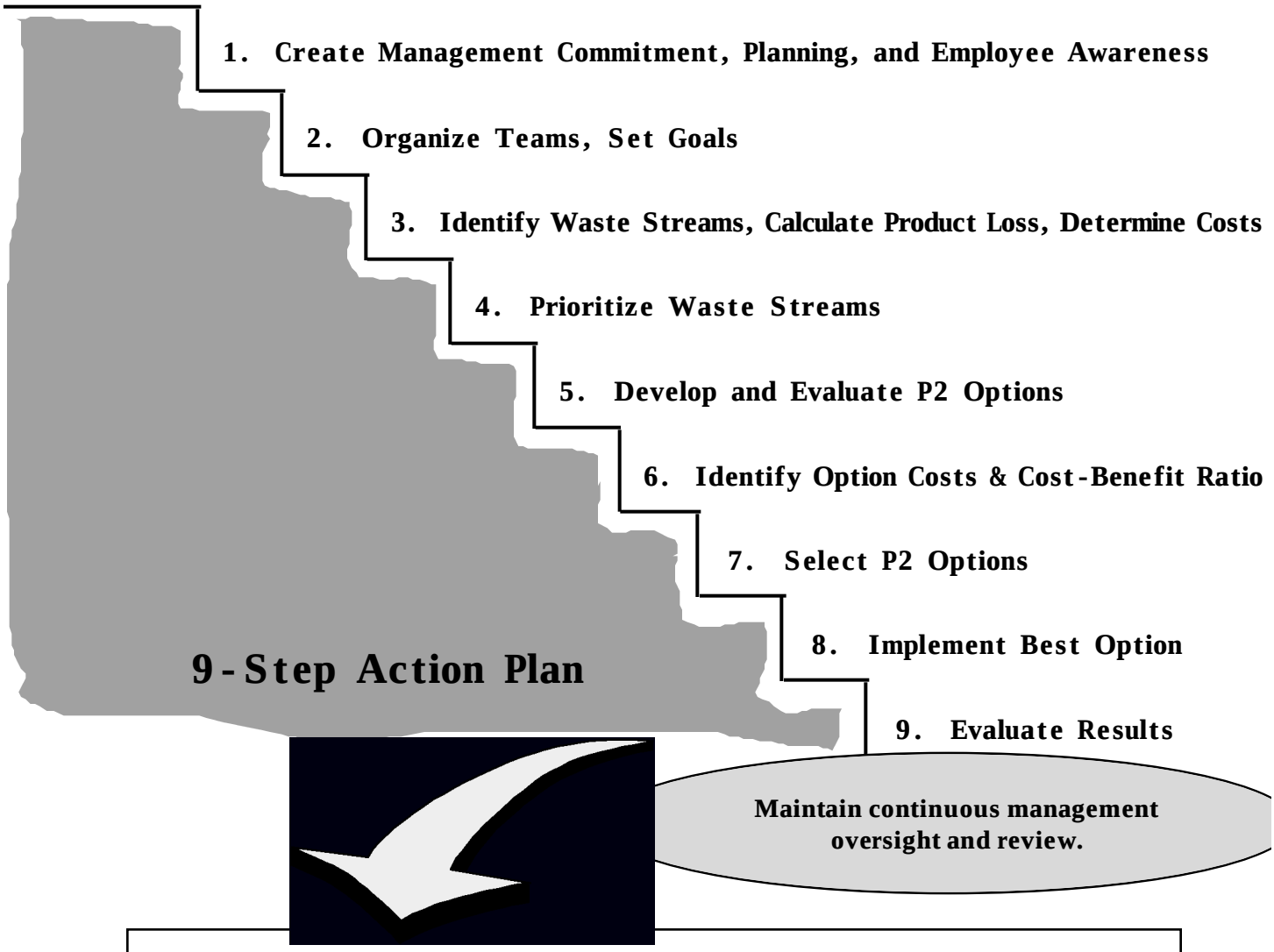
❑ **Prioritize Waste Streams...**

- Focus first on the waste streams which can most easily be minimized.
- Prioritize on waste streams by size, danger, and / or other criteria.

❑ **Implement Pollution Prevention Options...**

- Use this tool kit to help you find ideas to reduce or eliminate your wastes.
- Implement your pollution prevention options according to your prioritized, full-facility, program plan.

POLLUTION PREVENTION PROGRAM: ENVIRONMENTAL MANAGEMENT SYSTEM



The 9-Step Environmental Management System Action Plan can be used to guide your environmental management and pollution prevention activities. It is an organized sequence of actions that can be followed to ensure that you include everything you need to be successful. The first two steps are basic to your organization, regardless of the number and magnitude of waste streams. Steps three through nine are best tailored for each major waste stream, process, or subprocess. Feel free to shape these last steps in an iterative manner to avoid taking on too much. All nine steps ensure that you have a system in place for continuous oversight and improvement.

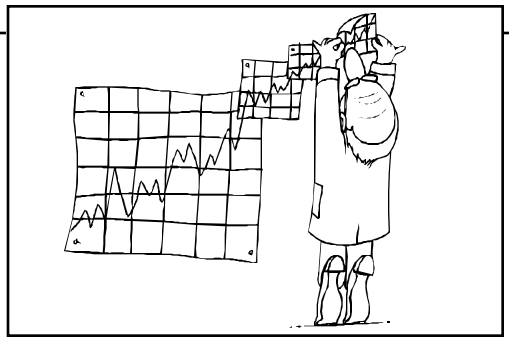
REMEMBER…

✓ Your *Environmental Management System/Pollution Prevention Program* is an organized, comprehensive, and continual effort to eliminate waste and pollution from your forest / district. By every measure, it is simply sound management and it is especially good fiscal management. Most recommendations presented in this manual have pay back periods of less than two years. All have been proven in the "real world."

✓ *Environmental Management Checklist*: Use these recommendations throughout your forest / district. These recommendations include those that will help you comply with federal and state environmental regulations, while others are waste minimization (reduction in hazardous waste volume or toxicity) recommendations based on *source reduction* changes (avoiding the generation of the waste *before* it is generated). In all cases, the USDA Forest Service and U.S. Environmental Protection Agency (EPA) urge you to consider changes that *avoid* generation of wastes *without* transferring the waste to another media.

- ☞ Use this manual to identify and prioritize waste management areas in which your forest and districts can improve.
- ☞ Try starting with water and energy conservation. Implementation of these conservation suggestions usually yields quick results with short payback periods.
- ☞ Turn this page and actually try tackling one or two changes that will reduce a waste stream in your facility.
- ☞ Follow the suggestions to also improve environmental compliance, a critical aspect of forest and district management.

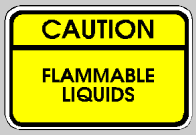
...Go ahead! Cut your wastes and conserve the natural resources of your forest/district, while providing for their unimpaired enjoyment by present and future generations and improving your operational budgets!



"It's not easy being green."

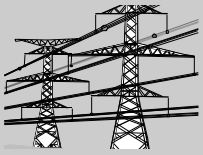
Kermit the Frog,
Sesame Street

General Forest/District Support



13. Hazard Material Storage

See Page 60

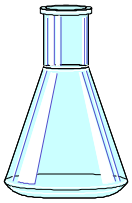


14. Energy

See Page 66

15. Water

See Page 70



6. Laboratories

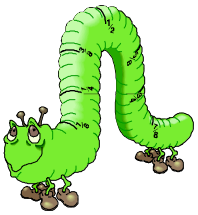
❑ *Do you have this waste stream?*

See Page 30

5. Used Antifreeze

❑ *Do you have this waste stream?*

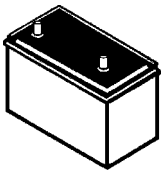
See Page 26



3. Insecticides, Pesticides, Herbicides

❑ *Do you have this waste stream?*

See Page 18



8. Used Batteries

❑ *Do you have this waste stream?*

See Page 38

7. Used Filters

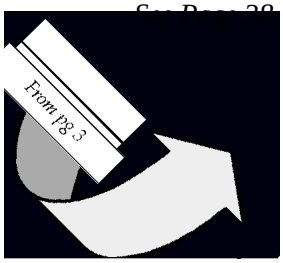
❑ *Do you have this waste stream?*

See Page 34

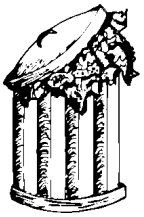
2. Used Oils & Lubricants

❑ *Do you have this waste stream?*

See Page 14



The 15 Primary Waste Streams and Functions at National Forests



11. Absorbents & Wipers

❑ *Do you have this waste stream?*
See Page 50

4. Paint Application & Cleanup

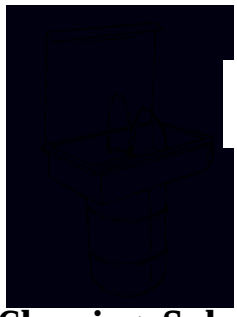
❑ *Do you have this waste stream?*
See Page 22

9. Fuels

❑ *Do you have this waste stream?*
See Page 42

12. Other Wastes

❑ *Do you have this waste stream?*
See Page 54

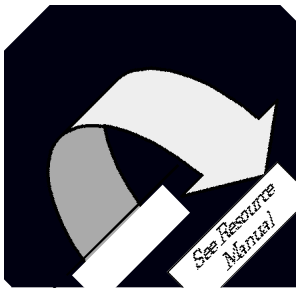


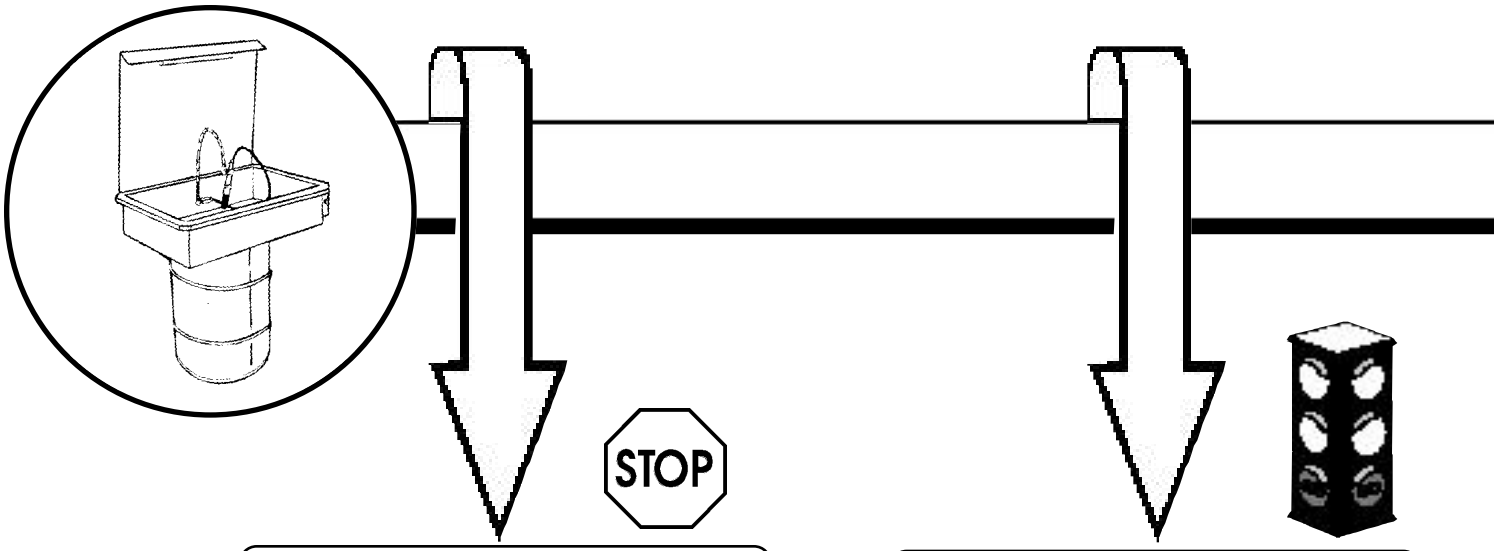
1. Cleaning Solvents

❑ *Do you have this waste stream?*
See Page 10

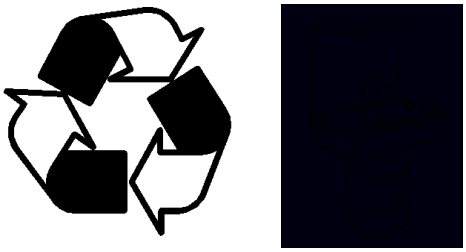
10. Boneyards

❑ *Do you have this waste stream?*
See Page 46

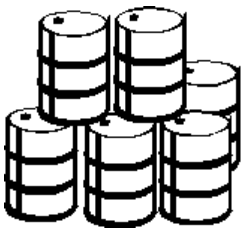




Hazardous Waste Disposal



Use Non-hazardous Solvent and In-line Recycling

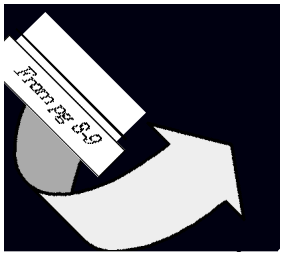


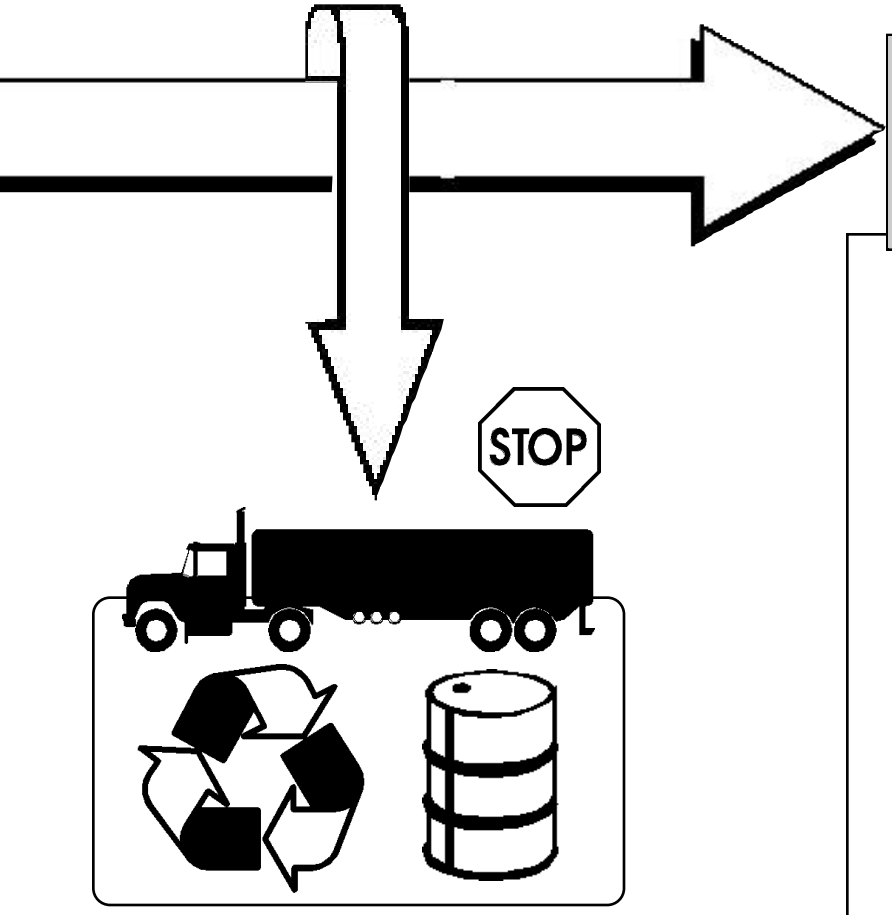
Buy in Bulk and Use in Aerosol Look-Alikes; Eliminate Aerosol Cans

This is not a desirable action for true source reduction.

Consider these actions as a part of your source reduction program.

Chlorinated compounds and other hazardous products can result in contaminated materials that are regulated as a hazardous waste.





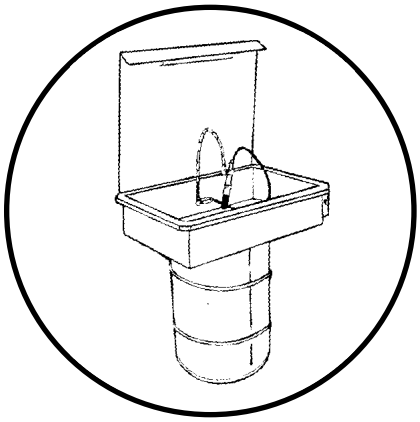
Off-Site Solvent Recycling

1. Cleaning Solvents

Eliminating chlorinated and hazardous solvents reduces costs, health risks, and environmental liabilities.

You can achieve facility wide fluids management through controlled bulk dispensing of non-hazardous products.

To pg 12



1. Cleaning Solvents

- Your goal in fluids management is to remove all hazardous fluids from your shop.
- Cleaning solvents and degreasers are probably the largest hazardous waste stream in your shop and the most likely candidates to cause environmental damage.
- Fluids that contain chlorinated compounds (ozone depleters) will almost always become a hazardous waste in the end.
- Many of the chemicals in cleaning solvents are listed and/or characteristic hazardous waste when they go out your back door as waste, especially if they contain the following compounds:

- Stoddard solvent	- methylene chloride
- toluene	- cresylic acid
- xylene	- sodium hydroxide
- 1,1,1-trichloroethane	- dichlorobenzene
- perchloroethylene	- mineral spirits
- 2-butoxethanol	- benzene

- Significant environmental concerns are associated with chlorinated solvents. They are expensive to "clean up" from the soil, water, and air, and they pose a significant threat to the earth's ozone shield in the stratosphere.
- Spent aerosol cans may pose a serious safety concern.

Regulatory Issues

✓ If your spent solvents and degreasers are classified as hazardous waste, they must be managed according to applicable hazardous waste requirements.

✓ All hazardous waste must be counted toward your hazardous waste generator size.

✓ Significant worker health concerns are associated with solvent use. Petroleum based solvents commonly used in automotive repair can cause nervous system damage and may be considered carcinogenic (potentially cancer causing).

✓ Serious flammability concerns are associated with many degreasing solvents, paint clean-up solvents and paint gun cleaners.

✓ Do not mix waste solvents with other hazardous or non-hazardous wastes.

From pg 11

✓✓ Environmental Management Checklist ✓✓

- ❑ 1. Remove all solvents and fluids containing chlorinated compounds from your facilities. Check the Material Safety Data Sheet (MSDS) for incoming products to insure chlorinated compounds are not reintroduced. See *Forest Service Resource Manual* for specific substitutes and vendors.

- ❑ 2. When purchasing degreasing agents, paint cleaners, paint gun cleaners, and petroleum products, check the MSDS and be sure the product does not contain hazardous chemicals, especially chlorinated compounds, and that it has a flash point above 140°F (closed cup).

- ❑ 3. Do not purchase any material in aerosol spray can form. This type of delivery system is expensive compared to other methods and environmentally unsound.

- ❑ 4. Buy fluids in bulk for all of your cleaners, washes, and solvents, but be careful you don't create wastes due to shelf life or changing requirements. Where feasible, maintain a stockroom system on a return basis (one-for-one exchange) for cleaning solvents.

- ❑ 5. Use refillable, rechargeable pump or spray dispensers in place of commercial aerosol spray-cans. Refillable spray-can "look-a-likes" are now available. Commercially available self-pump and compressed air chargeable aerosol containers are available for dispensing your cleaners and degreaser.

- ❑ 6. Use spill prevention techniques to make certain no hazardous materials reach the shop floor. Post procedures and warnings where fluids are handled.

- ❑ 7. Keep a lid on all open tanks when not in use to minimize product loss and protect employees from vapors.

- ❑ 8. Make the Laws of Substitution law in your facilities.
  - Substitute non-hazardous petroleum-based cleaners for solvent cleaners.
  - Substitute non-chlorinated products for chlorinated products.
  - Substitute detergent-based solution for caustic solution when cleaning.
  - Substitute refillable, rechargeable dispensers for aerosol spray-cans.

- ❑ 9. Consider using the next generation of non-toxic terpenes or citrus-based cleaners. Be sure it has a flash point above 140˚F and a mild orange aroma.

- ❑ 10. Use drip trays and pans to keep any hazardous materials from reaching the floor, and potentially your sump.

- ❑ 11. Determine if it is cost effective to purchase a parts washer.

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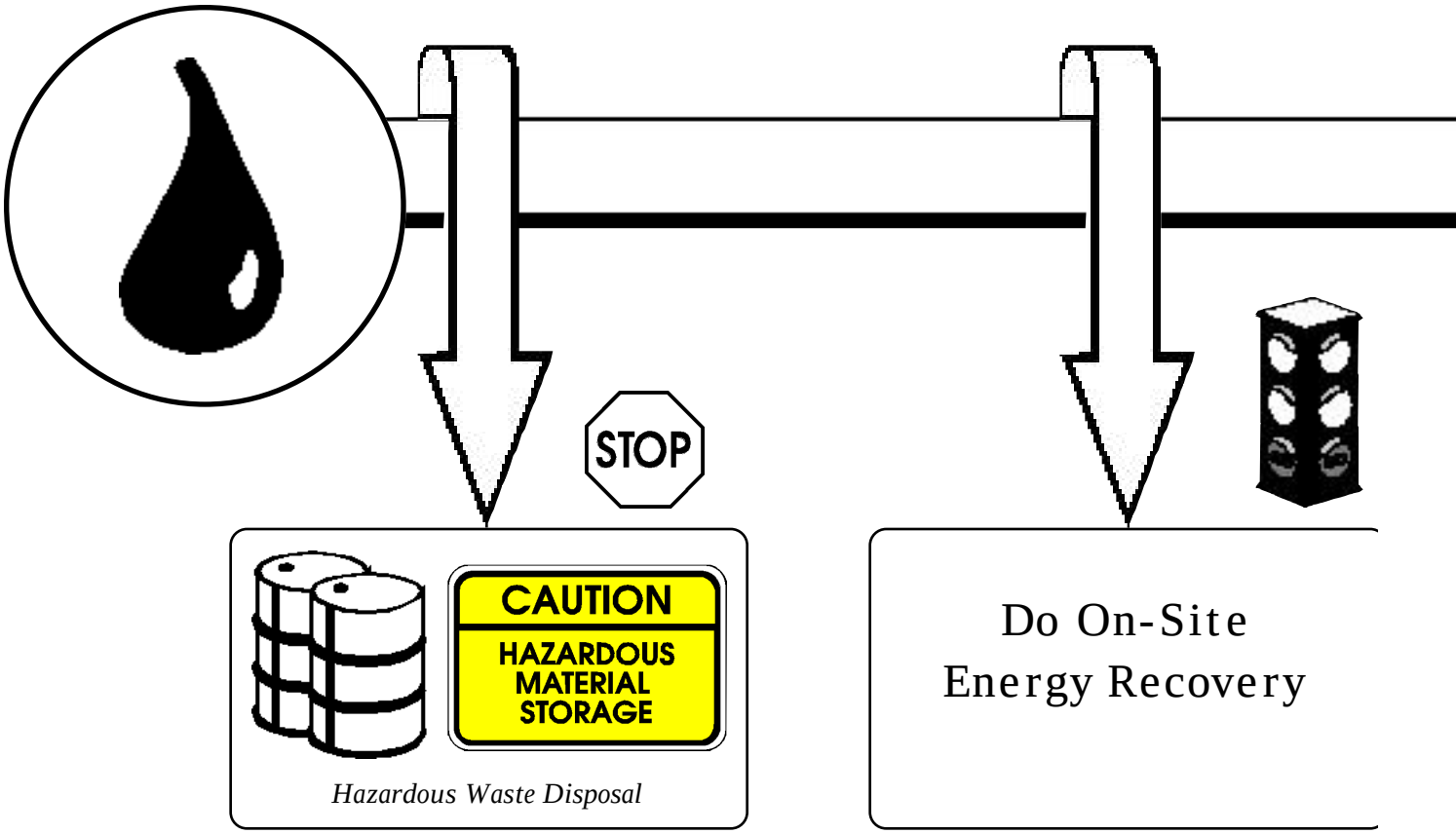
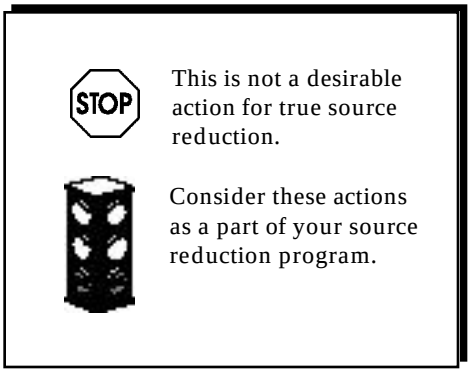
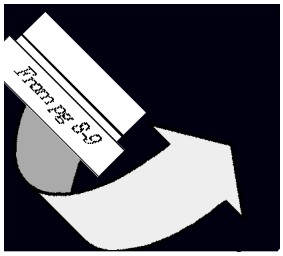
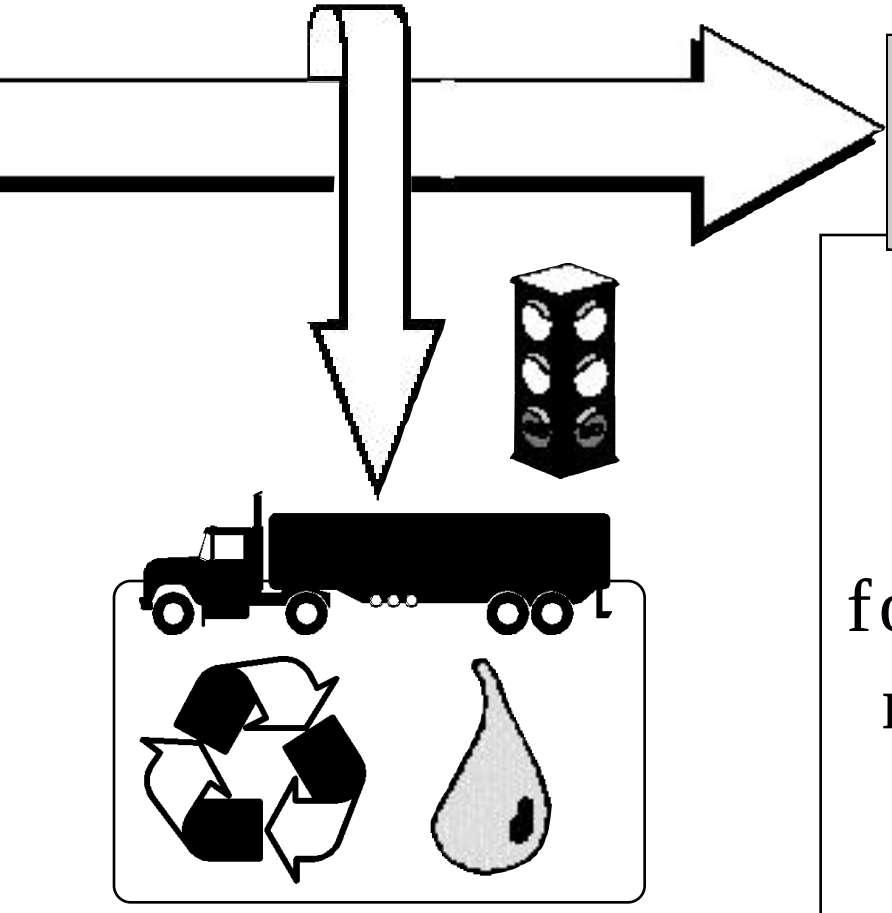




Used oils are regulated as a hazardous waste if they are not recycled and they exhibit the characteristics of a hazardous waste.





Do Off-Site Recycling
for Re-refined Oil

2. Used Oils & Lubricants

Recycling used oils for re-refined oil or for energy recovery reduces costs and environmental liabilities!

You can significantly reduce environmental concerns if you handle and recycle / recover used oils properly.

To pg 16

2. Used Oils & Lubricants

- Used oil is the largest source of pollution in U.S. waterways; most of this used oil is dumped by "do-it-your-selfers". Two-hundred and forty million gallons each year is poured down sewers and on the ground; this is as much as an Exxon Valdez spill every two weeks.
- Used oil usually contains toxic chemicals which are harmful to the environment and public health.
- Improper disposal of used oil threatens drinking water and the environment, across the U.S. and in our forests / districts.
- Recycling the motor oil that is thrown away each year could save the United States over 1.3 million barrels of oil per day.
- One pint of used oil can produce a slick of approximately one acre on water.
- One gallon of used oil from a single oil change can pollute a million gallons of drinking water. One quart of oil will foul the taste of 250,000 gallons of water.

Regulatory Issues

✓ Used oil is any oil that has been refined from crude oil or any synthetic oil, and has been contaminated by physical or chemical impurities as a result of its use. Waste oil includes bottom clean-out waste from virgin fuel oil storage tanks, or cleanup of virgin oil spills.

✓ Grease is a used oil as long as it has been refined from crude or synthetic oil.

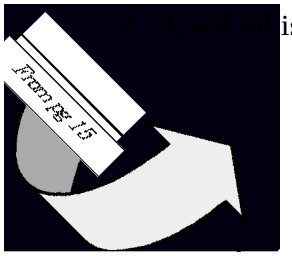
✓ Used oil is exempt from regulation as a hazardous waste if it is managed through a used oil recycler and is not mixed with any other hazardous waste.

✓ If hazardous solvents are mixed with the used oil, the oil can become hazardous waste.

✓ Never pour used oil down the sewer or allow it to flow from your shop or facility site to a storm drain.

✓ Used oil may not be disposed in a dumpster.

✓ Used oil is prohibited from being used on roads as a dust suppressant.



✓✓ Environmental Management Checklist ✓✓

- ❑ 1. Recycle used oil; never discard it:
  - It takes 42 gallons of crude oil to produce 2.5 quarts of new oil.
  - It takes one gallon of used oil to produce 2.5 quarts.
  - Recycling used oil includes burning used oil for energy recovery.
  - Engine oils do not wear out; the performance additives become depleted and the oil becomes contaminated with fuel, water, and metals contributed by wearing of the engine.

- ❑ 2. Keep your used oil segregated from all other waste streams. Store used oil and lubricants above ground in spill-proof, leak-proof, approved containers with proper labels ("USED OIL") and spill prevention and containment.
  - Used oils and lubricants may be hazardous because of low flash points or heavy metals and benzene. If recycled, it is exempt from hazardous waste classification.
  - If mixed with hazardous solvent, the used oil becomes a hazardous waste.
  - Use a chlorine detection kit, or have your used oil contractor, test your used oil before it leaves your facility to avoid later problems. Keep shipment logs and receipts accurate and current.

- ❑ 3. Recycle your oil with a contractor who sells your used oil to a re-refiner. Purchase all your oil in bulk from a re-refiner to encourage used oil reuse.
  - Depending on the market, you may be able to sell your used oil to a recycler.
  - Recycling used oil can significantly reduce the amount of oil that reaches the ground and surface water.

- ❑ 4. Do not purchase or use oil additives. Many oil additives contain chlorinated compounds such as chlorinated paraffins that can make your used oil a hazardous waste.

- ❑ 5. Install where possible special oil filters known as "oil extenders." These filters may extend by five to 10 times the useful life of oil, reduce disposal requirements, and reduce engine wear and tear.

- ❑ 6. If your shop areas need heat, try using approved used oil burners. Be sure to check local and state regulations. Used oil burners can be highly effective space-heating devices for maintenance and vehicle repair facilities.

- ❑ 7. Check with your oil recycler to determine whether your shop may be able to combine transmission oil and/or brake fluid with waste oil.

- ❑ 8. Check with your oil recycler to determine how to properly handle and recycle your synthetic oil.

- ❑ 9. Use re-refined oils whenever possible. Re-refined 10W30 motor oil is readilyavailable through the Defense Supply Center Richmond.

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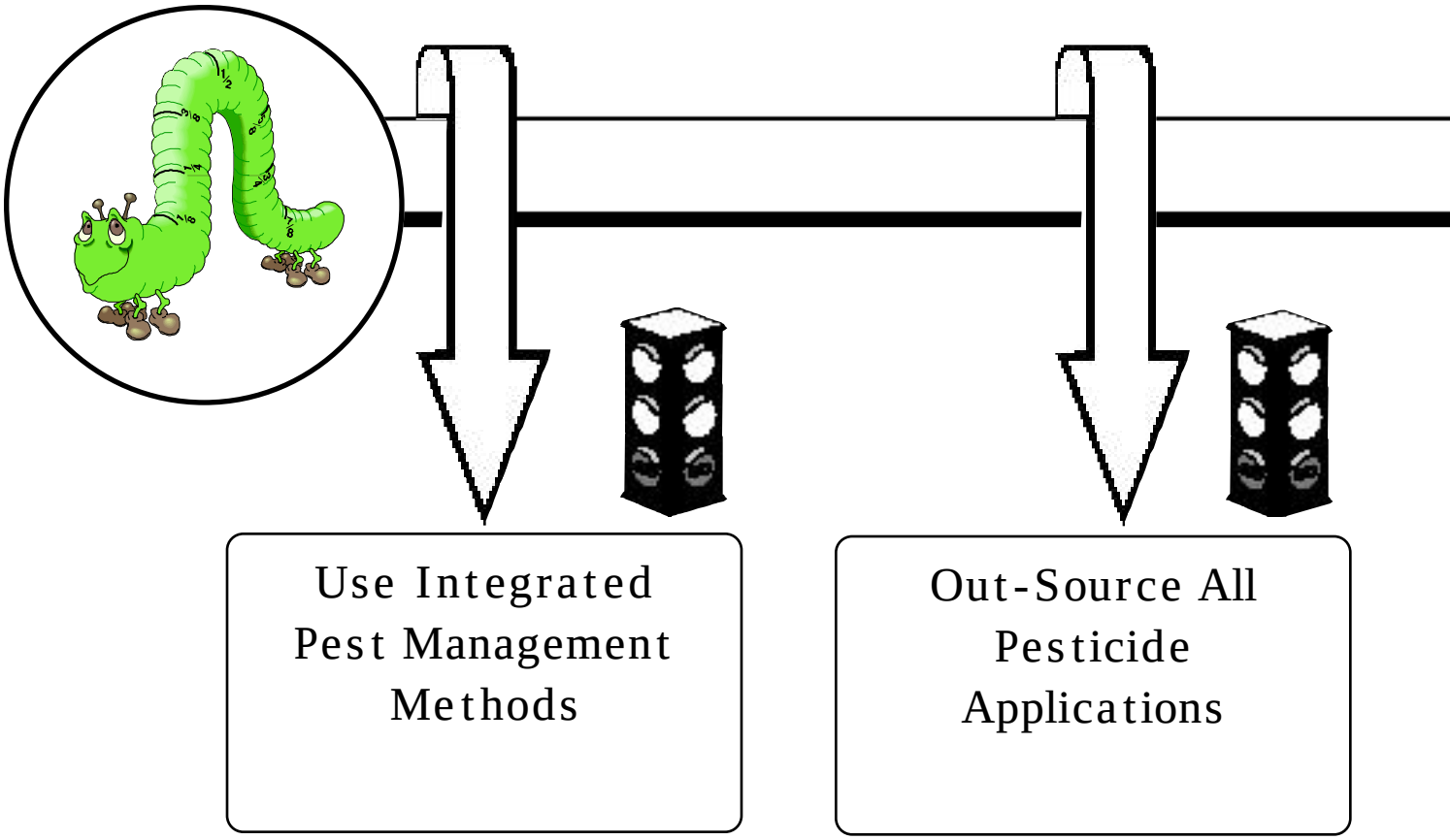
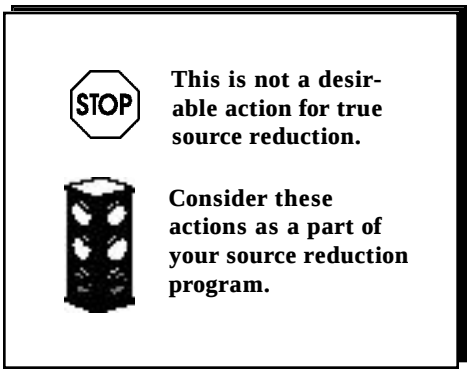
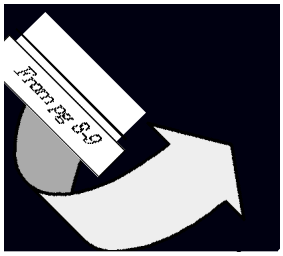




Eliminating the use of pesticides can minimize regulatory concerns and potential contamination.



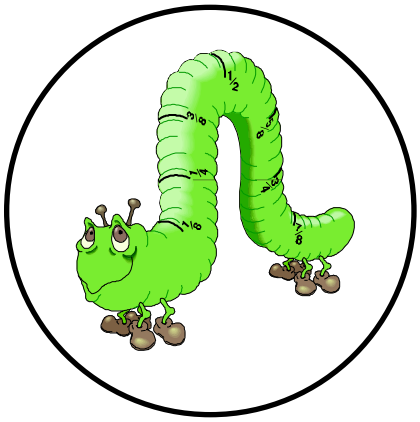
3. Insecticides, Pesticides, Herbicides

Avoiding the use of pesticides, herbicides, and insecticides avoids considerable environmental and health concerns.

If You Use Pesticides, Follow Forest Service Manual and Handbook

Source reduction in landscape design and maintenance can not only save money, it can also conserve natural resources.

To pg 20



3. Insecticides, Pesticides, Herbicides

- The use of insecticides, pesticides, and herbicides have serious environmental and health consequences.

- Integrated Pest Management (IPM) is now replacing the use of traditional pesticides. IPM focuses on ecologically-based processes that select strategies to regulate pests through planned and systematic use of detection, evaluation, and monitoring techniques, and all appropriate silvicultural, biological, chemical, genetic, and mechanical tactics that are economically, environmental, and aesthetically acceptable.

Regulatory Issues

✓ The registration, distribution, sale, shipment, receipt, and use of pesticides is regulated by the Insecticide, Fungicide, and Rodenticide Act, USDA Forest Service Manual Chapter 2150, and Forest Service Handbook Section 2109.14 (*Pesticide-Use Management and Coordination*).

✓ The proposed use of pesticides on Forest Service land must be approved by the District Ranger or Forest Supervisor prior to its use.

✓ For each pesticide project, a work plan is required which identifies the type of equipment to be used, personnel staffing, pesticides to be used, rate, timing, and method of application, sensitive and high value areas, and public concerns.

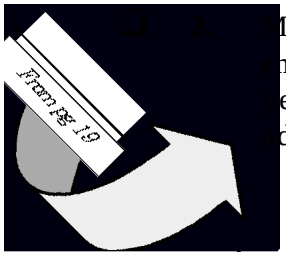
✓ A general safety plan is required for all pesticide-use projects except where housekeeping-type pesticides are used, less than one pound of active ingredient is required for the project, or for field experiments.

✓ A job hazard analysis is required for each project. This analysis determines the hazards of the pesticide project and identifies ways to eliminate them.

✓✓ Environmental Management Checklist ✓✓

❑ **1.** Consider an Integrated Pest management (IPM) program that combines chemical, cultural, and biological practices. Consider less soluble, less-leachable, less-persistent, and less-toxic pesticides whenever possible.

❑ **2.** Minimize the use of pesticides and herbicides, and pick those that pose the least environmental risk for your situation. Treat only the necessary areas. Use contact pesticides whenever possible. Refer to the *Forest Service Resource Manual* for additional information.



- ❑ **3.** When applying pesticides or herbicides, consider the weather's impact on pesticide migration. Control pesticide and herbicide droplet size and deposition. Avoid risk areas such as surface water, groundwater wells, wetlands, animal populations, and areas frequented by people.

- ❑ **4.** Mix and apply pesticides or herbicides only as specified by the manufacturer on the product packages.

- ❑ **5.** Calibrate application equipment. Consider using dyes to facilitate uniform application.

- ❑ **6.** Triple rinse all containers. Return cleaned containers to supplier or licensed drum reconditioner.

- ❑ **7.** Use cleaning water as makeup for the next pesticide or herbicide application. Use high pressure and water knife spray nozzles, steam cleaners, or wiper blades for cleaning tanks and containers.

- ❑ 8. Do not buy more than you need for the immediate application because the pesticide or herbicide could become restricted in the future and may need to be disposed of as a hazardous waste. To avoid risk of product expiration or spillage, only mix enough pesticide/herbicide for your present application needs.

- ❑ 9. Store large inventories (greater than 200 gallons or 400 pounds) of pesticides in a permanent facility located at least 50 feet from other structures or in a unit having 3-hour fire-resistant construction, that is posted with warning signs on all walls and securely locked. The permanent facility must be ventilated, cool, and dry, and pesticides containers must not be stored on the ground. Pesticides must not be allowed to freeze, and must be protected from rain and direct sunlight.

- ❑ 10. Temporary storage must be in a secured building or behind climb-proof fences that is posted with warning signs. Security guards or electronic surveillance is required to prevent pilferage, damage, and/or unauthorized access.

- ❑ 11. All pesticides must be stored in original containers with legible and visible labels, away from food, feed, seed, potable water, clothing, oil-based paints and other flammable liquids, and fertilizer. Smoking, eating, and drinking in or near facilities where pesticides are stored is prohibited.

- ❑ 12. Personal protective clothing and equipment and eye wash stations must be readily available at temporary and permanent storage facilities, mixing stations, and work project locations.

- ❑ 13. A Material Safety Data Sheet (MSDS) is required for each product used and in storage. These MSDSs and fire extinguishers must be readily available at the storage area and project location.

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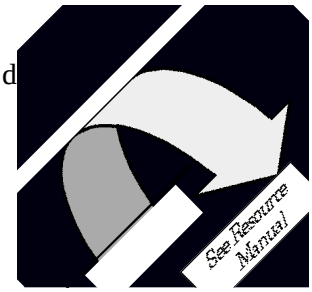
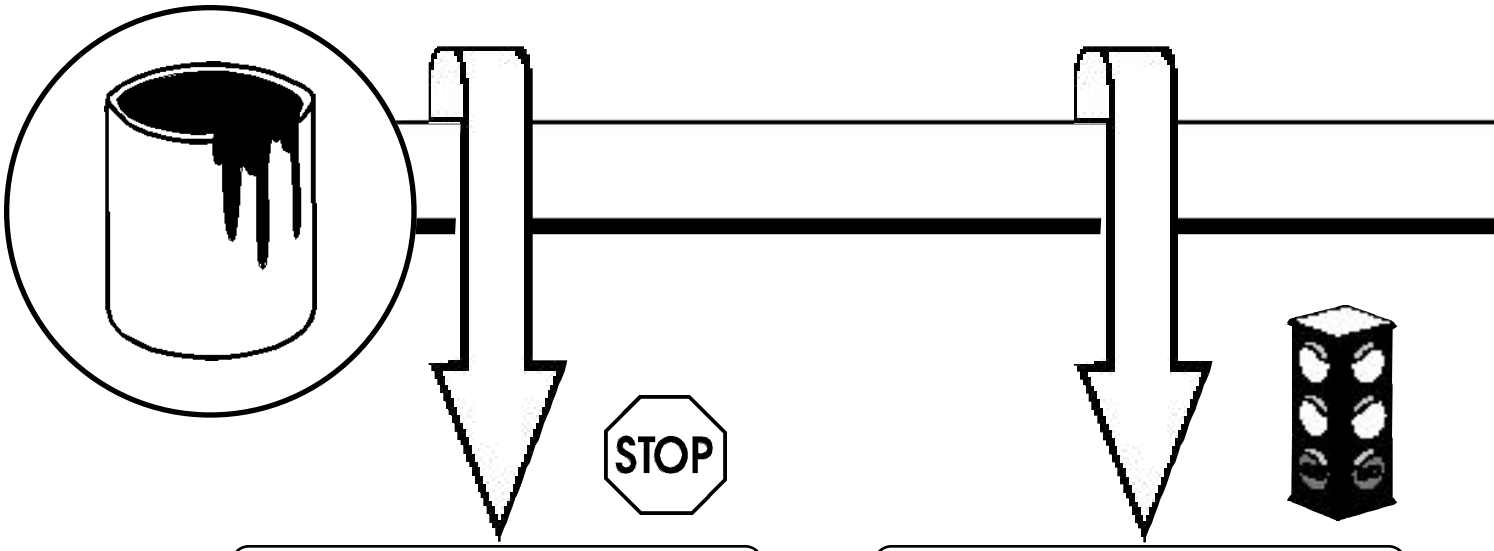
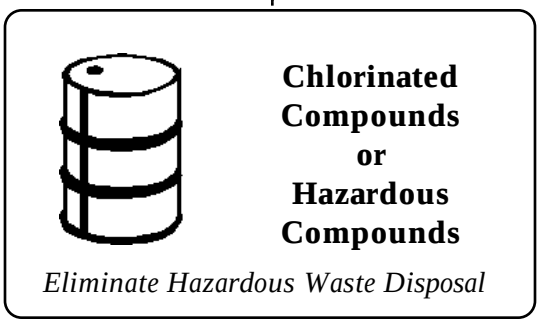
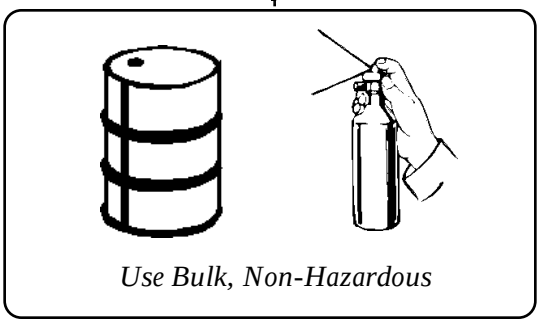
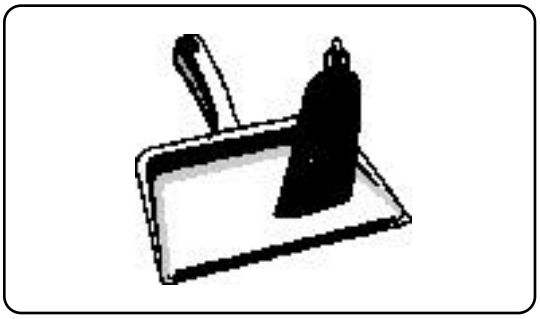




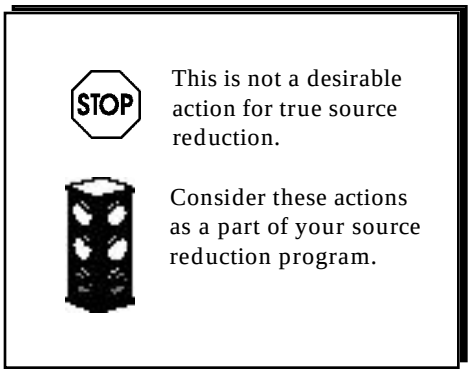


Cleanup Solvents
Surface Prep Solvents

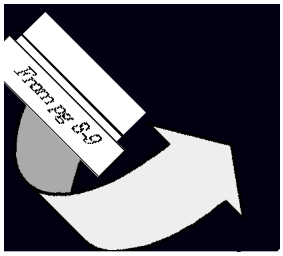


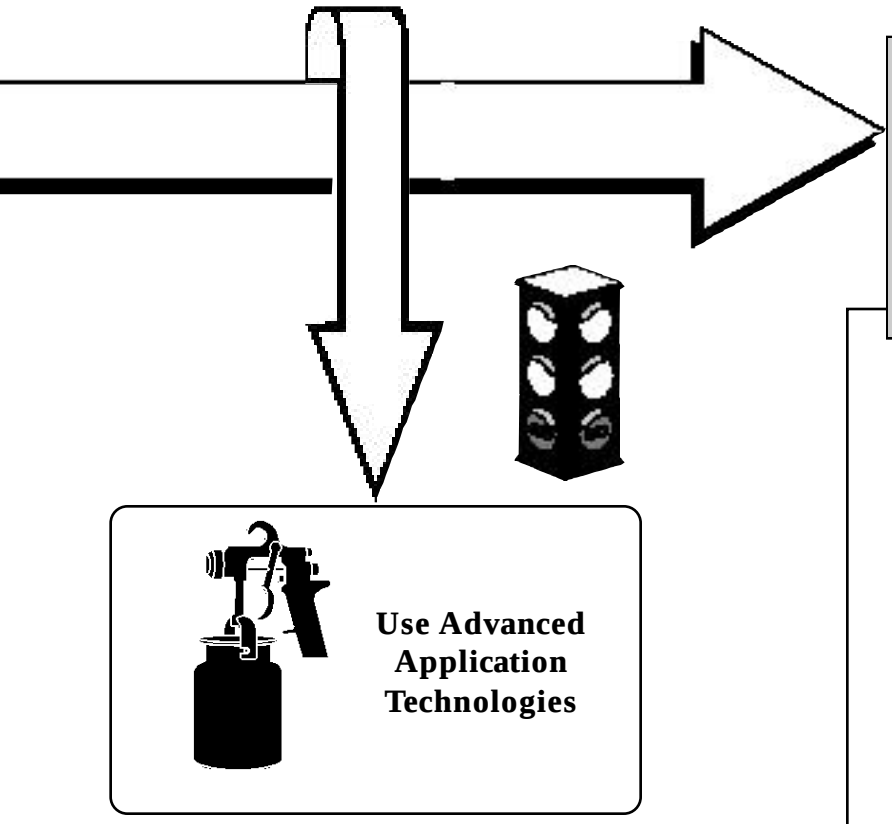


Use Improved Housekeeping



Paint filters and paint system cleanup solvents may be regulated as hazardous wastes.



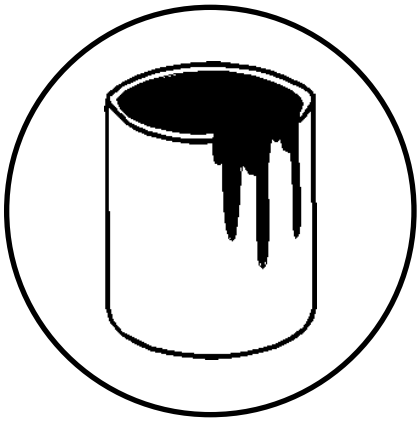


4. Paint Application and Cleanup

Latex paints, high efficiency paint technologies, and non-hazardous solvents reduce costs & environmental liabilities.

You can minimize environmental concerns if you consider new proven technologies.

To pg. 24



4. Paint Application and Cleanup

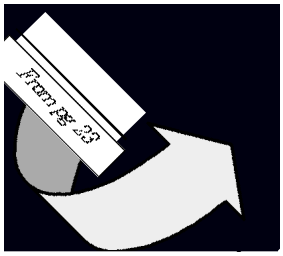
- The use of paints with chromium and lead pigments have serious environmental and health consequences.
- Paint operations can generate large volumes of hazardous wastes through the use of chemicals such as paint thinners and reducers, as well as the paint itself.
- Paint wastes are comprised of leftover paints, dirty thinner from equipment cleaning, volatile organic compound (VOC) emissions – all of which have a significant impact on the environment.

✓✓ Environmental Management Checklist ✓✓

❑ **1. Employ rigid inventory control. As simple as this statement may seem, it is a significant pollution prevention option for reducing the use of thinners and paint.**
- Keep daily and monthly logs. Records should be kept that show the exact amount of thinner and paint each employee checks out and uses.
- These records can be used to spot wasteful product usage.
- Compare use rates of different employees to determine if the problem is worker related, or facility related.

❑ **2. Institute simple housekeeping practices throughout your shop. These represent significant pollution prevention options and include several basic steps:**
- Always transfer volatile compounds by pumping from one container to another using transfer hoses or hard-plumbed lines.
- Use tight fitting lids and leak-proof spigots.
- Never pour paint or thinner from one container to another, especially large containers to smaller ones.
- Use paint cups for small jobs to reduce the chance of over mixing paints.
- Use Teflon® paint cups for easy cleaning.
- Scrape paint cups of residual paint before cleaning them with solvent.

❑ **3. Purchase degreasing agents, surface cleaners, thinners, and paint cleaning solvents only after checking the MSDS and ensuring that the product:**
- Does not contain any hazardous chemicals when it becomes waste.
- Contains no chlorinated compounds.
- Has a flash point above 140°F (closed cup).



- ❑ **4. Paint cleaning solvents and thinners are now available that are hydrocarbon-based, Stoddard-type solvents that have been distilled so that no chlorinated or other hazardous components are present. They look and feel like the traditional hazardous paint cleaning solvents without a significant loss in performance. Some of these products are effective substitutes while others are not. Be sure to check a new product yourself to verify that it works effectively for your paint and painting situation.**

- ❑ **5. Do not purchase any material in aerosol spray-can form. This type of delivery system is very expensive compared to other methods, and it is environmentally unsound no matter what the propellant. Alternative delivery systems now exist that mimic the aerosol spray-can but use compressed air (via hand-pumping or your shop compressor) to propel your non-hazardous solvent.**

- ❑ **6. Spray guns should only be cleaned in enclosed gun cleaners that recycle the cleaner. Models such as Gun Butler®, Astro®, Herkules®, and Uni-Ram Cascade® not only prevent loss of solvent to the atmosphere but also greatly reduce the net amount of solvent per gun required for cleaning. Reductions of up to 50% are easily obtained through the use of enclosed gun cleaners. [Note: Allow a minimum of 2 minutes to elapse after you shut off the gun washer before you open it up and remove the gun.]**

- ❑ **7. If you continue to use solvents in your shop, consider the purchase of a distillation unit to reclaim used solvent (e.g., the spray gun cleaning process). Significant savings can be realized with payback periods ranging under 24 months.**

- ❑ **8. Unused oil based paints should be disposed of as a hazardous waste. Dispose of unused latex paint by: a) apply excess paint on cardboard or other surface and let dry; b) evaporate carrier into the air (make sure it is completely hardened before disposing); or c) use all the paint when painting a wall or other surface.**

- ❑ **9. Institute fluid management practices that require segregation and reuse of paint thinner. Since some paints require thinning before use, segregate solvents generated from cleaning according to color. Use this partially-used solvent to thin the next batch of same color paint.**

- ❑ **10. Switch to computerized paint mixing systems (e.g., DuPont's) that can break a paint formula down to 1/16th of a pint and carefully meter the paint on a per job basis. Savings can reach up to 50% less paint per vehicle or job and result in significantly reduced cleanup costs.**

- ❑ **11. Always use recyclable rags (laundry service) and not disposal wipers. All disposal wipes should be removed from your facility.**

- ❑ **12. If you paint signs, consider switching to computer design and generation of pressure-applied laminates.**

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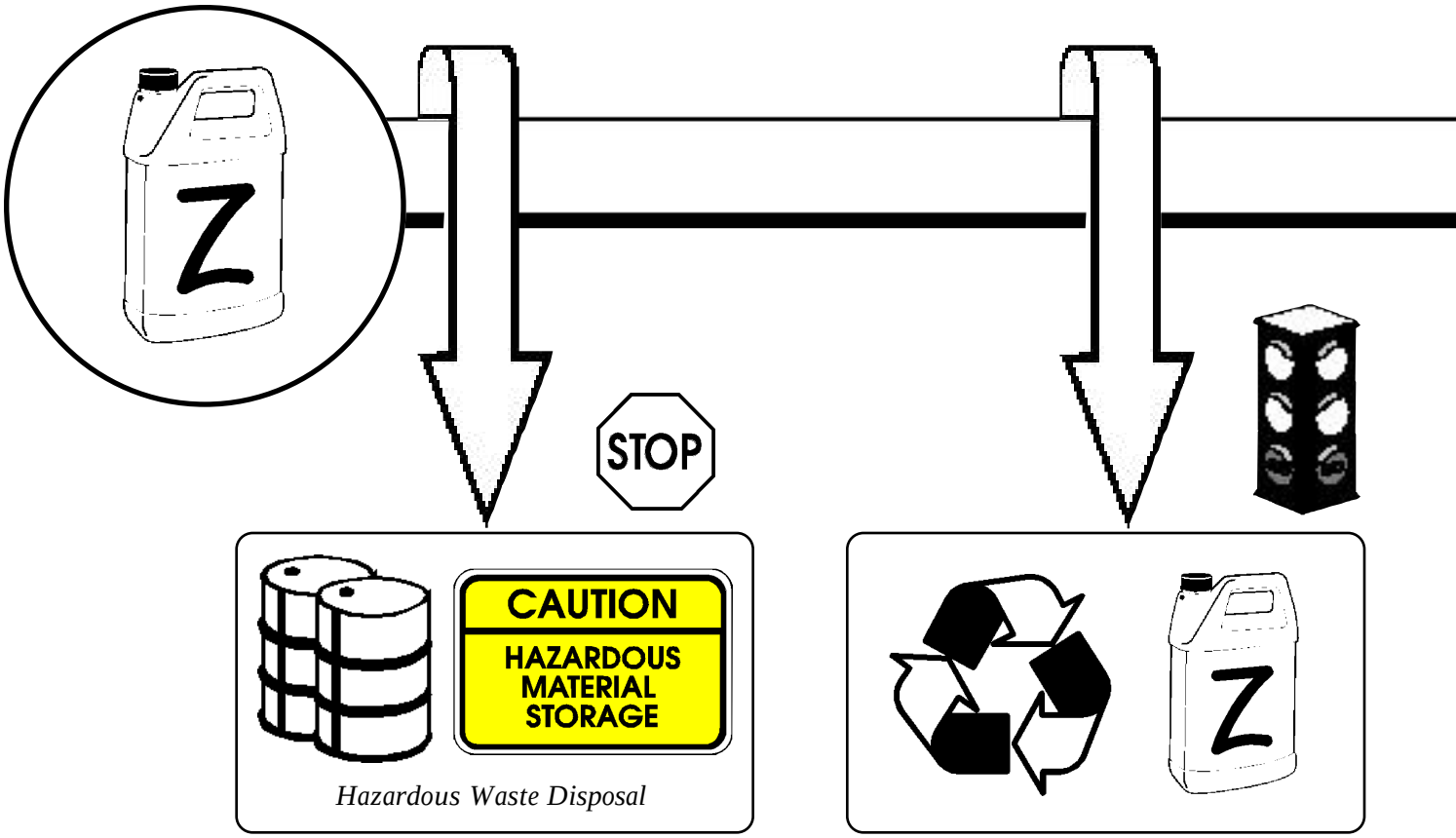
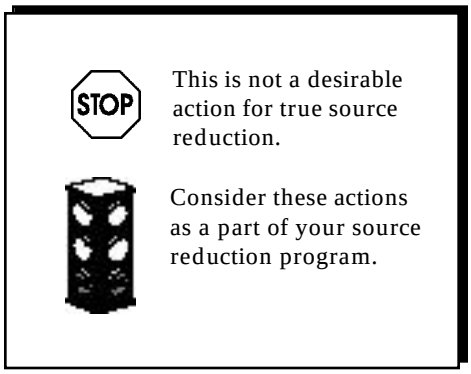
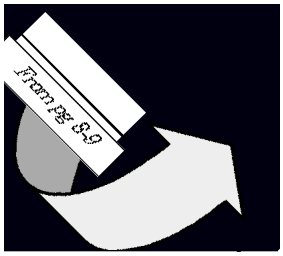
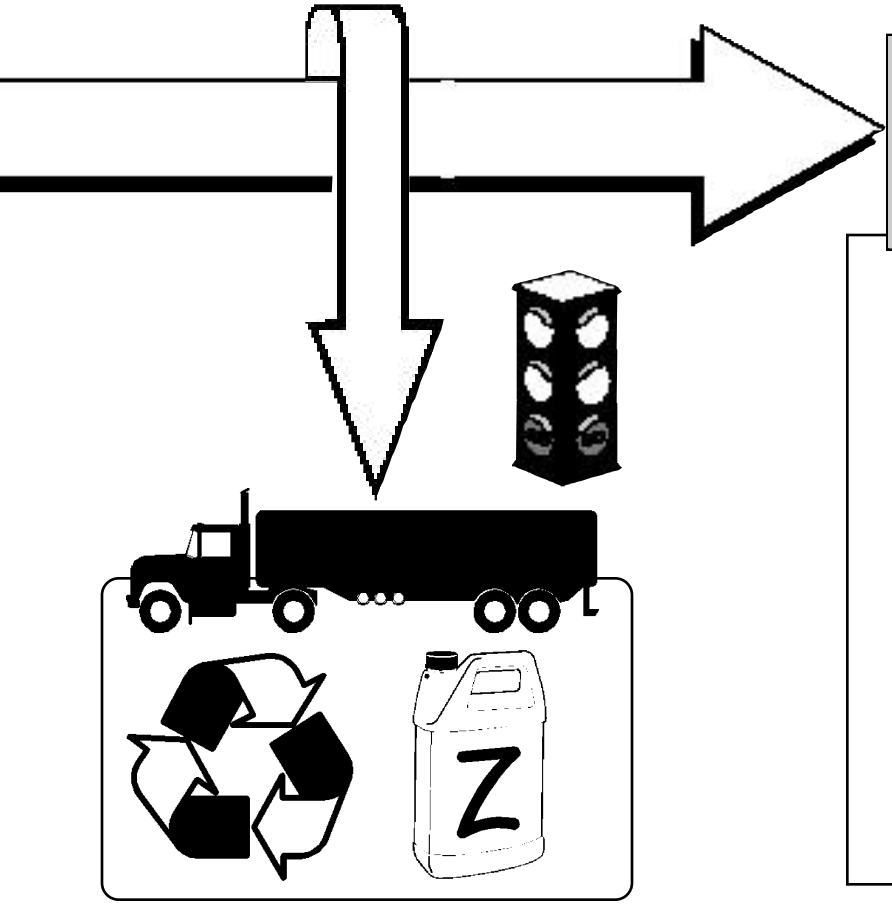
See Resource Manual





Used antifreeze may be regulated as a hazardous waste due to toxicity characteristics if disposed as a waste.





Off-Site Recycling

5. Used Antifreeze

Recycling used antifreeze, on- or off-site, reduces costs and environmental liabilities.

You can significantly reduce environmental concerns if you handle and recycle used antifreeze properly.

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5. Used Antifreeze

- Most antifreeze is comprised primarily of ethylene glycol which is sweet tasting and very attractive to most children and animals, but a deadly poison.
- The discarding of waste antifreeze by pouring it onto the ground is prohibited. It is potentially fatal to dogs, cats, and other small animals.
- The discarding of waste antifreeze by pouring it into a storm sewer also is prohibited. Used antifreeze should always be stored under lock and key and recycled.

Note: Propylene glycol is not as toxic as ethylene glycol and is being used more and more as a replacement for ethylene glycol. It exhibits, however, very similar physical (coolant) and chemical (metal extracting) properties as ethylene glycol at a significantly higher cost. It also becomes just as hazardous as ethylene glycol at the end of its useful life by picking up heavy metals during use.

Regulatory Issues

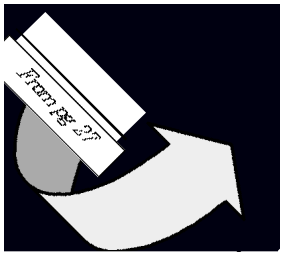
✓ Used antifreeze is part of the glycol family which incudes ethylene glycol and propylene glycol, and exempted as a hazardous waste as long as it is recycled.

✓ Used antifreeze may be characterized as hazardous due to heavy metals from the engine cooling system (such as zinc, lead, and tin) if it is not recycled.

✓ Never allow waste antifreeze to flow from your facility site to a storm drain or sump, or onto the ground.

✓ *Do not dispose of used antifreeze in a sanitary sewer.* One exception to this rule (which is discouraged) is to have it tested, shown not to be hazardous, and permission granted by the local sewer authority.

✓ Ethylene glycol is a Clean Air Act Hazardous Air Pollutant.



✓✓ Environmental Management Checklist ✓✓

❑ 1. Recycle used antifreeze at your facility into reconditioned antifreeze; never discard it. On-site recycling may be the only way to recover antifreeze at remote facilities, and it can save money as well.
- Most facilities today are finding that the inexpensive and easy-to-use portable filtration units are the preferred option; see figure at bottom of this page.
- On-site antifreeze recycling minimizes the entire waste stream including the used antifreeze and the spent filter cartridges from the recycling unit. Recycling also means less new or "fresh" antifreeze must be purchased.

❑ 2. Do on-site recycling of antifreeze with small portable units that roll up to the side of a vehicle. These units can be very practical and highly profitable; see figure at bottom of this page.

❑ 3. Select on-site antifreeze recycling that employs filtration. Distillation technology currently is too expensive for most shops ($8,000^{+}). A typical filtration recycling costs around $2,000.

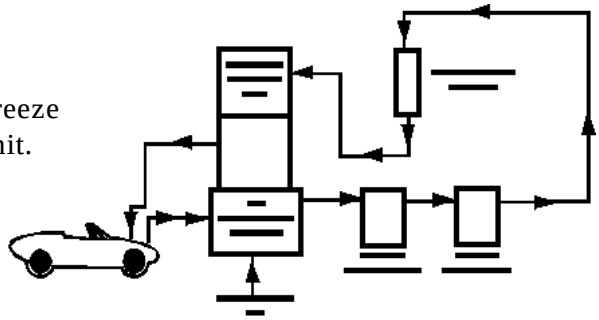
❑ 4. Keep used antifreeze segregated from other wastes; use "Antifreeze Only" pans.

❑ 5. For recycling off-site, use an established and licensed recycling contractor.

❑ 6. The discharge of antifreeze into wastewater lagoons is strongly discouraged. It is recommended that antifreeze be pumped back into holding drums and recycled. Small portable units, as described above, could be used to reclaim this used antifreeze.

❑ 7. Consider using "hydrophobic mops" for separating oils from antifreeze.

Portable Antifreeze Recycling Unit.



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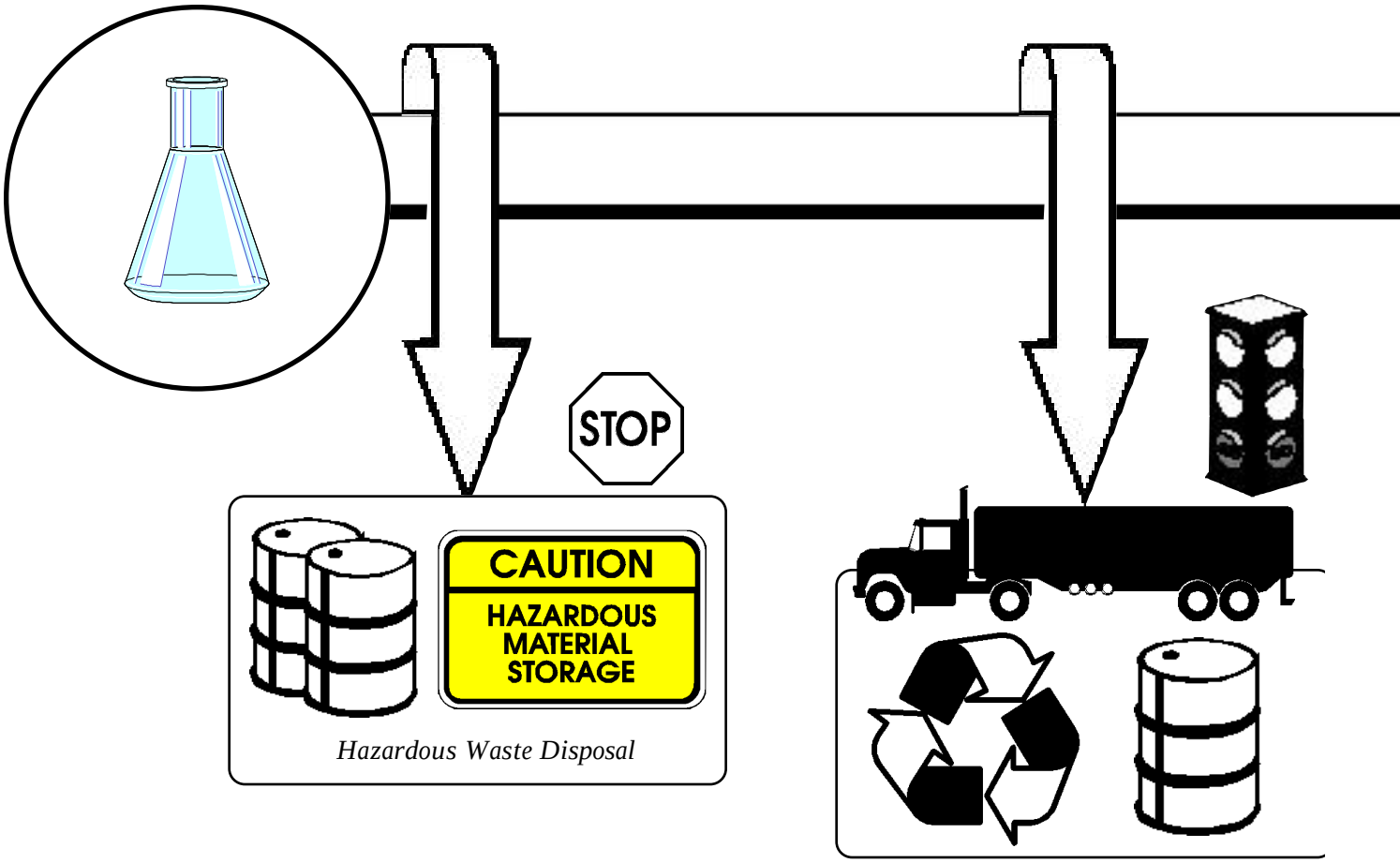
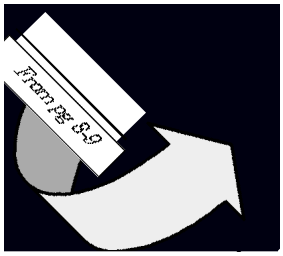


Off-Site Reuse/Recycle of Acids, Bases, and Other Reagents

STOP This is not a desirable action for true source reduction.

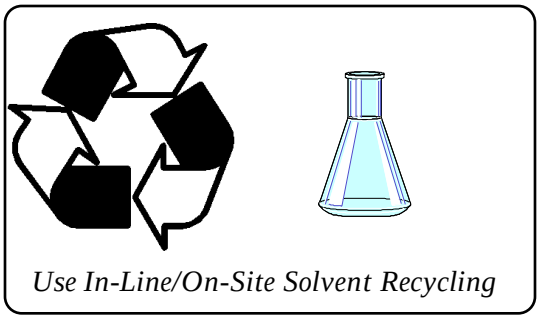
Consider these actions as a part of your source reduction program.

Several companies provide on-site used solvent recovery services for laboratory cleaning reagents.



6. Laboratories

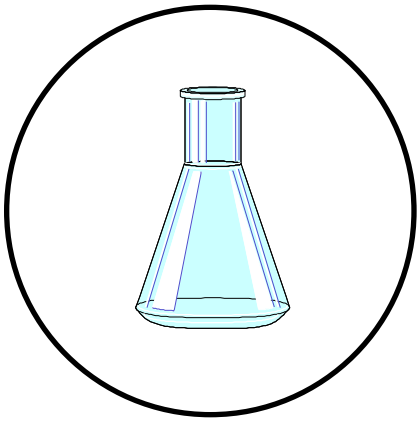
Eliminating regulated laboratory reagents and solvents can reduce costs and environmental liabilities!



Use Non-Regulated Cleaners

You can greatly reduce your environmental "footprint" if you use non-hazardous cleaning reagents and go "aqueous."

To pg 32



6. Laboratories

- Many laboratory reagents and cleaning solvents contain chlorinated compounds (ozone depleters) that will become hazardous waste at the end of their useful life cycle.
- Several common lab solvents contain 1,1,1-trichloroethane (known as “TCA” or “Trich”) which causes lung, liver, and brain damage.
- Many labs use acetone and methyl ethyl ketone (MEK) which cause liver and kidney damage.
- Significant environmental concerns are associated with chlorinated solvents. They are expensive to “clean up” from the soil, water, and air, and they pose a significant threat to the earth’s ozone shield in the stratosphere.

Regulatory Issues

✓ If your current waste hauler or recycler “rotates out” your used solvent on a regular basis, the monthly total of this hazardous waste counts against your generator status. This may be your single largest contributor to your waste generator classification.

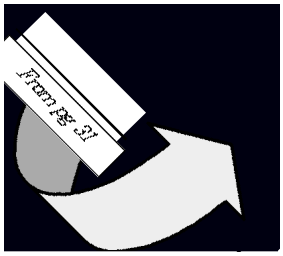
✓ Many of the chemicals in your laboratory are listed and/or characteristic hazardous was when they go out your back door as waste, especially if they contain the following:

- Stoddard solvent
- toluene
- xylene
- 1,1,1-trichloroethane
- benzene
- methylene chloride
- perchloroethylene
- dichlorobenzene
- mineral spirits
- carbon tetrachloride

✓ Significant worker health and liability concerns are associated with laboratory operations. Petroleum-based solvents commonly found in NPS labs can cause nervous system damage and may be considered carcinogenic (cancer causing).

✓ Serious flammability concerns are associated with many lab solvents, especially those with flash points at or below 105˚F.

✓ A chemical hygiene plan may be required if you have a laboratory that uses hazardous materials.



✓✓ Environmental Management Checklist ✓✓

❑ 1. Make the move to the new generation of lab cleaners that do not contain chlorinated compounds or other hazardous compounds. See the *Forest Service Resource Manual* for product names and local vendors.

❑ 2. Recycle on-site your cleaning solvents. Use normal distillation or vacuum distillation for high boilers.

❑ 3. Evaluate laboratory washer alternatives that include bake ovens, aqueous washers, terpene cleaners, and on-site solvent recycling units. See *Forest Service Resource Manual* for product names and local vendors.

❑ 4. Consider using the next generation of non-toxic terpenes or citrus-based cleaners. Be sure to purchase only those with a flash point above 140°F. and with a mild orange aroma (check MSDS). Terpenoid solvents can be very effective degreasing and cleaning agents.

❑ 5. Remove all solvents and cleaners containing chlorinated compounds from your laboratory facility. Check the MSDS for all incoming products to ensure that chlorinated compounds are not reintroduced.

❑ 6. When purchasing solvents and cleaners check the MSDS and be sure the product does not contain hazardous chemicals when it becomes waste, that it contains no chlorinated compounds, and that it has a flash point above 140°F (closed cup).

❑ 7. Dedicate certain wash stations for specific cleaning purposes only. Employ where possible aqueous ultra-sonic units. Consider using a non-hazardous compound.

❑ 8. Employ multi-stage cleaning in your laboratories: for example, the first stage for crude cleaning of heavily soiled or greasy glassware, second stage for light cleaning, and a final stage (if necessary) with a distilled alcohol rinse.

❑ 9. Establish a barcoding, computer based inventory system for all laboratory chemicals, including reagents, solvents, and cleaners. This is remarkably simple and inexpensive to accomplish yet very powerful as a management tool to reduce the amounts of hazardous materials on-site and to track their usage.

❑ 10. Be sure to maintain an on-going training program in the use of the new generation cleaners and solvents.

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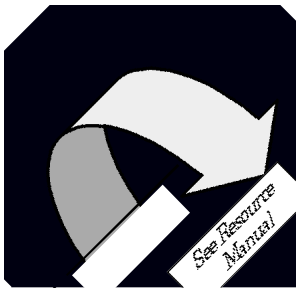
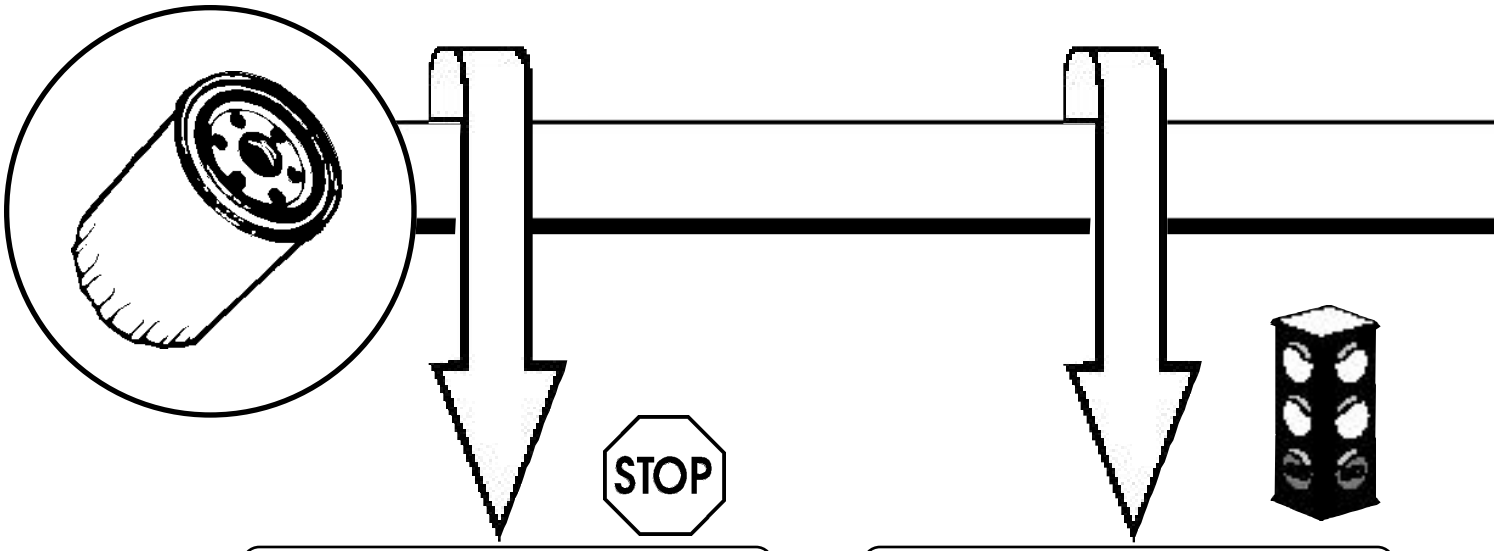
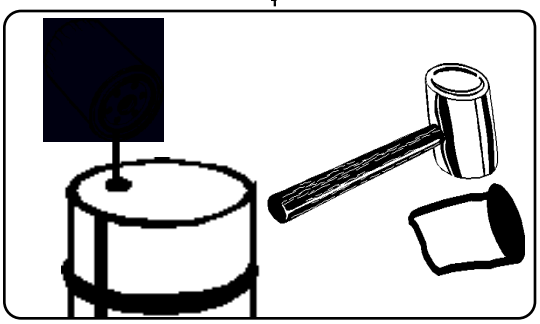
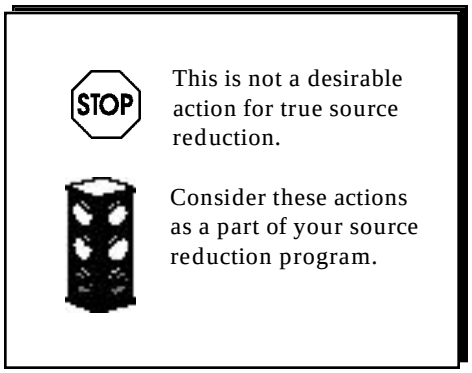


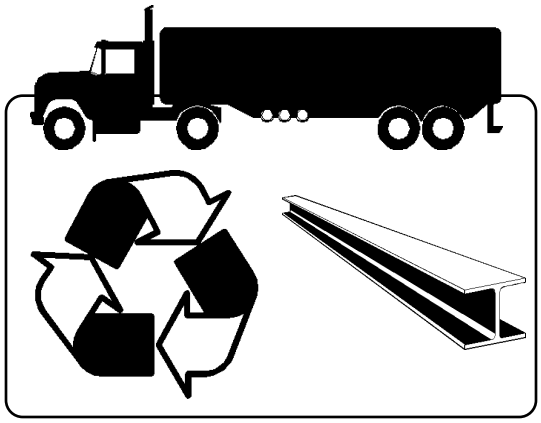


Un-drained Oil Filters Can Be a Hazardous Waste



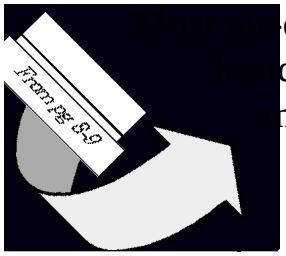
Hot Drained, Punctured, and/or Crushed Spent Oil Filters



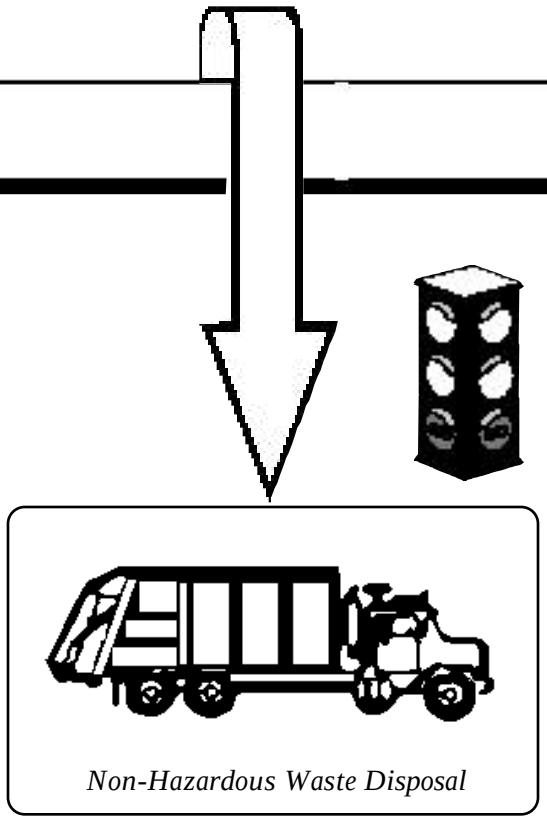


Off-Site Recycling for Metal Recovery

Spent oil filters may or may not be regulated as a hazardous waste if disposed of as waste; however, they are exempted if recycled for metal recovery. Most air-conditioner and antifreeze filters are also regulated and must be handled as hazardous waste. If properly drained, transmission and non-terne plated fuel filters are not hazardous wastes.



7. Used Filters

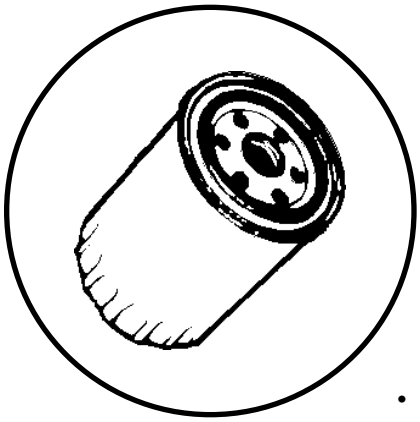


Transmission Filters
Fuel Filters

Recycling used oil filters and properly managing other filters reduces environmental liabilities.

You can significantly reduce your environmental concerns if you properly manage your used filters.

To to pg 36



7. Used Filters

- Improperly drained oil filters constitute a major source of used oil waste throughout the country.
- Used oil is the largest single source of pollution in United States' waterways.
- Used oil usually contains toxic chemicals which are harmful to the environment and public health.
- Improperly disposed oil filters threaten our drinking water.
- One pint of used oil can produce a slick of approximately one acre on water.
- One quart of oil will foul the taste of 250,000 gallons of water.

Regulatory Issues

✓ Fully drained non-terne-plated spent oil filters bound for recycling are currently exempted from hazardous waste regulations.

✓ Terne-plated spent oil filters contain an alloy of lead and tin and can be regulated as a hazardous waste.

✓ Spent transmission and fuel filters are not regulated as hazardous wastes as long as they are properly drained and can be disposed through your commercial non-hazardous solid waste service provider.

✓ Spent antifreeze recycler unit filters may be considered hazardous waste.

✓ "Fully drained" means hot drained by one of three methods: crushing, puncturing, or dismantling.

✓ Oil filters may be recycled without crushing or compacting. The use of a crusher is optional.

From pg. 35

✓✓ Environmental Management Checklist ✓✓

❑ 1. Do not purchase terne-plated oil filters. Specify to your supplier that terne-plated oil filters are unacceptable. The manufacturer of the filter is your best source for distinguishing terne- from non-terne-plated filters.

❑ 2. "Hot drain" to remove used oil from spent oil filter; drain the oil filter near engine operating temperature, above room temperature. Never drain oil filters outdoors. Puncture the oil filter around the dome. This will allow most of the trapped oil to escape and be collected for recycling. Spent oil filters contain up to 5 ounces of used oil after they have been drained for 24 hours.

❑ 3. Crush, puncture, or dismantle oil filters to reduce solid waste volume after removing the oil. Oil filters may be recycled, however, without crushing or compacting. Recycle the oil from the filters and send the crushed, punctured, or dismantled oil filter out for scrap metal recovery.

❑ 4. Drain spent transmission and fuel filters. They may currently be discarded in the dumpster as long as they are thoroughly drained. Your used oil hauler may recycle both spent oil filter casings and oil. If that is the case, you can return to your recycler the spent transmission and fuel filters without draining.

❑ 5. Recycle the used oil that is drained from filters; never discard it. It takes 42 gallons of crude oil to produce 2.5 quarts of new oil. It takes only 1 gallon of used oil to produce 2.5 quarts of new oil. Always recycle oil.

❑ 6. Treat air-conditioning filters containing CFC-12 or an equivalent Freon® as a regulated waste at present. Do not dispose in a dumpster.

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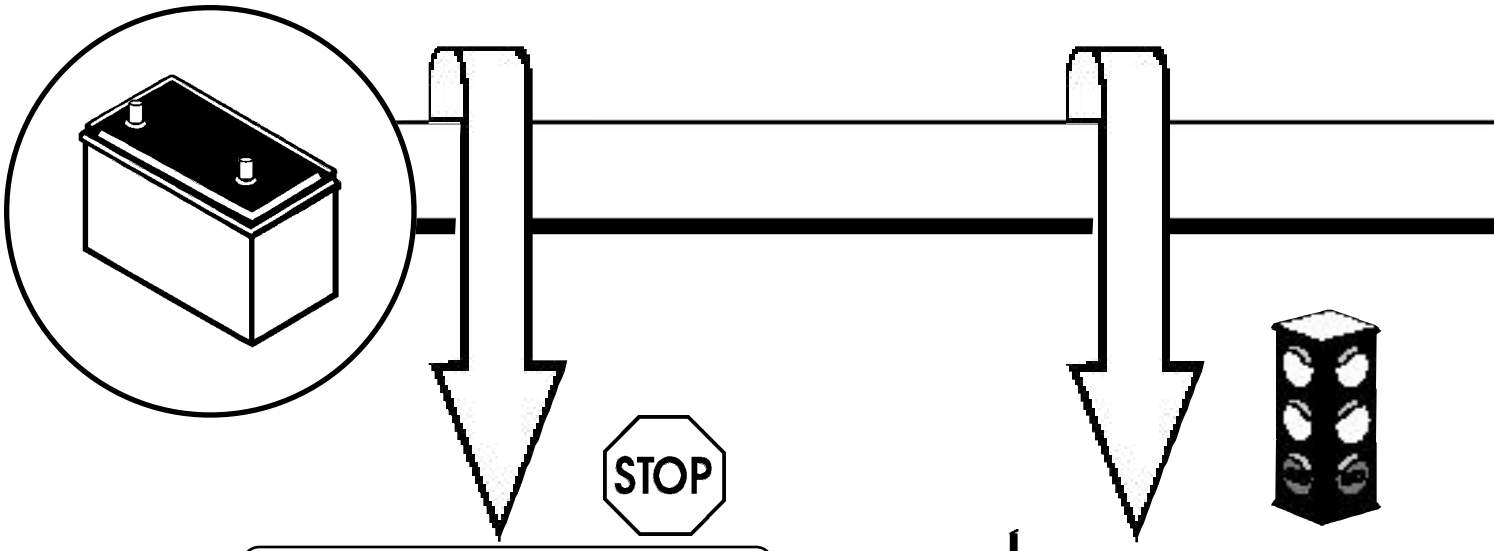
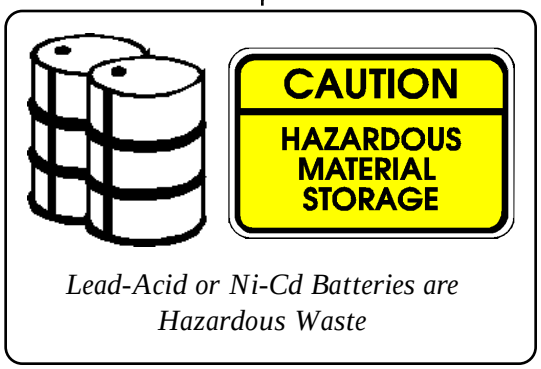
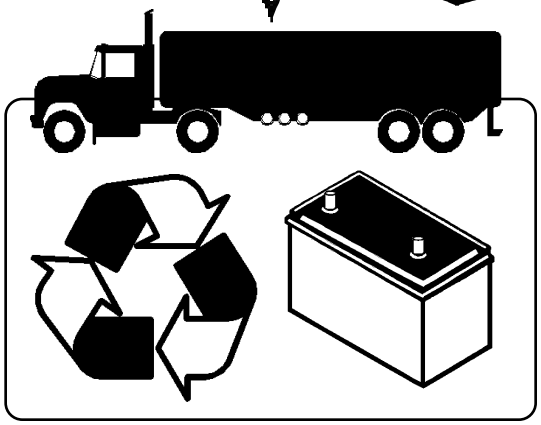
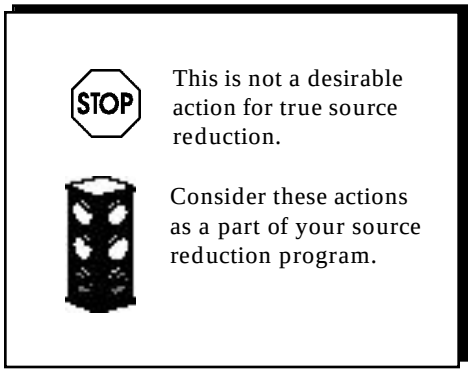




Lead-Acid or Ni-Cd Batteries are Hazardous Waste



Off-Site Recycling For Acids

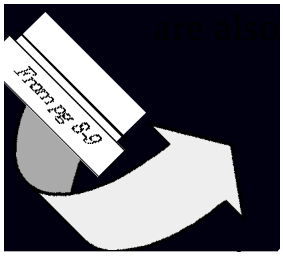


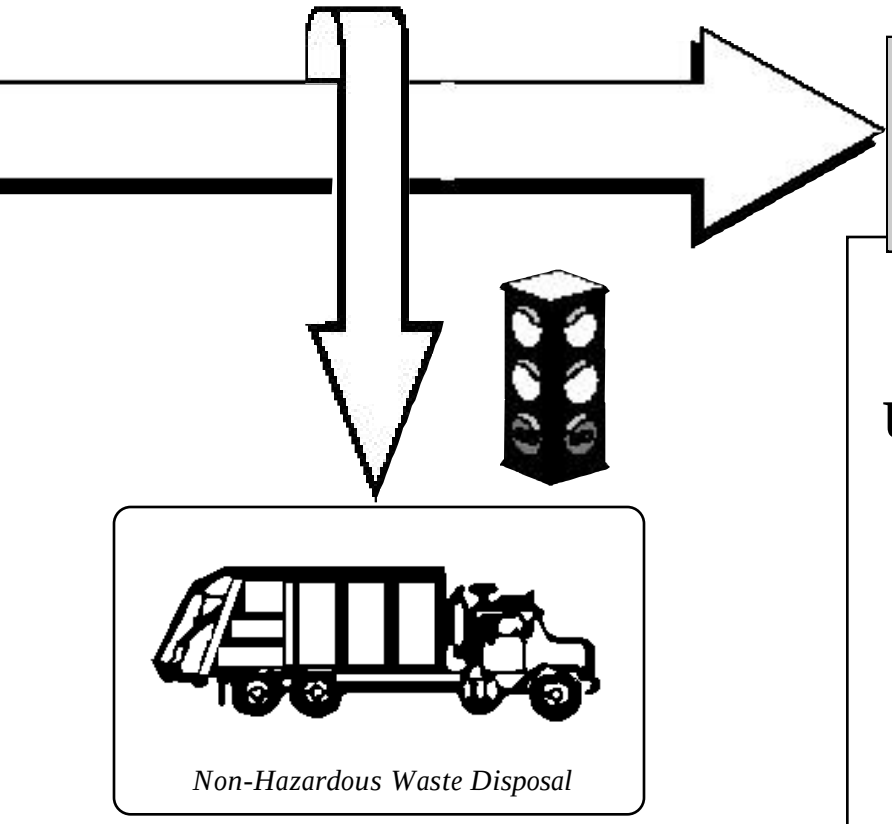
This is not a desirable action for true source reduction.

Consider these actions as a part of your source reduction program.

Off-Site Recycling for Lead

Used Nickel-Cadmium are regulated as a “universal” waste. Used lead-acid batteries are also regulated by RCRA if disposed of as waste; they are exempted from hazardous waste regulations if recycled.





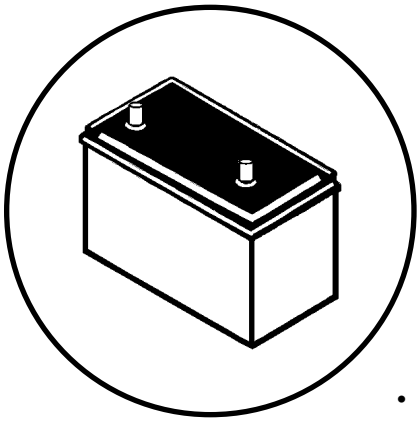
Non-Mercury Dry Cell Batteries

8. Used Batteries

Recycling used lead-acid and Ni-Cd batteries eliminates an environmental liability

You can reduce environmental concerns if you manage your used batteries properly.

To pg 40



8. Used Batteries

- Lead-acid batteries contain extremely corrosive acid and concentrated amounts of toxic lead.
- Dry cell batteries may be hazardous if they contain mercury.
- Mercury is extremely toxic and must always be recycled.
- Never discard mercury-containing batteries in the trash.

Regulatory Issues

✓ Nickel-cadmium batteries are included in EPA's Universal Waste Rules so they need not be counted towards the generator's size *if* they are recycled.

✓ Lead-acid batteries need not be counted towards the generator's size *if* they are recycled.

✓ Mercury-containing dry cell batteries are regulated as hazardous wastes and must be disposed accordingly. Check the Material Safety Data Sheet with the battery you purchased. Many "button" type batteries contain mercury.

✓ Never discard lead-acid batteries or mercury-containing dry cell batteries in the trash, or the local landfill. Determine recyclable options in your area or return to the place of purchase.

✓ Do not "give" your waste mercury to scrap dealers, colleges, high schools, and laboratories. Be sure to deal only with a licensed handler and recycler of mercury waste materials.

✓ Servicing lead-acid batteries may require special facility configurations to ensure worker safety and comply with environmental regulations.

✓ Nickel-cadmium (Ni-Cd) batteries contain mercury so be sure to collect them for recycling, or dispose of them as a hazardous waste.

From pg 39

✓✓ Environmental Management Checklist ✓✓

❑ 1. Keep and store lead-acid or dry cell batteries intact and undamaged in a cool, dry storage area removed from the elements.

❑ 2. Recycle all lead-acid and mercury-containing batteries through your contract recycler. For damaged batteries or mercury-containing batteries that your recycler will not take, treat as a hazardous waste.

❑ 3. Ask your battery distributors to take used batteries on a turn-key basis (one-for-one exchange). If they will not, change distributors.

❑ 4. Treat all mercury-containing dry cell batteries as hazardous waste. Store them on-site in a metal drum with lid. Used dry cell batteries that do not contain mercury and are not hazardous waste may be disposed of in a dumpster.

❑ 5. Do not dispose used lead-acid or mercury-containing batteries in a dumpster or with other municipal solid waste.

❑ 6. Store all lead-acid batteries indoors in a spill containment area. The indoor battery storage area should be temperature controlled because extreme hot or cold can cause the old battery casings to crack.

❑ 7. If a spill should occur, treat the acid as a hazardous waste due to its low pH and potentially high lead content.

❑ 8. Use EPA-approved secondary lead smelters for the recycling of lead-acid batteries if at all possible. Secondary lead smelters, approved by the EPA, are an excellent direct recycling source that may pay top-dollar for your used batteries.

❑ 9. Ni-Cd batteries are reusable and recyclable; contact the Rechargeable Battery Recycling Corporation (RBRC) at (201) 934-4202 for specific information. However, shipping Ni-Cd batteries may require compliance with RCRA requirements.

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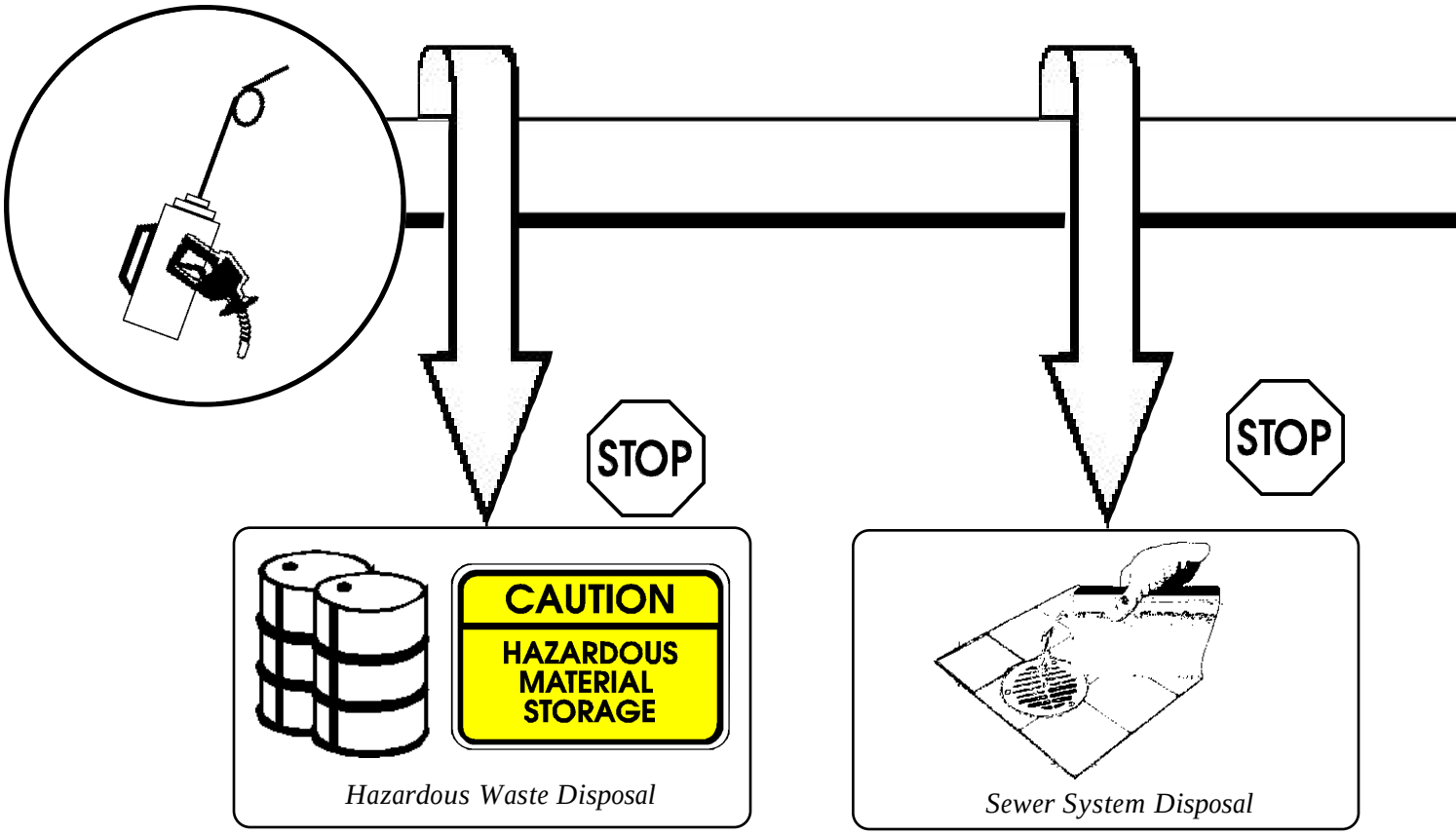
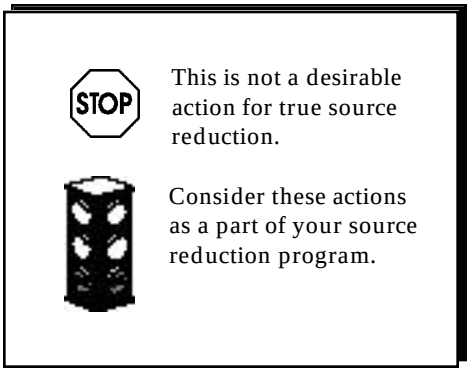
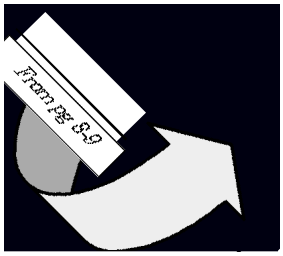
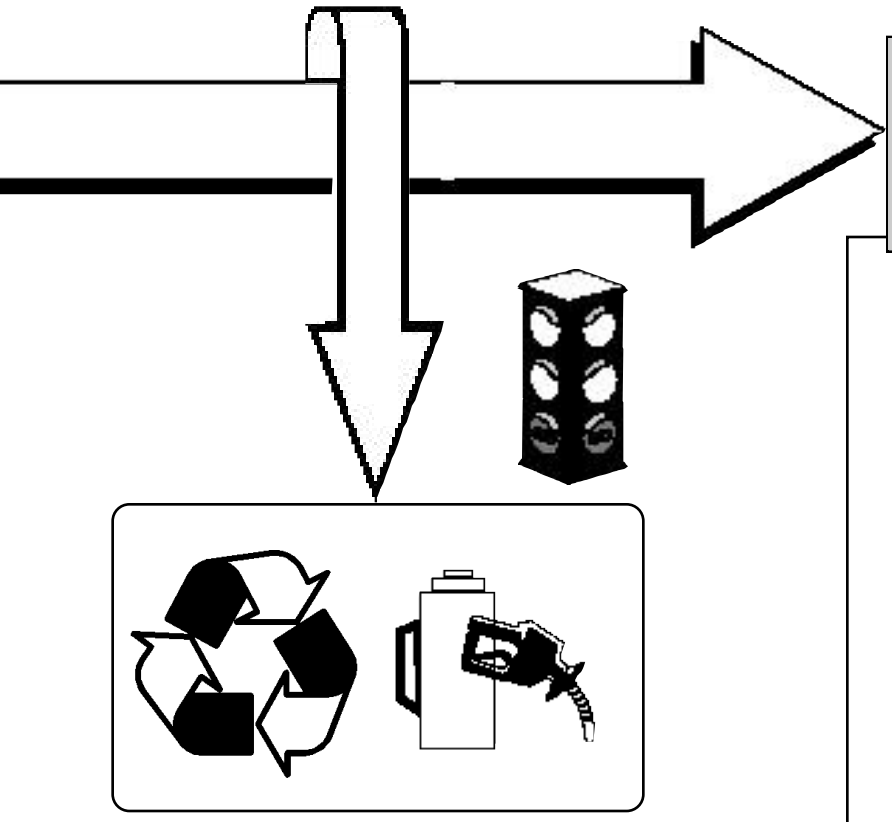


Used Fuels



If fuels are disposed of as a waste, they may be considered a hazardous waste based on content and characteristics.





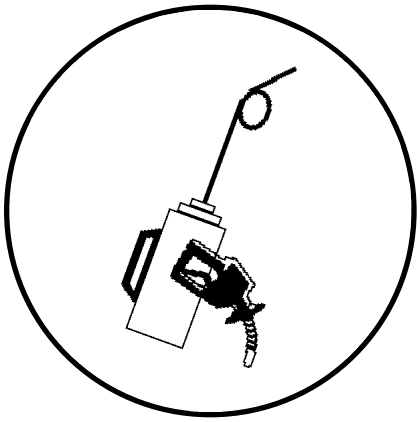
Reuse all fuels

9. Fuels

Reusing spent, used, or excess fuels reduces costs and environmental liabilities.

You can optimize usage and reduce cost by reusing all surplus fuels.

To pg 44



9. Fuels

- Gasoline contains a significant amount of hazardous materials including benzene, toluene, xylene, and assorted other hydrocarbons and chlorinated compounds.
- Significant environmental concerns are associated with used gasoline and spent fuels. They are expensive to "clean up" from the soil, water, and air.
- Gasoline is a very significant source of "volatile organic compounds" (VOCs) and a contributor to air pollution.

Regulatory Issues

✓ Wastes containing gasoline, diesel, and other fuels are considered hazardous because of their low flash point (ignitability) or chemical components (e.g., toluene, xylene).

✓ Spent fuels to be discarded must be handled, stored, transported and disposed of according to hazardous waste requirements.

✓ Used gasoline and spent fuels that are hazardous waste must be counted toward your hazardous waste generator size.

✓ There are significant worker health concerns associated with using and handling gasoline. The petroleum-based compounds commonly found in gasoline can cause nervous system damage and may be carcinogenic (potentially cancer causing).

✓ Serious flammability concerns and fire code regulations are associated with handling used gasoline and spent fuels in the shop.

✓ Avoiding soil and ground-water contamination from released gasoline or spent fuels is imperative.

From pg 43

✓✓ Environmental Management Checklist ✓✓

- ❑ 1. Never use any fuel, whether used or new, to degrease or clean parts as a solvent cleaner.
- ❑ 2. Minimize used gasoline by using one fuel/oil mixture for all small engines within the forest/district. Designate one person to be responsible for mixing and distributing the fuel so that large amounts of mixed fuel are not produced at the end of a season. Remove all mixed fuel from small engines at the end of the season and consolidate it for reuse and/or disposal.
- ❑ 3. Use spill prevention techniques to make certain no hazardous materials such as used gasoline or spent fuels reach the shop floor or your sump.
- ❑ 4. Filter water-contaminated gasoline or diesel through chamois to remove the water. This may be done without the process being classified as treatment of waste. Density segregation is also effective; allow two days for the gas to separate and then siphon off the used gasoline and reuse as waste fuel.
- ❑ 5. When disposing of gasoline that has been drained for the purpose of repairing gas tanks, handle it as a hazardous waste. This "tank" gasoline can be stored while the tank is being repaired, and then returned to the tank after it has been filtered to remove any solids.
- ❑ 6. Dispose of gas tank sediments from vehicles that use leaded gasoline or sediments saturated with gasoline as hazardous waste.
- ❑ 7. Sediments from vehicles that use unleaded gasoline are not hazardous if they are dry.
- ❑ 8. Never use new or spent fuels as a floor cleaner or to remove floor stains.
- ❑ 9. Store and transport fuel in authorized safety cans.
- ❑ 10. Treat all drip-torch or slash fuels the same as your vehicle and small-engine fuels.

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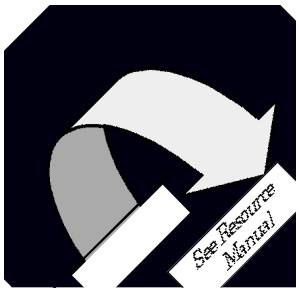
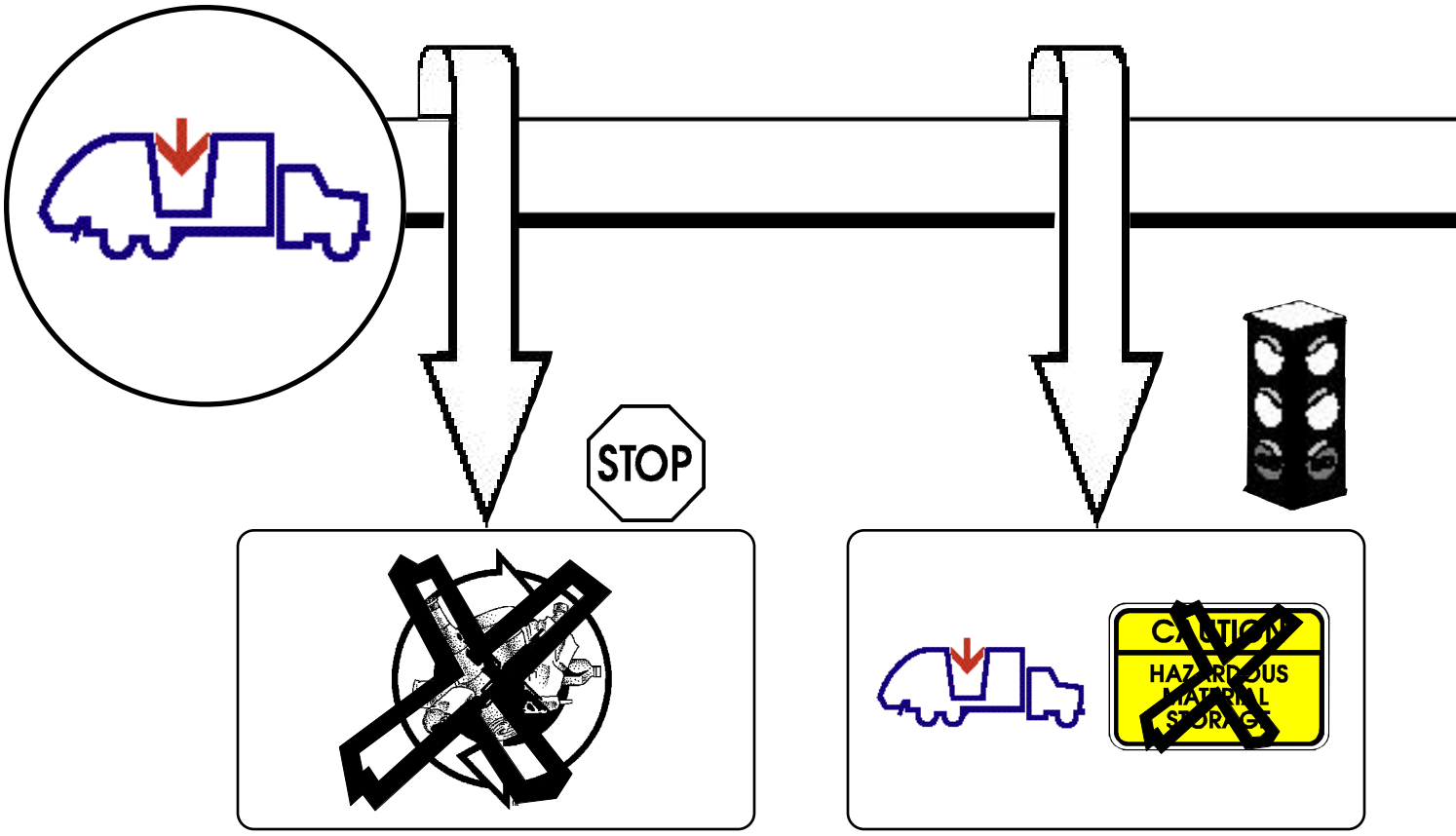
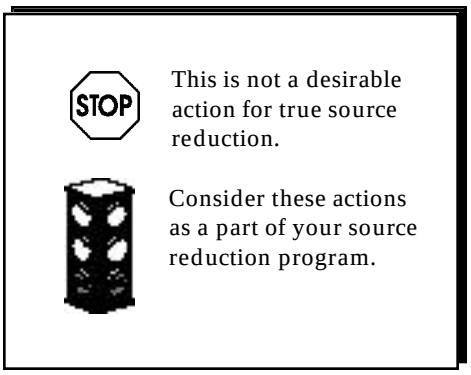


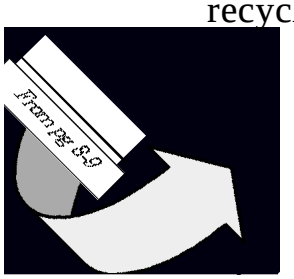


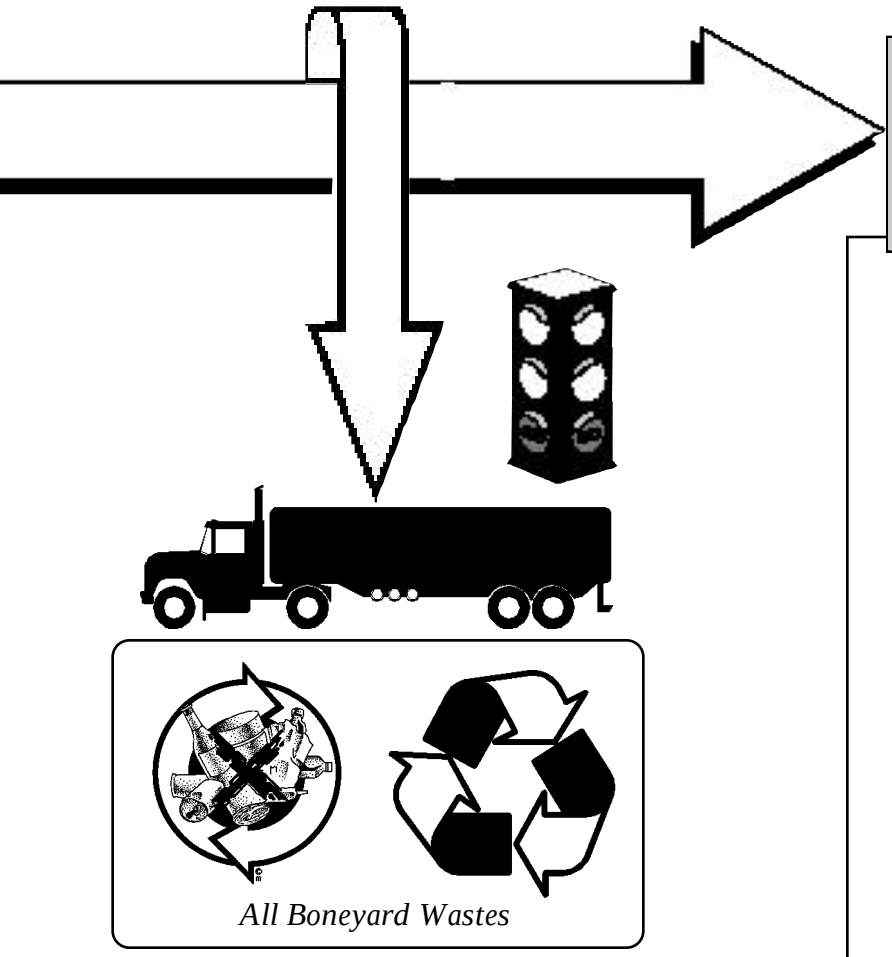
Reduce Facility Waste and Local Burn Piles

Cleanup Regulated Materials in Boneyards



Cleanup all boneyards and be certain that there all hazardous materials are removed for immediate disposal according to regulations; recycle everything that is possible to conserve natural resources.





Use Off-Site Recycling of Waste Materials Where Possible

10. Boneyards

Cleaning up your boneyards, and controlling access will avoid environmental compliance violations.

A “zero” waste objective is a healthy and realistic goal, but needs careful planning and management.

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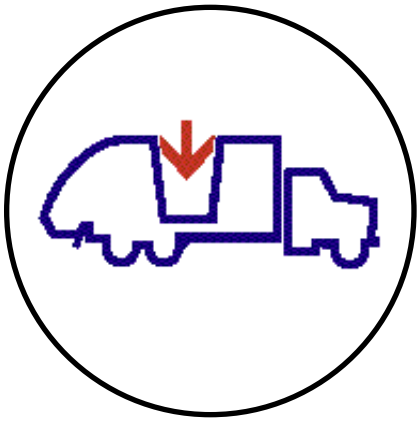


10. Boneyards

- Boneyards are one of the most common features of districts across the Forest Service, with each work center usually having more than one.
- Boneyards often reflect decades of stockpiling of new materials, materials in reserve for use, and considerable materials that are no longer usable.
- Reducing volume of materials in your boneyard will reduce environmental and health risks.
- Restrict access to your boneyard to authorized personnel only. Devise a method to identify who puts materials in the boneyard so they can be tracked to a user if materials cannot be determined to be hazardous or non-hazardous.

✓✓ Environmental Management Checklist ✓✓

❑ 1. Establish a district-wide policy on the use of boneyards; restrict the use to storage of usable materials only, and specifically prohibit the storing of materials that could be considered hazardous.

❑ 2. Limit the number of boneyards to only one unless there are geographic constraints that requires more.

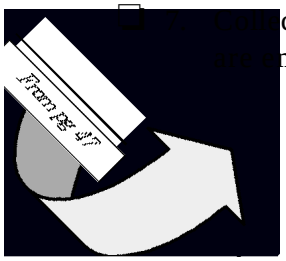
❑ 3. Conduct a “field cleanup day” at each boneyard in your district. Conduct prior training for all personnel to ensure comprehensive coverage, and prepare to move items removed from the boneyard to the selected destination in accordance with all applicable regulations.

❑ 4. Remove for immediate recycling, all lead-acid batteries found in boneyards. Collect all Ni-Cd batteries for recycling, and dispose of all alkaline batteries in the trash. As a strict policy, do not allow lead-acid batteries or Ni-Cd batteries to be placed in boneyards.

❑ 5. Remove for scrap metal recycling, all un-usable appliances. Be sure to have a certified service provider remove all Freon® before recycling or disposal

❑ 6. Remove for recycling all discarded tires. Do not accumulate used tires in your boneyards; always recycling them when a new tire is purchased.

❑ 7. Contact for immediate disposal or recycle as scrap metal, all drums (e.g., 55-gallon) that are empty and no longer of use. This will avoid unnecessary attention by regulators.



- ❑ 8. Locate all containers with liquids and immediately relocate them to proper storage. You must identify the contents of every drum that is not marked; if you cannot determine its contents with certainty, you must do a laboratory analysis. If the contents are no longer usable, relocate the container to your hazardous waste accumulation area and arrange for immediate disposal.

- ❑ 9. If any used oil is located, immediately put it into your used oil collection container(s) for recycling.

- ❑ 10. If you suspect a contamination area in your boneyard, contact your hazardous waste coordinator for further action.

- ❑ 11. Collect for recycling or disposal, all wood and wooden structures that are no longer capable of re-use. However, do not burn wood or wooden structures without proper permits.

- ❑ 12. Collect all treated wood that is no longer useful and dispose of it in accordance with the prevailing regulations for the type of chemical treatments; do not burn treated wood.

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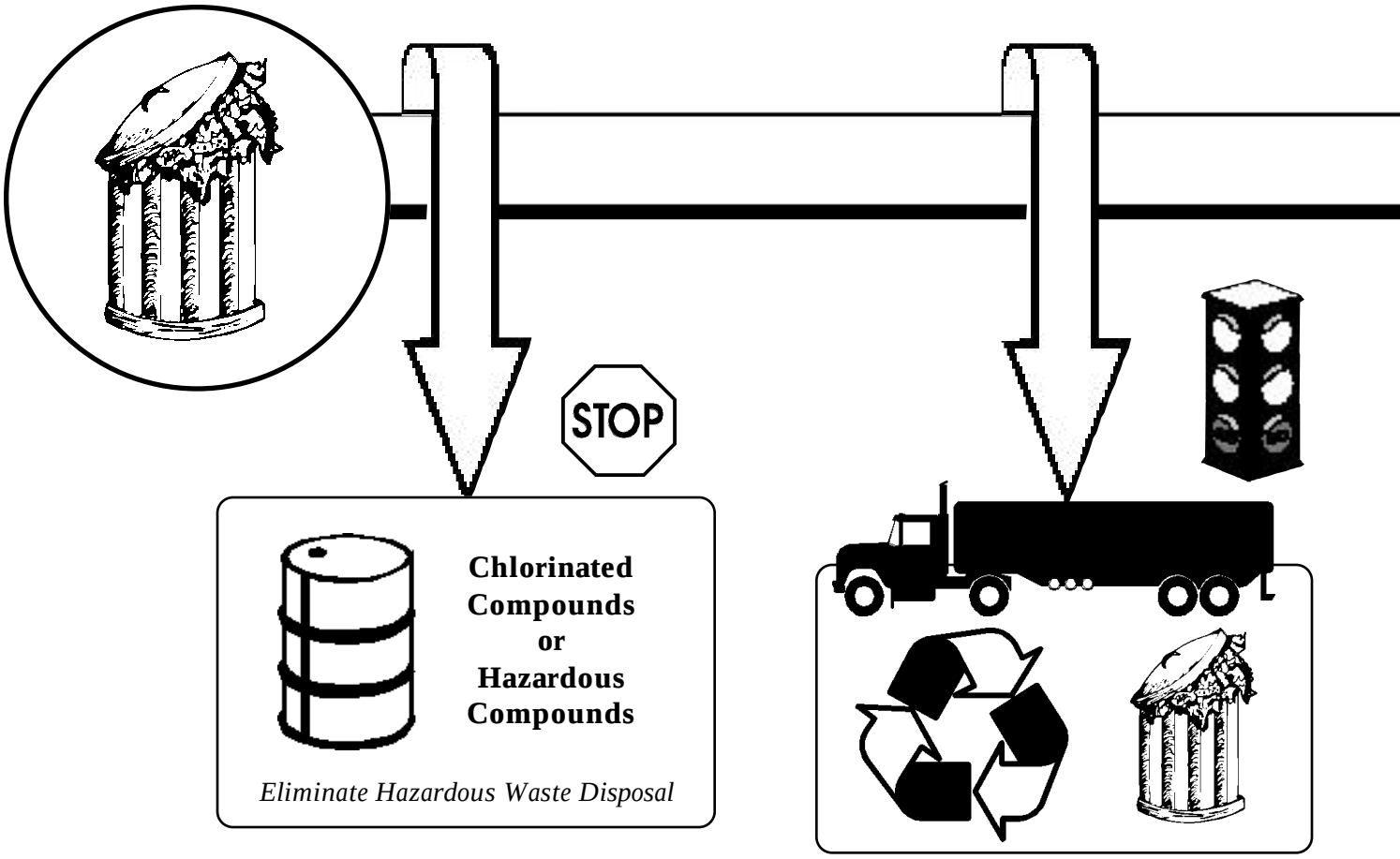
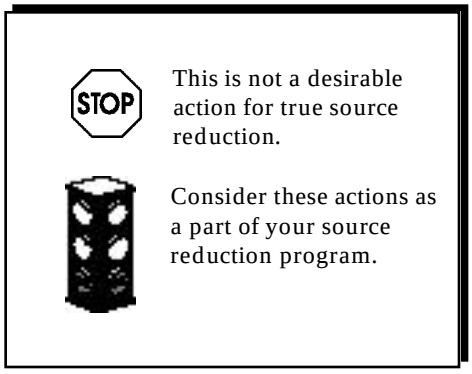
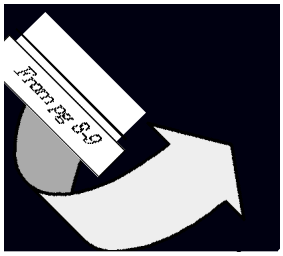


Use Off-Site Rag Recycling

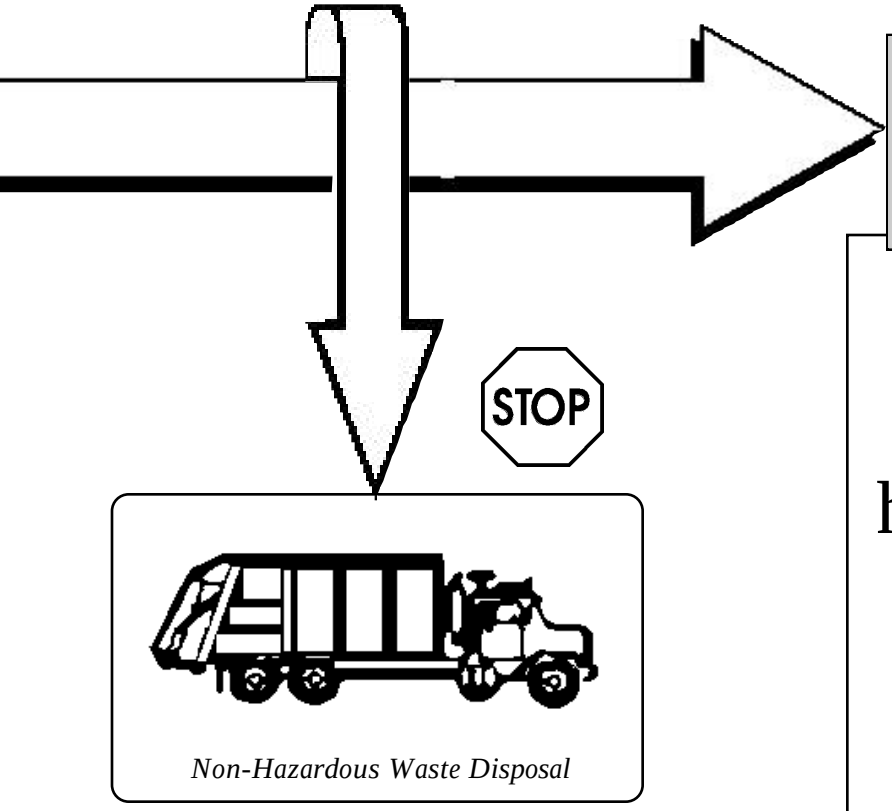


When disposed, absorbents used with hazardous materials are regulated as a hazardous waste if they exhibit the same characteristics. Spent rags containing regulated liquids are currently exempt from hazardous waste regulations if recycled.



11. Absorbents & Wipers

Eliminating chlorinated and hazardous solvents and properly recycling rags reduces costs and environmental liabilities!



Disposable Wipers

You can minimize your environmental concerns if you use non-hazardous solvents and reusable rags.

11. Absorbents & Wipers

- Rags and wipers used in your shop absorb the fluid with which they are used. If the fluid is hazardous, such as a chlorinated solvent, the rags and wipes become hazardous waste at the time of disposal.
- Since your cleaning solvents and degreasers probably create the largest hazardous waste stream in your shop facilities, your rags and wipes become potential carriers and must be handled as hazardous waste if they are not recycled.
- Disposable rags, wipes, and floor absorbents such as sawdust and paper towels pose significant environmental problems even if they are not contaminated with hazardous fluids.

Regulatory Issues

✓ Rags that are laundered through a commercial laundry are considered "recycled" rather than hazardous waste, even though they may contain hazardous solvents.

✓ The EPA states that "recyclable" rags are those which have been used as wipers "...in the normal process of cleaning parts..." and not to clean up spills. See the *Forest Service Resource Manual* for EPA's policy for rag disposal.

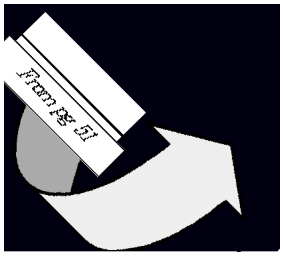
✓ If you do not recycle your rags and wipes and they are hazardous waste, they must be handled, stored, transported and disposed of as a hazardous waste.

✓ All of your hazardous rags and wipes must be counted toward your hazardous waste generator size unless they are recycled by a licensed laundry service.

✓ Significant worker health concerns are associated with solvent use on rags and wipes, especially if the solvents are chlorinated.

✓ Serious flammability concerns are associated with many degreasing solvents on rags and wipes that are not stored properly in closed containers.

✓ EPA Region VIII does not have a specific policy regarding wipers, but individual states may; contact your respective states and ask for their policy in writing.



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- ❑ 1. Use only recyclable rags and wipers through a reputable industrial laundry and adhere to any requirements of the laundry for "recycling".

- ❑ 2. Remove all chlorinated solvents and fluids containing chlorinated compounds from your facilities. Check the Material Safety Data Sheet (MSDS) of all incoming products to insure that chlorinated compounds are not reintroduced.

- ❑ 3. Minimize spills throughout your facilities. This is the main pollution prevention option for spill/floor absorbents. Use drip trays and pans to keep any hazardous materials from reaching the floor - and potentially your sump or storm sewer.

- ❑ 4. Do not use saw dust to absorb and/or clean floor spills.

- ❑ 5. Make certain your floor cleaner is appropriate for sewer discharge restrictions. An oil/water separator may be required to remove oils before discharging into a sewer system. Floor cleaners are found in powdered or liquid form and are often mixed with water.

- ❑ 6. Eliminate, or at least greatly reduce, the use disposable rags and wipers, especially paper towels, newspapers, paper wipers, and disposable tissues.

- ❑ 7. Store used rags and wipes in sealed, labeled waste containers. Failure to seal with a reasonably tight lid enhances the chances for spontaneous combustion of flammable, solvent-soaked rags.

- ❑ 8. If you purchase a dry floor absorbent be sure that it does not turn green or red in color when it contacts water or petroleum products. Otherwise it could appear to your employees and visitors that you have spilled antifreeze on your shop floor.

- ❑ 9. Consider the use of "hydrophobic mops" to separate oils from antifreeze.

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Pollution Prevention Pays!

See Resource Manual

12. Other Wastes

1. Ammunition, live and spent
2. Explosives
3. Asbestos
4. Broken glass
5. Treated wood
6. Used concrete and asphalt
7. Bleach products
8. Laser toner cartridges
9. Smoke and fire detectors
10. Spent Halon®
11. Spent Fluorescent Lights, HID Lamps, and Mercury Containing Products

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1. Ammunition (live, old, spent)

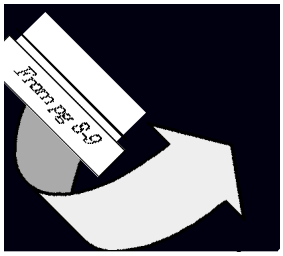
❑ 1. This may include lead and lead alloy bullets, spent cartridge cases, and old ammunition. The old ammunition may be outdated with some possibly coming from underground burial. All ammunition should be assumed to be live and dangerous.

❑ 2. At first contact, do not move or disturb in any fashion. Contact the appropriate safety personnel and your local environmental coordinator for specific action. You should not attempt handling or disposal yourself. In almost all cases expert outside help will be required to handle and dispose of these items properly.

2. Explosives

❑ 1. No matter what the nature of the explosive material or devices (fuses, detonators, etc.) found within your forest/district, do not disturb, move, or touch these items. Buried and/or discarded explosives may have degraded over time and could be highly unstable to mild shock or movement. The presumption is that all such material is extremely dangerous.

❑ 2. Contact the appropriate safety personnel and your local environmental coordinator for specific action. You should not attempt handling or disposal yourself. In almost all cases expert outside help will be required to handle and dispose of these items properly.



3. Asbestos

❑ 1. Wherever friable (easily crumbled) asbestos is found, contact immediately your local environmental coordinator for specific action. The handling, removal, or management of asbestos in place requires special training and procedures. A coordinated plan will usually be necessary to properly deal with any friable asbestos problems.

❑ 2. Asbestos fibers can cause serious health problems. If inhaled, they can cause diseases which disrupt normal functions of the lungs. Asbestosis (a fibrous scarring of the lungs), lung cancer, and mesothelioma (a cancer of the lining of the chest or abdominal cavity) have been linked to asbestos exposure.

❑ 3. Where is asbestos possibly found within forests / districts? Asbestos became a popular commercial product because it is strong, will not burn, resists corrosion, and insulates well. Its commercial use started in the early 1900's and peaked in the period from World War II into the 1970's. It is found as direct insulation on piping, water tanks, as spray-applied insulation, fireproofing, acoustical surfacing material. Asbestos has also ben found in roof tiles, floor tiles, building siding, tile cement, and wallboard joint compounds. You may come across it in older buildings during renovation or demolition. Again, if you do be sure to bring in outside expert help.

❑ 4. When is asbestos a problem? Intact and undisturbed asbestos materials do not pose a health risk. The mere presence of asbestos in a building does not mean that the health of building occupants is endangered. When ACM (asbestos-containing materials) are properly managed, release of asbestos fibers into the air is prevented or minimized, and the risk of asbestos-related disease can be reduced to a negligible level. However, asbestos materials can become hazardous when, due to damage, disturbance, or deterioration over time, they release fibers into building air. Under these conditions, when ACM is damaged or disturbed (e.g., by maintenance repairs conducted without proper controls) elevated airborne asbestos concentrations can create a potential hazard for workers and other building occupants.

❑ 5. How do I know if I have found asbestos-containing materials? Positive identification of asbestos requires laboratory analysis. Information on labels or visual examination only is not sufficient. Therefore, when in ANY doubt you should take the necessary steps to get a positive identification before any actions are taken to disturb the material.

❑ 6. Are asbestos-containing materials highly regulated? Yes! ACM are regulated by EPA, OSHA, and the Consumer Product Safety Commission (CPSC), and individual state and local agencies.

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❑ 7. Emphasizing the importance and effectiveness of a good Operations & Maintenance (O&M) program is a critical element of EPA's broader effort to put the potential hazard and risk of asbestos exposure in proper perspective. That effort centers around communicating the following Five Asbestos Facts :

- Fact 1: Although asbestos is hazardous, the risk of asbestos-related disease depends upon exposure to airborne asbestos fibers.
- Fact 2: Based on available data, the average airborne asbestos levels in buildings seem to be very low. Accordingly, the health risk to most building occupants also appears to be very low.
- Fact 3: Removal is often NOT the best course of action to reduce asbestos exposure. In fact, an improper removal can create a dangerous situation where none previously existed.
- Fact 4: EPA only requires asbestos removal in order to prevent significant public exposure to airborne asbestos fibers during building demolition or renovation activities.
- Fact 5: EPA does recommend a proactive, in-place management program whenever asbestos-containing materials is discovered.

4. Broken Glass

❑ 1. Contact your local recycler to see if the broken glass can be recycled or reused directly in some other product. Typically, most broken glass material can be recycled directly and can be removed during your normal recycling pickups. However, in some instances broken glass from such items as special tint window panes and mirrors can not be directly recycled. Ask your recycler for a clarification and for a list of options for the glass types you need to remove from the forest / district.

❑ 2. Most glass brokers require that the glass be reasonably clean and free of contaminants such as metal caps, ceramics, rocks, and dirt. The glass is typically separated by color (clear, green, and brown) before recycling.

❑ 3. If you cannot recycle your unused and broken glass, dispose of it in the trash.

5. Treated Wood

❑ 1. The handling of this material depends on the composition of the wood treatment. Recycling of creosote-type treated wood should be explored with your local recycler; however, reuse of old treated wood is the preferred option.

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❑ 2. Consult your Material Safety Data Sheet for a description of the hazards associated with the treatment used on the wood. If no hazardous substances were used to coat or treat the wood products, then they may be disposed of as normal non-hazardous solid waste. Conversely, if they contain hazardous constituents (for example, chlorinated or benzene-based compounds), then the treated wood waste must be handled as a hazardous waste. Many wood preservatives contain one of the following three compounds:

- chromated copper arsenate
- creosote
- pentachlorophenol

Waste wood products containing any of these three compounds should be handled as a hazardous waste.

❑ 3. In terms of pollution prevention options, only buy and bring into the forest or district treated wood products that contain non-hazardous treatment chemicals and that can be recycled or disposed of as normal solid waste.

❑ 4. Do not burn wood that has been treated.

6. Used Concrete and Asphalt

❑ 1. There are many possible options for used concrete applications within forests / districts from road base to construction filler. Make every effort to reuse within the forest / district the old concrete. If you have exhausted all applications, consult your local recycler for possibilities off-site. It is possible to recycle some types of used concrete products especially after the concrete has been crushed (e.g., road or sidewalk base).

❑ 2. Asphalt can also be recycled. Consult your local recycler for possible options in this arena In many cases asphalt can be reused for other products with only minimal reprocessing.

7. Laser Printer Toner Cartridges

❑ 1. Recycle your toner cartridges through the original manufacturer or through your local supplier. Do not discard spent cartridges in the trash. If your supplier does not supply recyclable toner cartridges, change to a manufacturer that does.

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8. Water Filters

❑ 1. If possible, recycle the filter element based on the manufacturer's instructions. At present, however, many spent water filter elements are not being recycled. If the MSDS for the product shows that it contains no hazardous materials, and there are no recycling options, then the spent water filters may be discarded as non-hazardous solid waste.

9 Smoke and Fire Detectors

❑ 1. Do not discard into the trash spent, damaged, or broken smoke and fire / heat detectors. Follow the manufacturer's instructions for the proper handling of spent smoke and fire alarms. Many of these products contain detectors which house a radioactive element that must be disposed of in a prescribed manner. Carefully follow the manufacturer's instructions. If you have any questions or concerns, call the toll free number supplied with your unit.

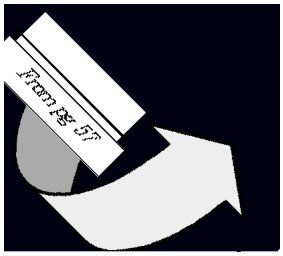
2. Smoke and fire detectors are covered in EPA's Universal Waste Rules, so they may be recycled without counting the volume against your hazardous waste generator size.

10. Spent Halon®

❑ 1. Most forests / districts probably do not have Halon®-based products in service today. Halon® is a highly regulated fire control substance that is gradually being phased out of use as new, more environmentally safe alternatives are made available. The preferred option, if you are one of the few with Halon®, is to replace any Halon®-based products with an alternative non-chlorinated and non-fluorinated product that is environmentally safe (as determined from the Material Safety Data Sheet).

❑ 2. Recycle back to the manufacturer your old Halon®-based products. If this is not possible, the unused waste Halon® will need to be handled in a special fashion depending upon type, amount, and product age. Contact the appropriate safety personnel and your local environmental coordinator for specific action. You should not attempt handling or disposal yourself. In almost all cases expert outside help will be required to handle and dispose of these items properly.

❑ 3. If you have any questions, consult your regional EPA office to determine exactly how you should handle unused Halon® fire extinguishers or fire extinguishing systems.



11. Spent Fluorescent Lights, High-Intensity Discharge Lamps, & Mercury-Containing Products

❑ 1. Never discard any fluorescent light, High Intensity Discharge (HID) lamps, or mercury containing products. Products containing mercury at your facility can include:

- thermometers
- manometers
- mercury switches
- hearing aids
- fluorescent lights including ballast
- thermostats
- mercury relays
- watches
- batteries (especially for pagers)
- HID (High Intensity Discharge) lamps

❑ 2. Each of these should be recycled at a licensed, full reclamation facility. Mercury has been recognized for some time as a poisonous substance. The EPA has estimated that a half-teaspoon of mercury can contaminate an average lake for several hundred years.

❑ 3. Traditional fluorescent lamps will fail the TCLP (Toxicity Characteristic Leaching Procedure) test for mercury. HID lamps will fail for mercury and lead. Older fluorescent lamps, prior to 1988, will also fail for cadmium. Recycling all of these products at a recycling center that distills the mercury to high purity commodity grade product affords the greatest protection against future liability.

❑ 4. Fluorescent lamps are included in EPA's Universal Waste Rules so they do not count against your hazardous waste generator size if you recycle them.

❑ 5. PCB Ballasts: All ballasts manufactured through 1979 contain PCBs; those manufactured after 1979 that do not contain PCBs are labeled "No PCBs". Under TSCA, intact fluorescent and HID ballasts that are not leaking PCBs may be disposed in a municipal solid waste landfill. All other must be handled as a hazardous waste.

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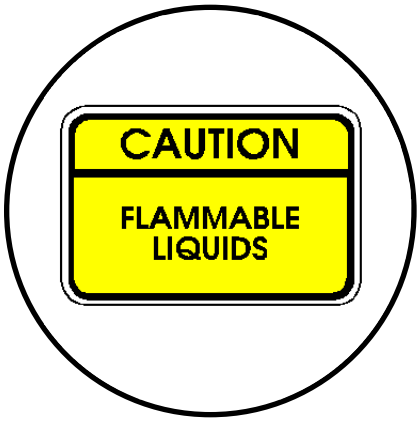
See Resource Manual



13. Hazardous Materials Storage

- Use of hazardous materials can be one of the most common problems in forests and districts. The most common examples are aerosol cans with "extremely flammable" contents.
- Other types of hazardous materials include liquid flammables such as gasoline, solid flammables such as fusses, and oxidizers.

Regulatory Issues

✓ Liquid and solid flammable storage is regulated by OSHA, the National Fire Protection Association (NFPA), Uniform Fire Code (UFC), International Fire Code Institute (IFCI), and state agencies.

✓ Following the regulations is for your protection so follow them as well as the Forest Service Manual and Forest Service handbooks.

✓ Flammables (referred to as Class I products) are liquids that have flash points below 100˚F. Class IA flammables have flash points below 73˚F and boiling points below 100˚F (e.g., acetaldehyde, ethyl ether, and cyclohexane); Class IB flammables have flash points below 73˚F and boiling points at or above 100˚F (e.g., gasoline, ethyl alcohol, ethyl benzene, hexane, methyl alcohol, methyl ethyl ketone, acetone, benzene, toluene, isopropyl alcohol); and Class IC flammables have flash points at or above 73˚F and below 100˚F (e.g., hydrazine, styrene, turpentine, petroleum naphtha, propyl alcohol, xylene).

✓ Combustibles (referred to as Class II combustibles) have flash points at or above 100˚F and below 140˚F; these include products such as acetic acid, naphtha, Stoddard solvent, fuel oil #1, #2, #4, and #5, kerosene, coal tar naphtha, and high flash point naphtha. Class III combustibles have flash points above 140˚F.

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❑ 1. Wherever possible, only purchase flammable materials in quantities necessary to achieve the task(s) at hand; over purchasing not only results in hazardous waste, it also requires larger storage capacity.

❑ 2. Whenever possible, reduce the number of products to do the same job; select non-flammable, non-hazardous products if at all possible.

❑ 3. Aerosol cans of paint are the most common "extremely flammable" product found on forests and districts. Try to minimize the use of these as they not only present a need for managing the can after the propellant is depleted, they are expensive; consider bulk paints and refillable aerosol-can "look-alikes."

❑ 4. Degreasers and other automotive servicing products are other common flammable products found in forests and districts. Try to eliminate these as soon as possible, replacing them with non-hazardous products.

❑ 5. Remember, if a product has a flash point equal to, or below, 140˚F, it will become a hazardous waste when its shelf-life is past or it is discarded.

❑ 6. Gasoline is the single most common flammable product found on forests and districts; be sure you store gasoline in metal safety cans for volumes greater than 1 gallon. Department of Transportation (DOT) approved plastic cans are acceptable for 1 gallon or less storage and for transportation.

Flammables and Combustibles

❑ 7. Flammable or combustible paints, oils, varnishes, and similar mixes used for painting or maintenance, when kept for a period less than 30 days, do not need to be stored in flammable cabinets.

❑ 8. The maximum volume that can be kept *outside* (in proper containers) of a cabinet or storage room cannot exceed 25 gallons for Class IA liquids and 120 gallons for Class IB, IC, and II liquids.

Safety Cans

❑ 9. Safety cans can reduce hazards associated with flammables and combustibles. A safety can is "...an approved container of <u>not more than 5 gallons</u> capacity, having a <u>spring-closing lid</u> and spout cover and so designed that it will <u>safely relieve internal pressure</u> when subjected to fire exposure." (Remember, there may be more restrictive state and Forest Service specifications.)

Flammable Storage Cabinets

❑ 10. Flammable storage cabinets are the most common means of storing flammable liquids. These cabinets must meet specific construction features: bottom, top, and sides of not less than 18 gauge sheet steel; cabinet must be double walled with 1.5 inch-air space; joints riveted or welded; doors with 3-point latch; door sills with at least 2 inch-secondary containment; marked "FLAMMABLE–KEEP FIRE AWAY."

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❑ 11. The maximum volume you can store in a cabinet in containers is 60 gallons of Class IA or Class II liquids, and not more than 3 cabinets can be in the same room ("fire area") unless the groupings are more than 100 feet apart. (The total volume limits include drums, safety cans, and aerosol cans)

❑ 12. It is recommended, but not required, that flammable cabinets not be mechanically ventilated; if they are, the ventilation may have additional specifications.

Inside Storage Rooms

❑ 13. An inside storage room is a room within a building that is constructed with non-combustible liquid-tight raised sills or ramps at least 4 inches high, or the storage room floor is at least 4 inches below the surrounding floor.

❑ 14. Where the walls join the floor, they must be liquid-tight.

❑ 15. All access doors must be approved self-closing fire doors.

❑ 16. Wiring and electrical equipment located within a storage room must meet detailed specifications.

❑ 17. The storage room *must* be provided with a gravity or mechanical exhaust ventilation system designed for a complete air change at least 6 times per hour.

❑ 18. Storage in a storage room must be such that there is a least a 3-foot aisle.

❑ 19. Containers over 30 gallon capacity shall not be stacked one upon the other.

❑ 20. You can store up to:
- 10 gallons per square foot of storage room floor space (not to exceed 500 square feet) *if* the room is equipped with fire protection *with* 2-hour fire resistant construction.
- 4 gallons per square foot of storage room floor space (not to exceed 500 square feet) *if* the room does *not* have fire protection *and* has 2-hour fire resistant construction.
- 5 gallons per square foot of storage room floor space (not to exceed 150 square feet) *if* the room has fire protection *and* has 1-hour fire resistant construction.
- 2 gallons per square foot of storage room floor space (not to exceed 150 square feet) *if* the room does *not* have fire protection *and* has 1-hour fire resistant construction.

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Fire Control

❑ 21. Portable fire extinguishers or other fire control devices shall be available at locations where flammable or combustible liquids are stored.
- At least 1 fire extinguisher of 12-B units shall be located outside of, but not more than 10 feet from the door into, any room used for flammable storage, and
- Not less than 10 feet, nor more than 25 feet, from any Class I or II liquid storage area located outside of a storage room but inside of a building.

Insecticide, Pesticide, Herbicide Storage

❑ 22. Exposure to light may cause a chemical breakdown that reduces the effectiveness of the pesticide, so never store pesticides in windows or other locations where they may be exposed to light.

❑ 23. High temperatures can cause liquid pesticides to expand, causing increased pressure in the container. Freezing temperatures may cause some pesticides to separate or break down chemically, and the containers may crack. Therefore, store pesticides in an area where the temperature range does not exceed 90˚F or drop below 40˚F.

❑ 24. Humidity or moisture may cause caking or degradation of dry formulations making them useless, metal containers may rust and develop leaks, and paper bags will more easily tear. So be sure to keep your pesticide storage area dry.

❑ 25. NEVER store pesticides near food, feed, or fertilizer.

❑ 26. Beware of storing herbicides that contain phenoxy (e.g., 2,4-D) as they are among the most volatile and their fumes can cause temporary contamination of soils, fertilizers, and surrounding plants. Fumes will build up in a closed area and follow air currents.

❑ 27. Mark your secured, locked, pesticide storage area with “PESTICIDES – KEEP OUT!.” Post this warning at all doors and windows.

❑ 28. Personal protective equipment (e.g., gloves, aprons, and respirators) should be stored nearby, but not inside, the pesticide storage area. A source of clean water should be provided in this area for cleanup.

❑ 29. For small quantities of pesticides, use a steel cabinet with shelves that each have a secondary containment. Locate the cabinet along an outside wall but make sure it is a dry area with the prescribed temperature range. The cabinet should remain locked at all times. It should be marked and have a list of contents on the outside of the door, with Material Safety Data Sheets located nearby.

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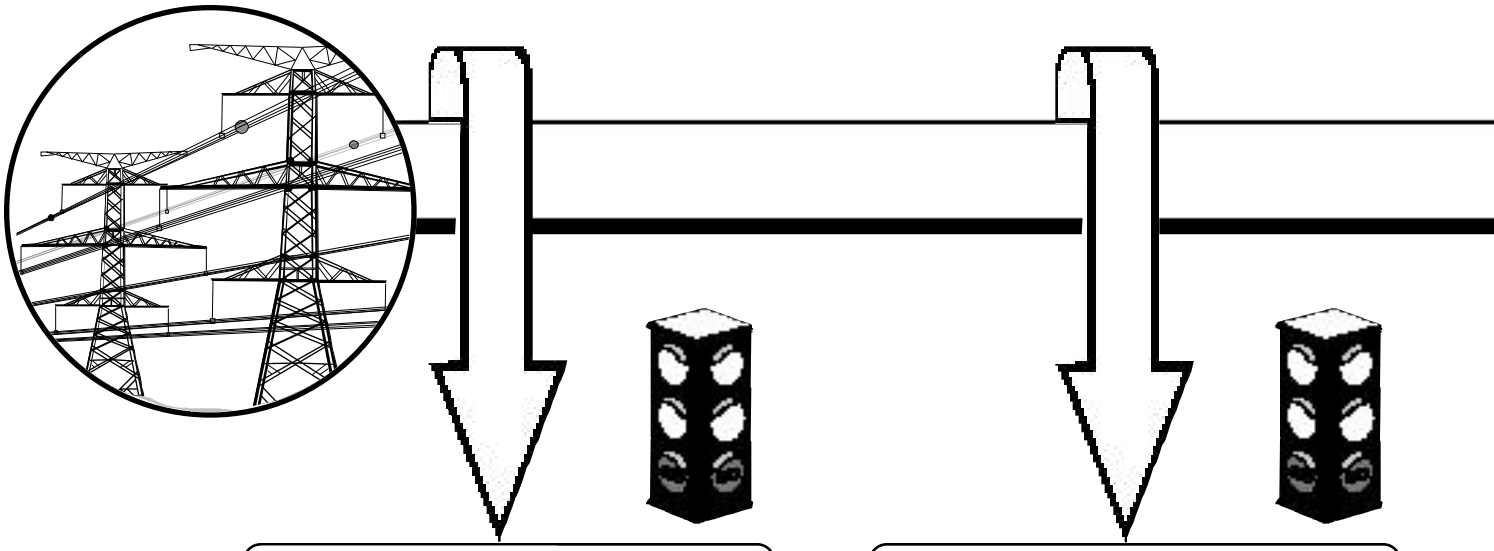
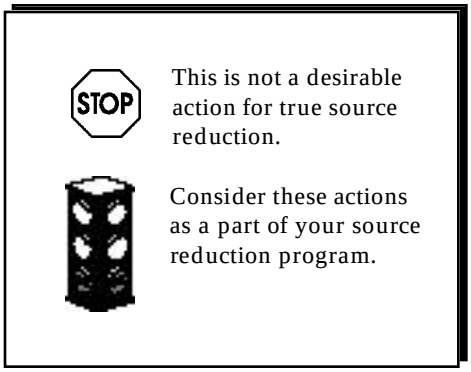
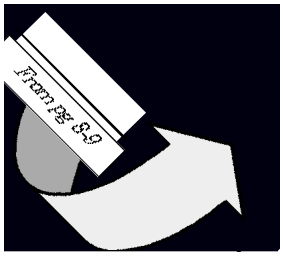


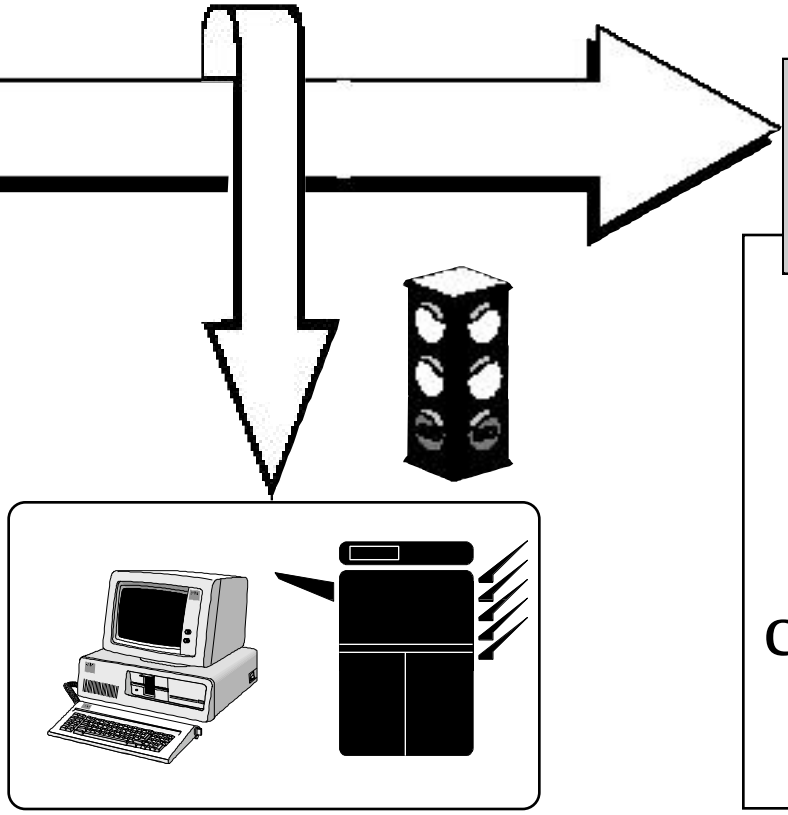
Consider Participating in EPA's National Programs

Use Facility Lighting and Heavy Electrical Equipment Energy Conservation



Conservation of energy begins with the smallest energy-consuming device. Use a full-facility approach. Large savings can often be obtained in all areas through many small steps.





Electronic Equipment
Energy Conservation

13. Energy Conservation

Energy conservation is a full-facility challenge and saves money!

Reducing energy use reduces energy costs and conserves a natural resource.

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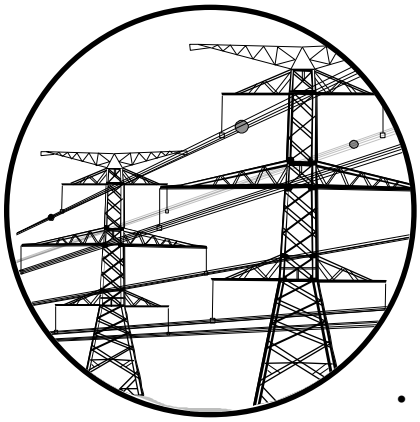


13. Energy Conservation

- No single program will save you money faster than one which increases your facility's energy efficiency.
- Most forest facilities can reduce energy use by at least 30% or more, with rapid paybacks.
- Replacing incandescent light bulbs with energy-efficient compact fluorescents has payback periods less than a year.
- Switching one compact fluorescent for an incandescent bulb saves 158 kilowatt hours per year per socket. Approximately 300 pounds of CO2, 1.4 pounds of SOx, and 0.8 pounds of NOx pollution will also be saved per year per bulb.
- Major energy conservation ideas for your facility center on four areas: lighting; heating and cooling; office electronic equipment use; and facility support equipment.
- Whatever your energy expenditures, cutting them will benefit your budget. A savings of 20 to 30% in energy use is usually possible in most facilities. Energy management may be one of your easiest pollution prevention options.

Six Steps to Saving Energy Dollars in Your Facility

1. **Tabulate your last two years of energy use and costs.** Break down your energy use and costs by natural gas, electricity, heating oil, and coal consumption, and other energy source uses. This is your baseline to gauge the effectiveness of your energy conservation program.

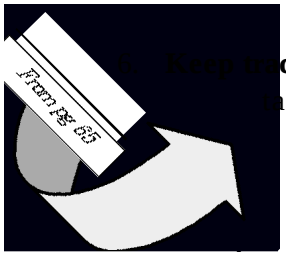
2. **Do a simple energy audit.** Conduct a walk-through of your facility and take a good look at how and where you use, and waste, energy. If you need help with the audit, call your primary energy provider. Ask your employees for their ideas.

3. **List energy reduction options.** Tabulate the estimated cost to implement and net savings from each energy saving option.

4. **Prioritize your energy reduction options.** Include simple energy saving ideas such as setting thermostats down two degrees.

5. **Do each energy reduction option on your list.** If you can't do them all, do at least your top three. Implement one option at a time before moving on to the next.

6. **Keep track of your energy savings.** Match month-to-month against your previously tabulated two-year record. See if what you have done is working, how much you are saving, and where improvements can be made.



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Lighting

❑ 1. Replace all incandescent bulbs throughout your facility with high efficiency compact fluorescent bulbs. Where possible, convert to T-8 fluorescent tubes.
- Dual fluorescent T-8 fixtures and bulbs can cost less than $10.
- Be sure to convert all of your drop-lights.
- Comparing total costs over 10,000 hours for a compact fluorescent versus an incandescent bulb, savings per bulb is greater than $25.00 (@ 9cents / kWh).

❑ 2. Remove unneeded lamps. "Delamping" can be highly effective since many buildings were designed and built in an era when energy efficiency was not a high priority. Most mechanical repair work is done with drop-lights for local illumination. Area lighting can be reduced in most cases.

❑ 3. Remove two lamps of four-lamp fluorescent fixtures; you have the choice of removing either the two outer-most lamps or the inner pair. If the resulting lighting is insufficient, consider re-lamping with two brighter, triphosphor or T-10 lamps. For maximum energy dollar savings when removing lamps, disconnect the ballast.

❑ 4. Make "flick the switch" your facility policy for all regularly traveled and used areas such as restrooms, meeting rooms, lunch rooms, and storage areas. Use a label or sign next to every switch to remind people to turn it off. Occupancy sensor switches can be especially useful and cost-effective in these areas.

❑ 5. Purchase highly energy efficient, simple, occupancy sensors for less than $100. The sensor turns the lights on when someone comes into the area, and then turns the lights off several minutes (variable and controllable) after the person has left.

❑ 6. Install the more efficient electronic ballasts when replacing burned out ones. These use much less power than magnetic ballasts and can operate all the common types of fluorescent tubes. Dimming electronic ballasts are also now available.

❑ 7. Review all of your large-area and outside lighting requirements. High Intensity Discharge (HID) lights are extremely energy efficient and perform exceptionally well in these areas. Consider switching to such HID lights as mercury vapor, metal halide, and sodium lights. The best sodium lights for most uses are the golden-white high pressure sodium (HPS) lights which give good color rendition.

❑ 8. Contact EPA's Green Lights program for excellent tips on energy reduction using proven state-of-the-art technologies (202-775-6650).

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✓✓ Environmental Management Checklist ✓✓

Heating and Cooling

❑ 1. Take measures to keep all access doors closed especially for vehicle traffic. Substantial heat loss or gain occurs when doors are opened to let vehicles or people pass. Attacking this problem area with the following steps usually leads to large and immediate energy savings:
- Install an automatic "electric eye" door controller that keeps the door open only when it is in use.
- Cut a small, person-size door in large service doors if outside access to the service area is through an overhead bay door.
- Configure heaters or air conditioners in the service area to turn off automatically whenever the overhead doors open.
- Install new flexible molding and weather stripping around each over-head door at least every three years.

❑ 2. Keep interior doors closed that separate general service areas from other areas where temperature is highly regulated. Use self-closing doors with weather stripping.

❑ 3. When installing or changing windows be sure to use at least double pane "low E" (low emissivity) windows with thermal resistance (R-values) of at least two to eight. Single pane window glass has a very low thermal resistance of only 0.9.

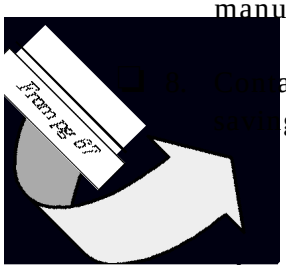
❑ 4. Maximize your heating and cooling cycles by installing small programmable thermostats in place of manual thermostats. These controllers can be purchased for under $90 and can be programmed to control temperatures throughout the workday, and during off hours. Typical savings can reach up to 30% by minimizing the operation of your heating, ventilating, and air conditioning (HVAC) system. Keep all thermostats located in public areas locked. If not protected in some way, settings can easily be changed incorrectly.

❑ 5. Reduce the heat loss from excessive exhaust fan operation. For example, in restrooms fans sometimes run continuously. Consider linking your occupancy sensors not only to your lights, but also to your exhaust fans.

❑ 6. In rooms with high ceilings, install ceiling-mounted paddle fans to help "de-stratify" the warm air layer which collects near the ceiling. Significant energy savings can be realized since the ground-level thermostats need not be set as high.

❑ 7. Service your air handling equipment regularly, and only operate within the manufacturer's specifications.

❑ 8. Contact EPA's Energy Star Building Program for information on how to achieve energy savings and reduce capital expenditures (202-775-6650).



✓✓ Environmental Management Checklist ✓✓

Equipment Operation

❑ 1. Carefully inspect all air compressor, delivery lines, shut-off valves, connections and flanges, and quick-release valves. Check for worn air cylinders. Leaks in these areas are major sources of energy loss.

❑ 2. Seal all line leaks or replace the high pressure hose completely. This should be at the top of the action item list for compressor pollution prevention.

❑ 3. Lower your air compressor regulated line pressure to the bottom end of the operational window. Pressures in excess of 80 psi will waste significant amounts of energy. If lowering your pressure poses a performance problem, install a larger compressed air ballast tank.

❑ 4. Operate your compressor at set periods for recharging your compressed air tank, preferably only in the early morning hours just before your mechanics and shop personnel come to work.

❑ 7. Make "turn it off" a policy throughout your shop with reminder signs and equipment hut-off timers where possible.
- Computers, copiers, printers should not be left on all day unless they are used constantly.
- Shut off all office equipment over night. Use timers to ensure that equipment is shut off at the end of the work day and on weekends.

❑ 8. Consider installing simple and inexpensive "Voltage Controller Monitors" on all of your facility electric motor-driven equipment. These devices monitor motor energy needs and regulate incoming voltage so that appliance motors receive only the electricity needed. These are most effective when used on constant use compressor motors.

❑ 9. When worn out equipment must be replaced, choose the most energy-efficient replacement properly sized to meet the needs of the job. New energy-efficient motors can reduce electricity consumption by up to 30%.

❑ 10. When buying new computer and office equipment, buy only those that are endorsed by EPA's Energy Star Program. Display monitors and other electronics have a programmable sleep mode that wakes back up when accessed. This is a great energy-saving technique in offices. Some Energy Star electronics may consume less energy if left on all the time; check with the manufacturer.

❑ 11. For more information about EPA's Energy Star Program, call them at (202) 775-6650.

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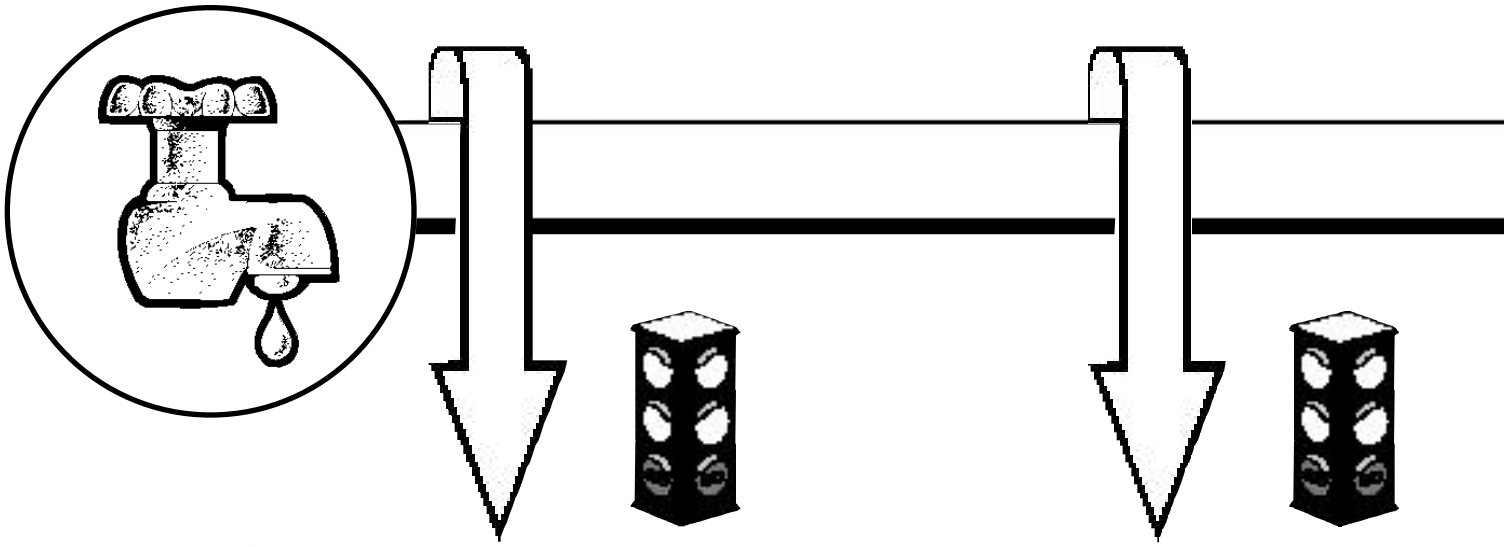


Water Alliances for Voluntary Efficiency

Consider Participating in EPA's National Program

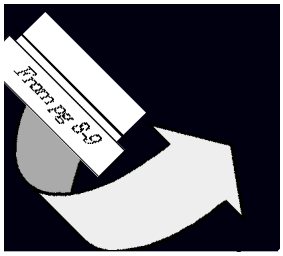
Public Water Devices

Use Low-Flow Devices
Use Automatic Cut-Offs

STOP This is not a desirable action for true source reduction.

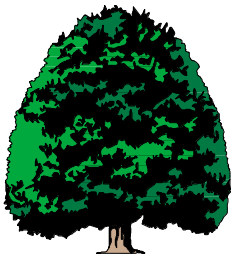
Consider these actions as a part of your source reduction program.

Water conservation begins with the smallest water uses. Use simple as well as advanced technologies and methodologies on a full-facility basis.



14. Water Conservation

Full-facility water conservation can save a valuable natural resource and save money.



Grounds Maintenance

Use Xeriscape and Conservation Methods

You can minimize costs and conserve a natural resource.

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14. Water Conservation

- Today there is heightened concern for water conservation. Only 3% of Earth's water is fresh, and only 1% of that is available to man, plants, animals, and fish species.

- Water conservation is a major area for a pollution prevention program to realize significant savings and reduce the loading on wastewater treatment operations.

Six Steps to Saving Water Dollars in Your Facility

1. **Tabulate your last two years of water use and cost.** Break it down by water consumption and cost. This record will show you where your large water uses are, and will become your baseline to gauge the effectiveness of your pollution prevention water conservation program.

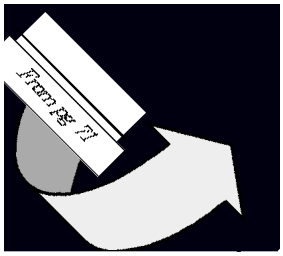
2. **Do a simple water audit.** Conduct a walk-through of your facility and take a good look at how and where you use, and waste, water. Ask your employees and co-workers for their inputs and ideas.

3. **List water reduction options.** Tabulate the cost to implement and the net savings likely to result from each water saving option. Use the water saving ideas listed in this section. Consult the General Services Administration Federal Supply Schedule and your local vendors for additional water conservation ideas and products.

4. **Prioritize your water reduction options.** Be certain to target your vehicle washing area for water conservation measures.

5. **Do each water reduction option on your list.** If you cannot afford to complete all options, do at least your top three. Implement one option at a time before moving onto the next.

6. **Keep track of your water savings.** Match month-to-month against your previously tabulated two-year record. See if what you have done is working, how much you are saving, and where improvements can be made.



✓✓ Environmental Management Checklist ✓✓

❑ 1. One major source of waste originates from leaking toilets, sinks, bathtubs, and showers. Leaks are easy to find and easy to fix.

❑ 2. Consider reasonably new, proven, advanced water conservation technologies and products that are available to your facility (regulations may vary by state; contact your state pollution prevention coordinator for more information), for example:
- Low-flow shower heads to reduce water used without cutting performance.
- Ultra low-flush toilets for public restrooms to reduce water consumption without impacting your guest's comfort.
- Low-flow aerators.
- Restrictors in all kitchen sinks, and in public restrooms.
- In-line flow reduction devices.
- Low-flow basin faucets.
- Greywater to supply toilets; regulations vary among states – contact your state pollution prevention coordinator for more information.

❑ 3. If you have outdoor watering requirements for grounds maintenance consider the installation of a simple rain sensor. This device will automatically shut down your watering system during a rain event and cut water waste. Other ideas include:
- Using well water to irrigate.
- Greywater for irrigation.
- Capture rainwater from roofs and other collection points for irrigation.
- Recover condensate from chilled water coils.

❑ 4. If you have a poorly insulated hot water storage tank or uninsulated distribution pipes, add an insulated jacket or "wrap" to your hot water tank and tubular insulation on the pipes to reduce "stand-by" hot water heat loss. If your hot water tank is hot or warm to the touch, it needs insulation.

❑ 5. Encourage employees to conserve water by placing a self-stick "Please Turn Off the Water" green label near each sink, bath, and shower faucet as well as hose outlet. Water conservation is everyone's business.

❑ 6. Serve water upon request only in your food service areas.

❑ 7. Reclaim your laundry water for reuse.

❑ 8. Reclaim your dishwashing rinse water.

❑ 9. Work with concessionaires for an integrated program at forest concessionaire hotels and motels to reduce guest towel laundering.

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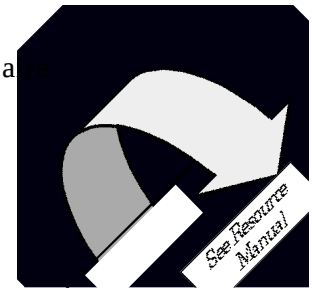


USDA Forest Service
Rocky Mountain Region

Environmental compliance and pollution prevention are the responsibilities of forest supervisors, district rangers, work center supervisors, and *all* employees. Understanding the requirements is a start – but taking action is what counts!

Environmental Regulations

The USDAForest Service is subject to federal, state and local environmental laws and regulations, including the regulations covering hazardous materials and hazardous waste. The U.S. Environmental Protection Agency (EPA) treats each federal law and regulation as different programs, often with different inspection teams and enforcement responsibilities. Except for a few states, the federal government has delegated regulatory responsibility to states for developing their own environmental laws, with companion regulations, inspections and enforcement.

Within this complex regulatory structure, many organizations have had great difficulty in not only understanding their regulatory obligations, but effectively coordinating with the appropriate inspection and enforcement personnel. At the same time, the enforcement actions of the federal and state environmental agencies have significantly increased, with resulting fines and even civil penalties. Because of these laws and regulations, the costs of hazardous waste management, transportation, and disposal has grown rapidly. The liability associated with using hazardous materials is almost boundless.

With all these pressures, every organization must find a way to manage their environmental concerns, not as a special issue, but as an integrated part of daily management activity. Using an Environmental Management System and pollution prevention techniques and methodologies, many of the environmental issues, challenges, and risks can be significantly reduced.

Organizations must be aware of the environmental laws that might affect their activities. Being informed will help avoid problems and unnecessary expenses. The following sections of this tool kit are designed to bring an initial awareness to the forests and districts of the USDAForest Service of the primary environmental laws that should concern them.

The following sections address eight primary laws, including those regulated by federal and most state agencies. While each law has a reason for existing, every manager must understand how it affects the organization's operations, and must take the necessary steps to fully comply with the associated obligations. This tool kit discussion identifies some of the major elements of each law and flags to the manager certain responsibilities. The material presented here is by no means complete... it represents only an overview.

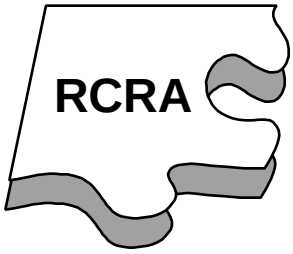
Other Federal Environmental Regulations

Hazardous Materials Transportation Act (HMTA)

Federal Facilities Compliance Act (FFCA)

Safe Drinking Water Act (SDWA)

Pollution Prevention Act (PPA)

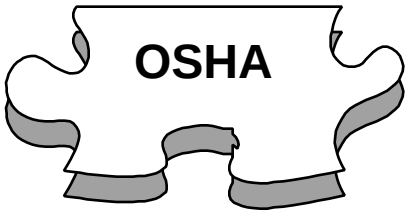


Resource Conservation and Recovery Act (RCRA)

See page 86

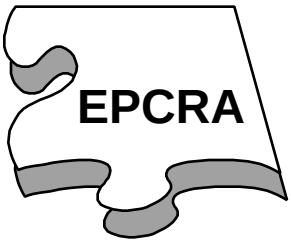
Energy Policy Act (EPAct)

See page 95



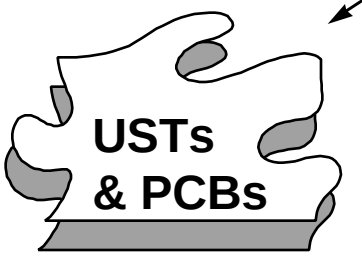
Occupational Safety and Health Administration (OSHA), Hazard Communication

See page 84



Emergency Planning and Community Right-to-know Act (EPCRA)

See page 82



Underground Storage Tanks (USTs

See page 92

Polychlorinated Biphenyls (PCBs)

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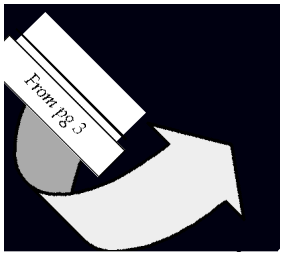
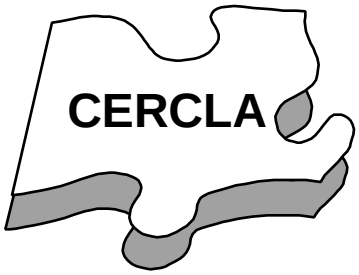


Key Environmental Compliance Areas that Affect the Forest Service



Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

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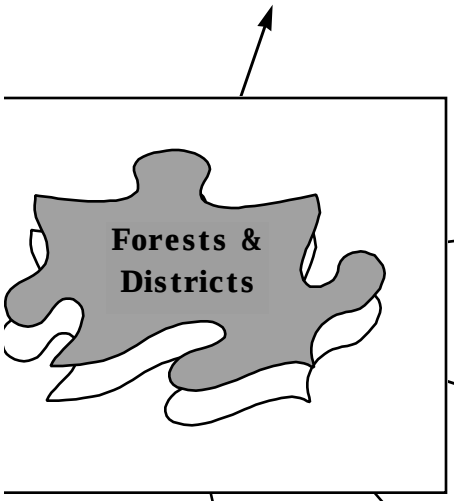

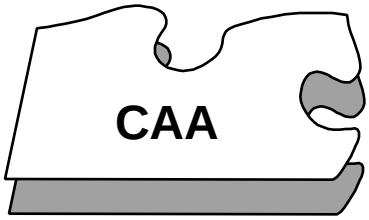

Clean Air Act (CAA)

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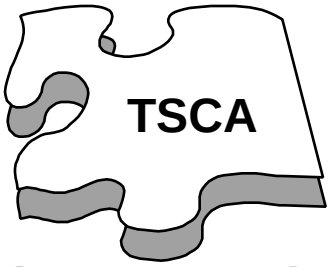

Toxic Substance Control Act (TSCA)

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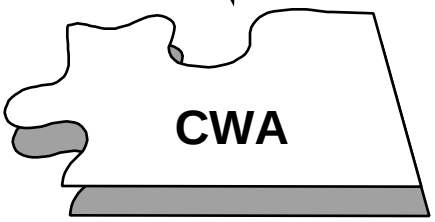

Clean Water Act (CWA)

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Executive Orders

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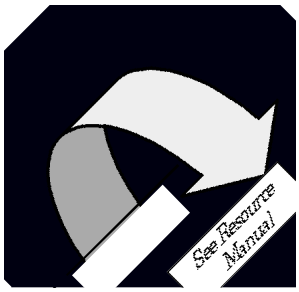
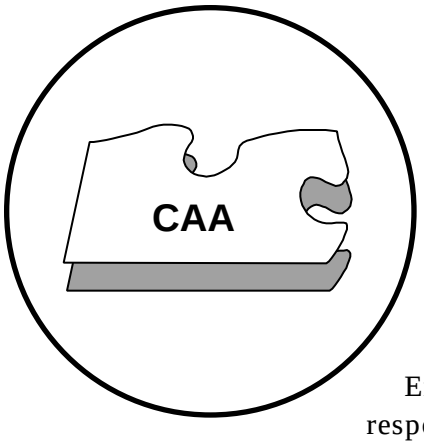




Clean Air Act (CAA)

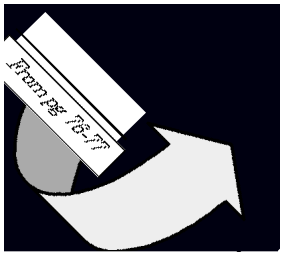
The Clean Air Act (CAA) was passed by the United States Congress in 1970, as a vehicle for the prevention and control of emissions into the air of substances that may harm the public health or natural resources. This act includes regulations for both stationary sources of air pollutants (factories, businesses, etc.) and mobile sources (automobiles, trucks, and airplanes). The U.S. Environmental Protection Agency has been delegated full national responsibility to develop, inspect, and enforce all relevant regulations. Most states have been delegated the primary responsibility for inspection and enforcement of similar air quality regulations if they have regulations equal to, or more stringent than those established under the federal CAA law. Under this law, the federal government is completely phasing out the availability of chemicals that adversely affect the earth's ozone layer.

- ✓ Forests and districts may be subject to these air quality regulations if they routinely emit hazardous air pollutants in the form of volatile organic compounds (VOCs).

- ✓ Most states strictly regulate all such sources. These compounds are present in a variety of hazardous liquid products. They rapidly evaporate and then photochemically react with sunlight to form an ozone-based atmospheric pollution, or smog.

- ✓ Most states have listed over one hundred chemicals considered to be toxic (hazardous) air pollutants (a list is included in the *Forest Service Resource Manual*).

- ✓ Most air permit holders are required to implement some form of Reasonably Available Control Technology (RACT) in order to minimize or eliminate air emissions.



✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Make a list of all sources within your facility that generate air pollutants. Include major heat and air-conditioning systems, coal fired steam plants, and natural gas systems within your facility.

❑ 2. Your facility is a "stationary" emission source. Add up all emissions to see if you exceed one ton (2,000 pounds) of volatile organic compounds (VOCs). Record production or activity rates associated with the release of VOCs.

❑ 3. Add up each Hazardous Air Pollutant (HAP) to see if any exceed the 100 pound reporting threshold during the year. Use the information in the companion resource manual to help determine which are Hazardous Air Pollutants (HAPs). Record production rates associated with the release of HAPs.

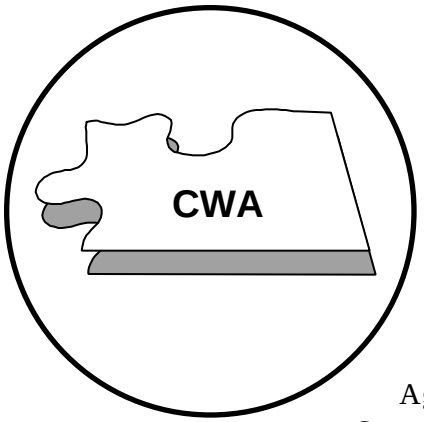
❑ 4. If total VOCs or individual totals of HAPs exceed the reporting thresholds, complete your state's air pollution notice (if appropriate) and/or submit the appropriate permit request.

❑ 5. Keep records of quantities of VOCs and HAPs released during each year to be sure you operate within the permit requirements. If exceeded, take steps to reduce your emissions, and/or revise your permit.

❑ 6. Submit all annual reports and complete any federal or state surveys sent to your facility.

Minimize environmental obligations through pollution prevention!

See Resource Manual



Clean Water Act (CWA)

The Clean Water Act (CWA) was passed by the United States Congress in 1972, to provide a vehicle for regulating the direct and indirect discharge of pollutants into the country's surface waters. Direct discharges or surface discharges occur from industrial sources and municipal wastewater treatment plants. A federal program was developed by the U.S. Environmental Protection Agency (EPA) called the National Pollutant Discharge Elimination System (NPDES) to regulate direct discharges.

- ✓ Industrial wastewater being discharged by forests or districts is usually routed to the local Publically Owned Treatment Works (POTW) through city-owned sewer systems. Through local municipal codes, the POTW establishes quality constraints on all federal facilities that discharge wastewater to them. These quality requirements not only include levels of acceptable chemicals, they also regulate wastewater pH and the presence of oils and surfactants.

- ✓ Industrial wastewater pretreatment processes may be required to consistently ensure that the discharge to the POTW is within acceptable limits.

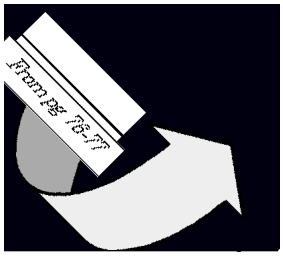
- ✓ Any federal facility that is issued a permit for non-POTW discharges must monitor the quality of wastewater discharged to ensure that permit limits are not exceeded. Records must be kept of these monitoring efforts.

- ✓ Stormwater discharges are regulated under the CWA and respective state regulations. These are focused on facilities where rainwater runoff is collected by the city's storm drain system, and dumped into local surface water.

- ✓ Analysis of stormwater runoff may be required to verify that runoff is within acceptable quality limits.

- ✓ If you have a sump, septic system, or vehicle service bay drain connected to a disposal well, you have a Class V Underground Injection Well which must be registered with the EPA. Use the phone lists in the front of this tool kit to call EPA for more specific guidance.

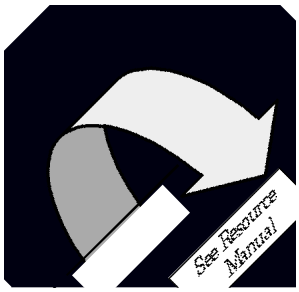
- ✓ This Federal regulatory program has been delegated to your state regulatory agency. Contact them for more information, or contact your Area Environmental Office for assistance.

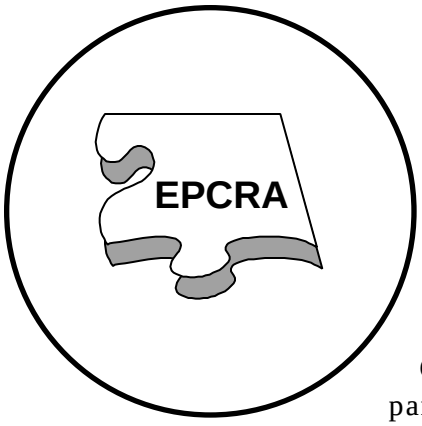


✓✓ Environmental Regulatory Checklist ✓✓

- ❑ 1. Complete any wastewater discharge surveys released by local municipalities and keep records.
- ❑ 2. Survey your facility to see if you are discharging anything into the municipal sewer system except domestic discharges through kitchens, restrooms, etc. Note any work-related discharges and the constituents in the discharge. If you have unused floor drains, seal them off to preclude accidental release of regulated materials into the sewer system.
- ❑ 3. If you do discharge into the municipal sewer system, contact the municipality regarding the need for a permit.
- ❑ 4. Complete permit requests as appropriate in a timely fashion.
- ❑ 5. Prepare a plan to ensure that your discharges do not violate your discharge permit. A pretreatment system may be required.
- ❑ 6. Take periodic samples and conduct analyses of discharges to verify that they are within the discharge permit criteria.
- ❑ 7. Do not release any materials into the municipal storm drains.
- ❑ 8. If you have rainwater runoff from your facility that might contain regulated compounds, contact your local regulatory agency for a possible stormwater permit.
- ❑ 9. Maintain all permits, analysis reports, and product usage records for up to five years.
- ❑ 10. Prepare and submit all required local and state water-related discharge reports.
- ❑ 11. Be sure to develop your own plan.

Minimize environmental obligations through pollution prevention!





Emergency Planning and Community Right-to-Know Act (EPCRA)

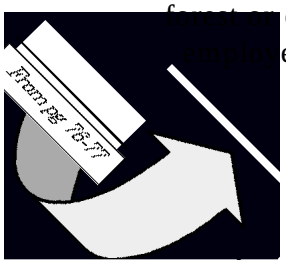
In October of 1986, the President signed into law an act that for the first time would require industries and businesses to report chemical use information to the public and take part in local emergency plans. This is known as the Emergency Planning and Community Right-to-Know Act (EPCRA). There are four major parts of EPCRA, including: 1) emergency planning at the state and community level; 2) emergency notification of chemical accidents; 3) community right-to-know reports regarding hazardous chemicals; and 4) toxic chemical release reporting to the public. Under this law, Local Emergency Planning Committees (LEPC), and State Emergency Response Commissions (SERC) are required. Contact your state environmental regulatory agency for references to your relevant LEPC and SERC. Federal facilities are required to comply with EPCRA by Executive Order 12856. Any Federal facility which reports under any section of EPCRA, must also prepare a facility pollution prevention plan.

- ✓ Forests / districts may be required to take part in their community's emergency planning process if they have "Extremely Hazardous Substances" (EHSs) above the designated "Threshold Planning Quantities" (TPQ) at their facility. Each EHS has been designated a TPQ. EPCRAstipulates a storage level of concern if the entire quantity of the substance were accidentally released. The EPA has listed over 400 EHSs. Planning quantities can range from one pound to 10,000 pounds.

- ✓ The second part of EPCRA requires facilities to immediately notify national, state and community emergency response groups in the event that a hazardous chemical is accidentally released off-site above "reportable quantities" (RQ). The RQ for hazardous chemicals ranges from one pound (for EHSs), up to 10,000 pounds.

- ✓ The third part of EPCRA, the Community Right-to-Know sections, concerns reporting the amounts of hazardous chemicals that are present on-site. Forests / districts that have individual hazardous chemicals or EHSs on-site above specified thresholds must submit detailed information to community and state planning groups. Reporting thresholds range from several pounds to 500 pounds for EHSs, and up to 10,000 pounds for most non-hazardous chemicals.

- ✓ The last part of EPCRA is the Toxic Chemical Release section which requires facilities to report the type and amount of releases of toxic chemicals that occur from their facility. There are approximately 320 toxic chemicals. If a forest / district uses in excess of a designated amount in one calendar year it must provide the Toxic Release Inventory (TRI) Form R. A forest or district is exempt from this requirement if it has fewer than 10 full-time equivalent employees.



✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Prepare a total list of all materials and quantities you purchased during the calendar year that are on the EPCRA lists subject to reporting.

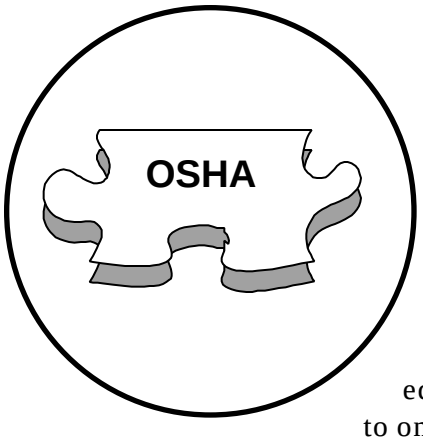
❑ 2. If you exceed the EHS threshold planning quantities, you must prepare specific reports for the community and state emergency planning commissions.

❑ 3. If you exceed the reporting thresholds of the quantities of materials stored on site, you must prepare specific reports.

❑ 4. If you employ more than ten full-time equivalent persons during the calendar year (or all your employees and contractors work more than 20,000 hours in one calender year), and you release (use) chemicals in quantities above the reporting thresholds, you must prepare a Toxic Release Inventory (TRI) Form R for your state and the EPA. [Note: many forests and districts have seasonal workers and contractors; watch for these because their hours worked must be included in the 20,000 hours which could trigger the 10 full-time employee threshold.]

❑ 5. Keep records of all regulated chemicals purchased during each calendar year, together with the quantities actually used during the year. These records can be used to track pollution prevention program progress, and be used for determining reporting requirements under EPCRA.

Minimize environmental obligations through pollution prevention!



OSHA Hazard Communication

Federal law guarantees the rights of employees to know about the chemical hazards present in their workplace. These rights are protected by a national standard created by the Occupational Safety and Health Administration (OSHA) called the Hazard Communication Standard. The Hazard Communication Standard was developed by OSHA in response to the growing number of organizations using hazardous chemicals. It is estimated by OSHAthat approximately one in every four workers is exposed to one or more chemical hazards. Exposure to hazardous chemicals can cause serious health problems and pose potentially dangerous situations in the workplace.

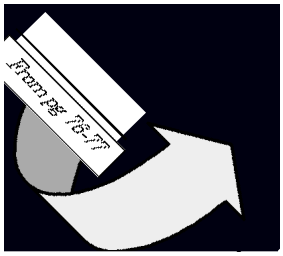
✓ Employee right-to-know begins by requiring chemical manufacturers to assess the hazards posed by the substances they produce. Manufacturers must supply this hazard information to their purchasers by including a Material Safety Data Sheet (MSDS) with each substance sold. The MSDS must have the identity of all hazardous chemicals included in the product, along with the physical and chemical characteristics and health hazards posed by the chemicals.

✓ Under the Hazard Communication requirement, each forest and district must create a written program which identifies among other things, the hazardous chemicals found on-site and the methods to be used to communicate these hazards to employees.

✓ Each forest and district must comply with standards for labeling containers of hazardous substances. Each forest and district must also maintain MSDSs at convenient places in the facility for easy access by all employees involved in working with hazardous materials.

✓ The Hazard Communication Standard is a performance-oriented rule. Almost all of the requirements are stated in terms of objectives to be achieved rather than methods or means an employer needs to use to achieve those objectives. For example, forests / districts may educate their employees in any manner they see fit, as long as the employees are informed of the necessary information. There is no mandated way to train employees, but they must demonstrate the appropriate work habits whenever working with hazardous chemicals. This usually entails wearing protective clothing, safely handling chemicals, and knowing the appropriate response actions for accidental releases or spills.

✓ OSHA also has specific container and other safety regulations that are similar EPA's RCRA regulations for wastes. These regulations prohibit open containers of flammable substances.



✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Request Material Safety Data Sheets (MSDS) with every product. Do not accept any product sample without an accompanying MSDS.

❑ 2. Review your MSDSs and understand what chemicals you are bringing onto your forest/district and what health and safety problems they may pose.

❑ 3. Make sure all containers of hazardous materials are labeled and the MSDS can be found easily in an emergency.

❑ 4. Organize all MSDSs by work area and make them available to all employees. Post for easy visibility and access.

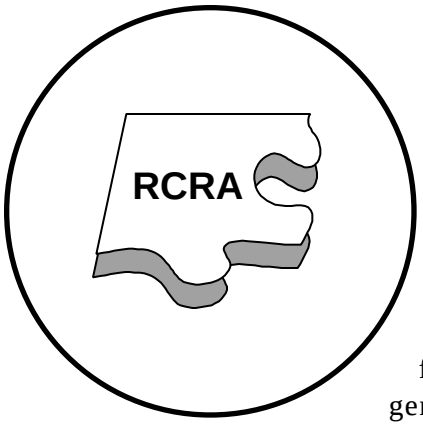
❑ 5. Develop a hazard communication training plan as part of your own Chemical Hazard Communication Program (Employee Right-to-know).

❑ 6. Establish a hazard communication training session for all employees that handle hazardous wastes. You can purchase good training aids that fulfill this need.

❑ 7. Keep records of when each employee is trained and exactly what the training context was.

❑ 8. For the Forest Service, all records must be kept indefinitely.

Minimize environmental obligations through pollution prevention!



Resource Conservation and Recovery Act (RCRA)

A solid waste is any solid, liquid, or contained gaseous material that you no longer use, and either recycle, throw away, or store until enough is accumulated for treatment or disposal. The U.S. Environmental Protection Agency has been assigned responsibility for developing and enforcing regulations under this law. You, the generator, are fully responsible for determining if any of the wastes you generate are hazardous.

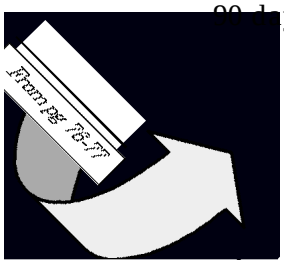
✓ A waste is considered hazardous under RCRA if it has been "listed" by EPA as one of over 400 manufacturing process wastes or discarded chemical products.

✓ A waste may be a characteristic hazardous waste if it is ignitable (combustible or flammable, or flash point of 140°F or less), corrosive (dissolves metals or other metals, with a pH less than or equal to 2, or a pH equal to or greater than 12.5), reactive (unstable or undergoes rapid or violent chemical reactions with water or other materials), or toxic (a high concentration of heavy metals, solvents, or pesticides).

✓ Acutely hazardous wastes are regulated in much smaller quantities, and are also subject to solid hazardous waste regulations. (See the *Forest Service Resource Manual*)

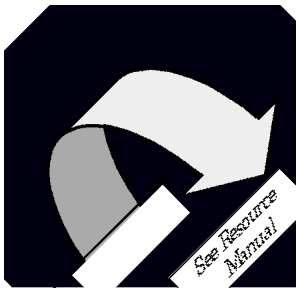
✓ You must determine in which category your chemical wastes fall, and you are responsible for all associated storage requirements and recordkeeping:
- Conditionally Exempt Small Quantity Generator (CESQG) generates no more than 220 pounds of hazardous waste or 2.2 pounds of acutely hazardous waste in any month.
- Small Quantity Generator (SQG) generates more than 220 but less than 2,200 pounds of hazardous or 2.2 pounds of acutely hazardous waste in any month.
- Large Quantity Generator (LQG) generates more than 2,200 pounds of solid hazardous or 2.2 pounds of acutely hazardous waste in any month.

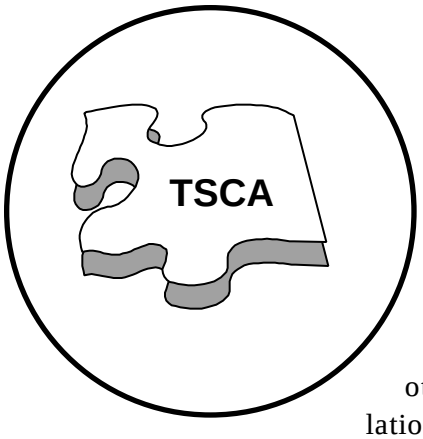
✓ You are limited in the amount of hazardous waste you can accumulate on-site:
- A CESQG may accumulate up to 2,200 pounds, after which the generator is reclassified as a SQG and has 180 days to dispose of the waste.
- A SQG may accumulate no more than 13,200 pounds before it must apply for a storage facility permit. Once a container has been filled, it may not be stored on-site for more than 180 days, or 270 days if the disposal site is more than 200 miles away.
- A LQG may not accumulate more than 13,200 pounds before it must apply for a storage facility permit. Once a container has been filled, it may not be stored on-site for more than 90 days.



✓✓ Environmental Regulatory Checklist ✓✓

- ❑ 1. Identify all solid waste streams in your facility.
- ❑ 2. Determine which of your waste streams are hazardous; don't forget to include abandoned drums and containers that may be sitting around.
- ❑ 3. Count all hazardous waste generated during any one month to determine your generator size.
- ❑ 4. If you are a hazardous waste generator, apply for an EPA Identification Number.
- ❑ 5. Store hazardous wastes in DOT-approved drums. You can use 55-gallon drums to save money if they are properly protected and secured.
- ❑ 6. Minimize hazardous waste generation. Purchase only what you can use. Don't make hazardous waste by contaminating non-hazardous wastes with regulated chemicals or other hazardous waste. Segregate waste.
- ❑ 7. Do not mix hazardous wastes. Do not mix non-hazardous materials into hazardous wastes - it increases disposal costs since the entire mixture becomes hazardous.
- ❑ 8. Properly mark each hazardous waste drum. Date it when it is filled.
- ❑ 9. Move all hazardous waste storage drums to a separate, controlled area and keep under lock and key. Segregate all waste drums in storage to minimize accidental mixing if leaks occur. Be sure all hazardous waste is maintained in indoor facilities completely removed from the elements.
- ❑ 10. Inspect the hazardous waste storage area at least weekly for leaking drums.
- ❑ 11. Select permitted, reliable hazardous waste hauler and disposal facilities. Incinerate wastes if at all possible to reduce liability. Never let anyone dispose of it in an unauthorized manner. Remember, you are responsible for it from "cradle to grave."
- ❑ 12. Properly prepare, and thoroughly verify, all hazardous waste manifests when shipping hazardous wastes off-site.
- ❑ 13. Install facility and personal safety equipment for emergency response.
- ❑ 14. Develop emergency response plans and post emergency numbers.
- ❑ 15. Keep all records (manifests, analysis reports, etc.) in your permanent files. Prepare required reports to EPA and your state.

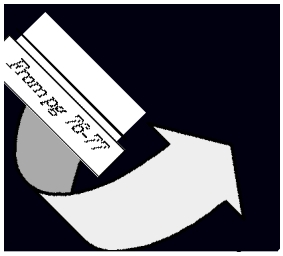




Toxic Substances Control Act (TSCA)

The Toxics Substance Control Act (TSCA) was passed by Congress and signed into law in 1976 to establish a means by which all new chemical substances entering the United States market would be evaluated for their effects on human health, other living organisms, and the environment. Through this law, several serious chemical hazards were detected that would not have otherwise been found. EPA was assigned authority to develop regulations and enforce the provisions of TSCA. While there are many regulatory components to TSCA the main area of concern for forest/district employees is listed below:

✓ Under TSCA, EPA has developed special regulations for polychlorinated biphenyls (PCBs), chlorofluorocarbons (CFCs), friable asbestos, and 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD). These are addressed in other sections of this *Forest Service Tool Kit* where necessary.



✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Because national forests and forest districts do not normally manufacture chemical substances, most of the regulatory obligations of TSCA do not apply.

❑ 2. However, as a result of TSCA, there are specific areas of concern for forest / districts in the use of selected chemical substances, namely, polychlorinated biphenyls (PCBs), chlorofluorocarbons (CFCs), friable (crumbling) asbestos, and possibly the disposal of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD).

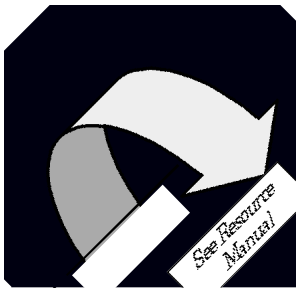
❑ 3. Through your pollution prevention program, you should specifically target the total elimination of the use of chlorofluorocarbons (CFCs) except where absolutely necessary in air conditioning and cooler / freezer systems.
- There are many replacement chemicals and methods for CFCs as a cleaning agent in almost all applications.
- The use of aerosol canisters should be completely eliminated through bulk purchase of products and use of look-alike dispenser bottles

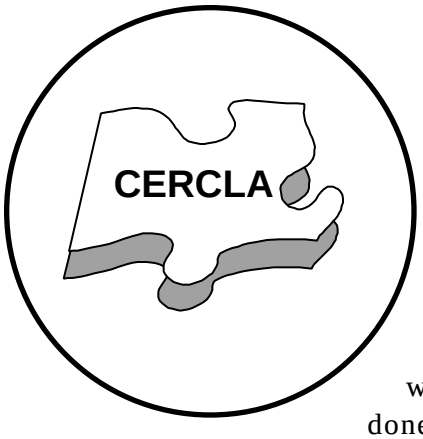
❑ 5. You are strongly encouraged to remove all PCB-containing equipment from your facilities. A special section on PCBs has been included later in this *Forest Service Tool Kit*, and is explained in more detail in the *Forest Service Resource Manual*.

❑ 6. When replacing or in new construction, consider air-conditioning and cooler / freezer systems with non-CFC compressors.

❑ 7. Wherever the use of friable asbestos is found, contact your local environmental coordinator for specific action. An excellent forest / district policy is the complete avoidance of all asbestos in construction, etc.

Minimize environmental obligations through pollution prevention!





Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly called the Superfund law, requires cleanup of releases of hazardous substances in air, surface water and groundwater, and on land. New spills and leaking or abandoned dumpsites are covered. Releases of a substance listed as hazardous above its reportable quantities must be immediately reported to the **National Response Center at (1-800) 424-8802**. CERCLA was enacted by Congress in 1980 and was a direct result of the Love Canal situation in 1978.

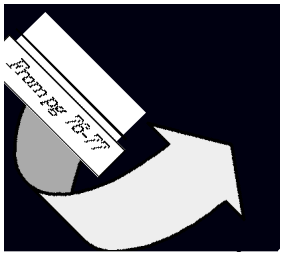
- ✓ CERCLA broadened the National Contingency Plan to encompass a wide variety of emergency responses and substances. Included in this revised plan is the federal policy on responding to oil spills and other discharges not only into navigable waters, but also at abandoned and/or uncontrolled hazardous waste sites.

- ✓ CERCLA established the National Response Team to oversee the federal response to emergencies involving hazardous substances. EPA heads this team which originally consisted of 12 different federal agencies.

- ✓ Under CERCLA, EPA established and maintains the National Priorities List (NPL), a list of abandoned or uncontrolled hazardous waste sites. Each new site added to the NPL is evaluated according to a risk ranking system to establish its priority for cleanup.

- ✓ Under CERCLA, all spills or discharges into the environment of listed substances above the reporting threshold, must be immediately reported to the National Response Center.

- ✓ Substances that are considered hazardous and are subject to CERCLA include: hazardous wastes listed by the Resource Conservation and Recovery Act (RCRA) (40 CFR 261); hazardous substances listed under Section 311 of the Clean Water Act (CWA) (40 CFR 110, 112-1114); toxic pollutants listed under Section 307 of the CWA (40 CFR 116, 117); hazardous air pollutants listed in Section 112 of the Clean Air Act (CAA) (40 CFR 61); imminently hazardous substances and mixtures regulated under Section 7 of the Toxic Substance Control Act (TSCA); and any additional substances that EPA designates as hazardous.



✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Acquire the following document which lists all materials subject to CERCLA: Title III List of Lists, Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-know Act (EPCRA) and Section 112(r) of the Clean Air Act, as Amended; Title III of the Superfund Amendments and Reauthorization Act of 1986, and Title III of the Clean Air Act Amendments of 1990, EPA document number 740-R-95-001. Call the EPCRA Hotline for a free copy: (1-800) 424-9346.

❑ 2. Identify all storage and use area materials that could be subject to the regulations of CERCLA if they are spilled. This list will be critical to full compliance with other federal environmental regulations. Prepare it, and make it a part of your employee training and emergency planning programs.

❑ 3. Follow the recommendations in this tool kit to establish a pollution prevention program to reduce or eliminate the use of hazardous materials, thus eliminating the potential liabilities of CERCLA for new spills or accidental discharges.

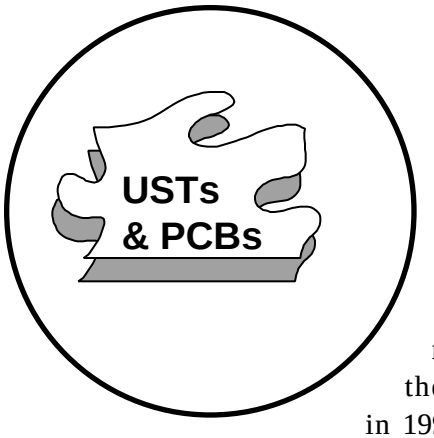
❑ 4. Take all measures necessary to ensure that all hazardous materials that cannot be eliminated, whether new products, products in use, or wastes, are handled and stored to eliminate any possibility of spills or accidental releases.

❑ 5. If an accidental spill or discharge does occur, immediately notify your designated emergency response coordinator, and notify the **National Response Center at (1-800) 424-8802**. Give them all the information they ask for, and follow their directions.

❑ 6. If you suspect a potentially contaminated site(s) within your geographic areas of responsibility, report it immediately to your supervisor.

❑ 7. Do not try to hide hazardous spills or releases. It not only will bring harm to the natural environment of the forest/district, and perhaps threaten injury to humans, fish, and animals, it is illegal and you can be punished with fines and civil actions.

Minimize environmental obligations through pollution prevention!



Underground Storage Tanks (USTs)

Underground storage tanks (USTs) are widely recognized as a major environmental problem. They have been the cause of soil and groundwater contamination at thousands of sites throughout the United States. In 1988, the EPA estimated that there were over two million UST systems located at over 700,000 facilities nationwide. EPA judged that roughly 75% of such systems posed the greatest potential for leakage and environmental harm. A study in 1992 suggests that the cost to clean up the nation's leaking underground storage tanks could exceed $41 billion and take over 30 years. In an attempt to address the widespread problems with USTs, Congress enacted the Hazardous and Solid Waste Amendments (HSWA) of 1984 which added Subtitle I, Regulation of Underground Storage Tanks, to RCRA. The U.S. Environmental Protection Agency (EPA) has been assigned primary responsibility for RCRA and the Regulation of Underground Storage Tanks.

✓ Under the RCRA, EPA is to identify all existing USTs and require that they be brought up to certain design and operating standards or be closed.

✓ New tanks must meet strict design and operating standards, and the local, state, and Federal government must be notified when they are installed.

✓ RCRA requires the reporting, investigation, and cleanup of releases from USTs.

✓ RCRA also specifies standards for closure of USTs and financial responsibility requirements for persons who own and operate petroleum USTs.

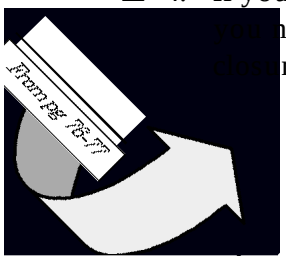
✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. You should identify every UST you have on your forest / district property, and every UST must have spill, overfill, and corrosion protection.

❑ 2. You should work with the respective state office to determine if all USTs are registered, and their current status.

❑ 3. Each forest / district should have a Spill Prevention Control and Countermeasures Plan (SPCC). Contact your state for specific requirements. Every tank must have a leak detection system in place.

❑ 4. If you find contamination around any UST, whether used, not used, or being removed, you need to properly clean it up. All contaminated soils need to be remediated before closure.



Polychlorinated Biphenyls (PCBs)

The Toxics Substances and Control Act (TSCA) has specific regulatory authority to control the manufacture, use, and disposal of equipment using polychlorinated biphenyls (PCBs). The U.S. Environmental Protection Agency has been delegated responsibility for the preparation and enforcement of regulations associated with PCBs.

✓ Under TSCA, EPA has standardized the warning labels that must be affixed to specific items such as electrical, hydraulic, and heat transfer equipment, containers and vehicles containing PCBs.

✓ Existing PCBs and PCB articles are to be disposed of gradually through methods by which exposure is virtually eliminated.

✓ Under TSCA, EPA has specific regulations regarding removal of PCB-containing items from service, their storage, and ultimate disposal.

✓✓ Environmental Regulatory Checklist ✓✓

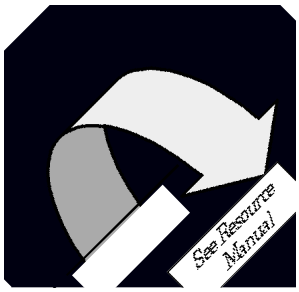
❑ 1. For the most part, this regulatory obligation for forests and districts is limited to high voltage electrical equipment and fluorescent and HID ballasts where PCBs are used as a cooling agent.

❑ 2. You should identify every PCB-containing item (contact the manufacturer directly if you are not certain) you have on your forest/district property, whether you are currently using it or not, even if it has never been used. Prepare a comprehensive list and include it in your employee training program.

❑ 3. All PCB-containing items removed from service must be relocated to a temporary storage facility for final disposal. See the *Forest Service Resource Manual* for specific instructions on storage areas and allowable storage times.

❑ 4. All PCB-containing items must be prepared for disposal according to EPA regulations. See *Forest Service Resource Manual* for specific instructions.

❑ 5. PCB-containing items cannot be commercially reused; once they have been removed from service, you must proceed with disposal.



Executive Orders

The President of the United States uses his powers to direct specific actions through Presidential Executive Orders. There are several such orders that affect environmental management at Federal facilities, including those that are listed below. If you have any questions, contact your Field Area office for more information, or the regional EPA office through the Federal Facilities Program Office.

- ✓ Executive Order 12843 – Procurement Requirements and Policies for Federal Agencies for Ozone Depleting Substances (April 21, 1993).
- ✓ Executive Order 12844 – Federal Use of Alternative Fueled Vehicles (April 21, 1993).
- ✓ Executive Order 12845 – Purchasing Energy Efficient Computer Equipment (April 21, 1993).
- ✓ Executive Order 12856 – Federal Compliance With Right-to-Know Laws and Pollution Prevention Requirements (August 3, 1993).
- ✓ Executive Order 12873 – Federal Acquisition, Recycling, and Waste Prevention (October 20, 1993).
- ✓ Executive Order 12902 – Energy Efficiency and Water Conservation at Federal Facilities (March 8, 1994).
- ✓ Executive Order 12969 – Federal Acquisition and Community Right-to-Know (August 8, 1995).
- ✓ Executive Order 12898 – Federal Actions to Address Environmental Justice.
- ✓ Executive Order 13101 – Greening the Government Through Waste Prevention, Recycling, Reporting, and guidance Issues.

Energy Policy Act (EPAct)

The National Energy Policy Act (EPAct) was passed by Congress in October of 1992. This comprehensive Act is comprised of 30 titles that cover a broad range of energy issues, including new efficiency standards for lights, electric motors, and vehicles, power transmissions, heating and cooling systems, and gas pipelines. The Act also contains measures to encourage utilities to provide energy conservation rebates. Primary responsibility for the EPAct was assigned to the U.S. Department of Energy (DOE).

Under the energy-efficiency title of the Act, mandatory efficiency standards are established for some fluorescent and incandescent lamps. After the effective date, lamps that do not meet the efficiency requirements (lumens per watt) may not be manufactured. Certain lamps with "non-general" applications are exempt from the standards. Some of the special applications include: traffic signal lamps, aviation lamps, swimming pool lamps, and colored lamps, impact-resistant lamps, and lamps with a CRI of 82 or greater – which are used in places where very high-quality lighting is needed, such as photo labs.

✓ The Act does not mandate efficiency standards for lumens; however, the DOE will establish programs for testing and labeling of fixtures.

✓ The Act established funding for 10 regional centers to promote energy-efficient buildings, including efficient lighting, heating, cooling, and building design.

✓✓ Environmental Regulatory Checklist ✓✓

❑ 1. Be aware that energy efficiency is a national issue and that you can do your part by upgrading your lighting and heating and cooling systems to be more efficient.

❑ 2. Consider switching to only fluorescent fixtures with electronic ballasts; select only bulbs with the highest number of lumens per watt.

❑ 3. Contact the National Electrical Manufacturers Association (NEMA) (202-457-8474) for more information on actions you can take.

❑ 4. The EPA has a voluntary program which can provide technical assistance to Federal participants in the latest lighting efficient techniques. Contact the Green Lights Program at (202) 775-6650.

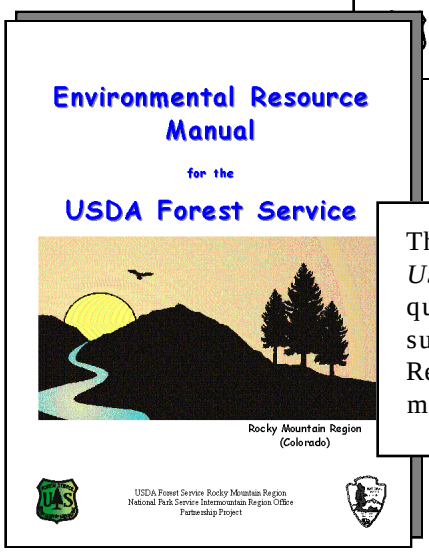
❑ 5. The Defense Logistics Agency has issued a catalog of energy efficient lighting devices that are available to all Federal agencies. Contact them for a copy at 1-800-DLA-BULB.

See Resource Manual

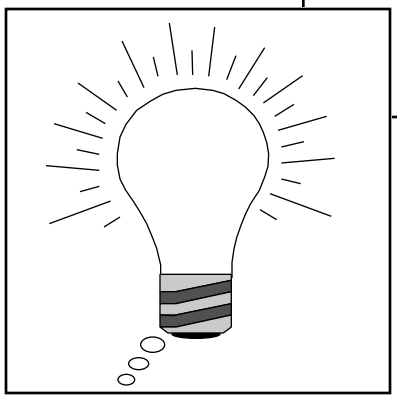
Pollution Prevention and Environmental Assistance

This tool it was prepared especially for those forests and forest districts within the USDA Forest Service Rocky Mountain Region. Please see the other supporting document for an integrated approach to your environmental management program.

The "*Environmental Tool Kit for the USDA Forest Service*" is designed to guide you through the 15 most common functions and waste streams at at forests and districts and identify management reduction possibilities.



The "*Environmental Resource Manual for the USDA Forest Service*" will provide you with quick references to products and equipment suppliers and service providers. Remember, make all choices keeping in mind the principles of source reduction.



There are many sources for technical, compliance, and financial assistance. Use them to your advantage!

- Pollution prevention contacts at EPA's regional offices.
- Professional and trade associations.
- Trade journals and environmental publications.
- Local and regional universities specializing in pollution prevention.
- Technical consultants and non-profit assistance.
- Department of Energy and Small Business Administration.
- Federal, state, and special topic pollution prevention clearinghouses and on-line databases.

Your best source for all forms of assistance and referral are pollution prevention programs at the local, state, and federal level. They are there to assist you in decreasing your environmental footprint. Use them! Call them!

This environmental management tool kit is a part of a series that has been prepared for a variety of organizations and is available to support local, state, and federal source reduction programs.

For more information, contact...
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2919 West 17th Street, Suite 208
Longmont, Colorado 80503
(303) 684-0215 (voice)
(303) 485-8273 (facsimile)
mes@mesllc.net (e-mail)

Management and Engineering Services, L.L.C. and Recom Applied Solutions, Incorporated are small businesses that have been advancing the concept of pollution prevention since the 1980s. They work with organizations of all sizes, from all industries, offering pollution prevention programs, environmental management systems, and technical assistance. As a part of an integrated outreach program, they offer federal and state agency policy development and program integration, as well as training.

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