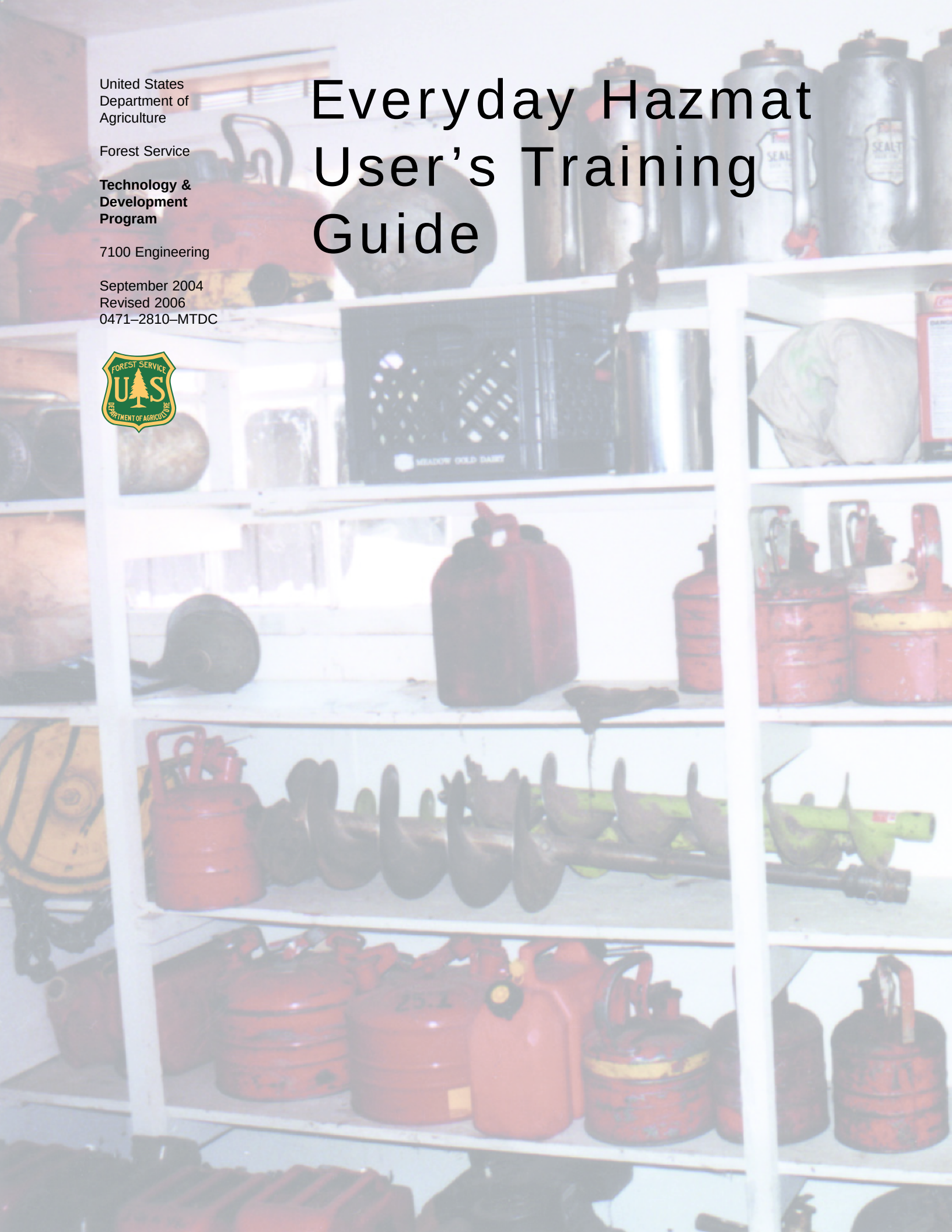

United States
Department of
Agriculture

Forest Service

**Technology &
Development
Program**

7100 Engineering

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Everyday Hazmat User's Training Guide

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J. Craig Erickson
Management and Engineering Services, L.L.C.

William H. McMullen
Management and Engineering Services, L.L.C.

Wes Throop
Project Leader

USDA Forest Service
Technology and Development Program
Missoula, MT

8E82P49—Everyday Hazmat

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Special Disclaimers

The *Everyday Hazmat User's Training Guide* is intended to help USDA Forest Service employees who are responsible for using, transporting, storing, or disposing of hazardous materials. It is based on relevant laws and regulations, but it is not the law, nor is it USDA Forest Service policy. More specific laws may be in effect in certain States and localities. If the guide conflicts with any law, regulation, or policy, follow the law, regulation, or policy. All such conflicts should be brought to the attention of the engineering program leader at the Missoula Technology and Development Center (MTDC) and the user's regional environmental engineering staff.

This publication does not contain recommendations for the use of pesticides, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

Contents

See the *Everyday Hazmat Designer's Training Guide* (0471–2819–MTDC, *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/designers_guide.htm*) for more detailed information on new construction, remodeling or converting existing facilities, and purchasing hazardous materials storage units and self-contained buildings.

Introduction

The *Everyday Hazmat User's Training Guide* was designed for use by U.S. Department of Agriculture (USDA) Forest Service employees who come in contact with hazardous materials or regulated wastes. Using graphic images and text, this guide provides suggestions on how to manage these hazardous materials and regulated wastes, including labeling, placarding, storing, dispensing, and transporting them. The guide is intended for general use and does not cover specific operations such as dust abatement, or use of drip torches. The guide is divided into four sections.

Introduction—Introduction presents an overview of the *Everyday Hazmat User's Training Guide* and a graphic table of contents to highlight areas of interest, describes how to determine if a product is hazardous, provides background on reading a Material Safety Data Sheet (MSDS), includes a review of the National Fire Protection Association (NFPA) hazard identification, discusses hazardous product numbers, and provides a brief summary of the importance of local environmental recordkeeping.

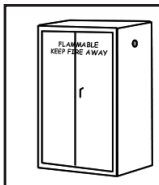
Section I—Common USDA Forest Service Activities is where you will find information on a variety of painting operations and automotive and small engine services, covering products and activities such as lead-acid batteries, used oil, used oil filters, fuel, used antifreeze, tire changes, vehicle washing, degreasing solvents, and recordkeeping suggestions. A list of operational tips is provided for each activity.

Section II—Waste Management is where you will find out how to determine whether a waste is hazardous. You also will find information on common, but regulated wastes, such as mercury-containing lamps (for instance, fluorescent bulbs), aerosol cans, nickel-cadmium (Ni-Cd) batteries, and unknown wastes. A second part of this section covers hazardous waste management and reviews several areas important to facility safety, employee health, and fulfilling regulatory obligations, with recordkeeping suggestions for all areas.

Section III—Hazardous Materials Management is where you will find extensive information on nearly every type of hazardous product found at USDA Forest Service units. Included in this section are details on corrosives, oxidizers, flammable liquids, combustible liquids, flammable solids, compressed gases, and pesticides, followed by suggestions on recordkeeping to fulfill critical regulatory obligations.

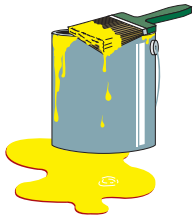
The following two pages will help you find the subject of interest in this guide.

The Everyday Hazmat User's Training Guide Roadmap



Hazardous Materials Storage Cabinets

See page 94.



Painting

See page 14.

Environmental Recordkeeping

See page 8.

Combustible Liquids

See page 58.

Common Regulated Wastes

See page 30.

Handy Tips

See pages 17, 27, 36, 71, and 79.

Automotive & Small Engine Services

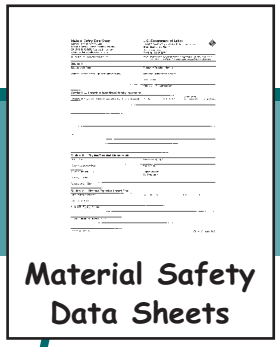
See page 18.

Pesticides

See page 72.

Identification Numbers

See page 10.



Material Safety Data Sheets

See page 6.

Hazardous Wastes

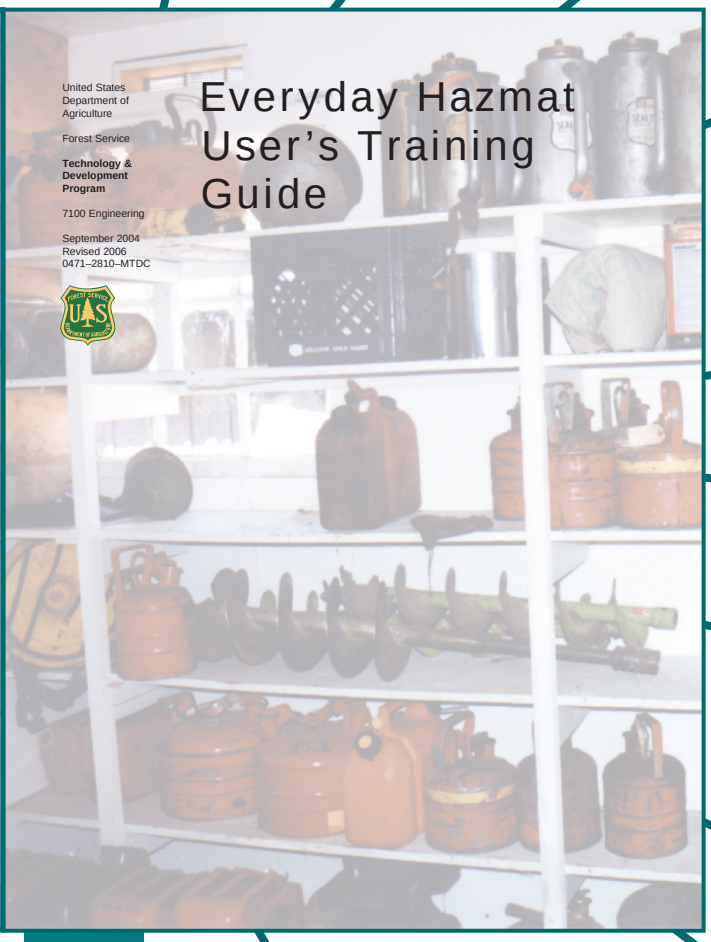
See page 35.

Flammable Solids

See page 66.

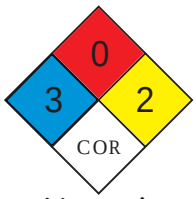
Reference Materials

See page 12.



Oxidizers

See page 44.

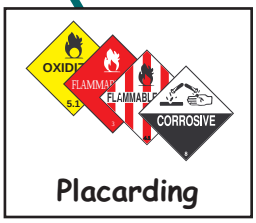


Hazard Identification

See page 9.

Flammable Liquids

See page 50.



Placarding

See page 11.

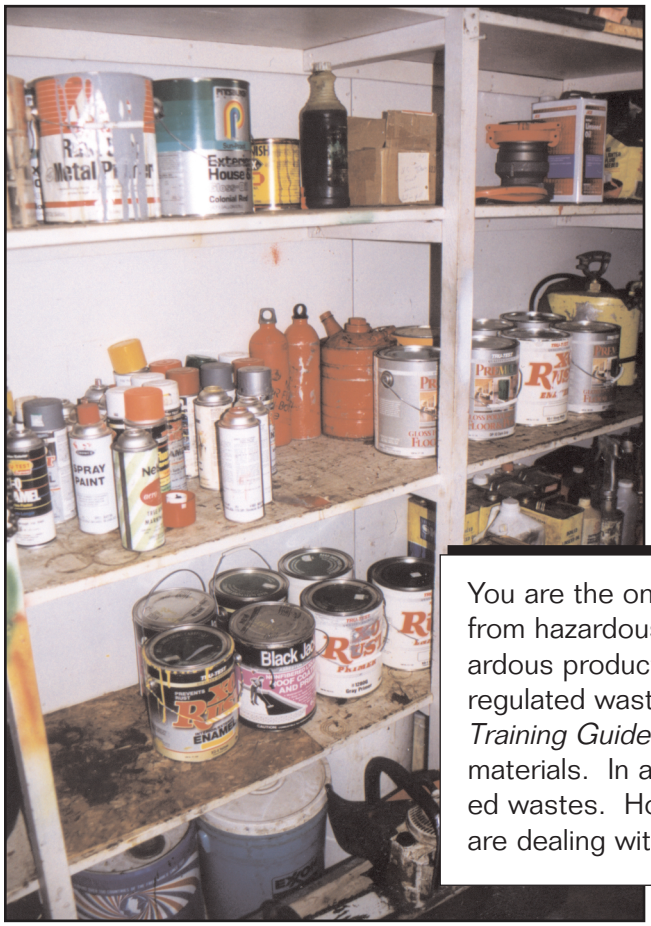
Compressed Gases

See page 80.

Corrosives

See page 38.

How This Guide Can Help You



You are the one who must know what to do to protect yourself from hazardous chemicals, how to store, dispense, and use hazardous products, and how to properly dispose of hazardous and regulated waste. To assist you, the *Everyday Hazmat User's Training Guide* reviews various operations and types of hazardous materials. In addition, the guide explains what to do with regulated wastes. However, YOU must identify the type of product you are dealing with and take action!

Contains user warnings and information about storage requirements.

Product Label

Contains everything else you need to know to protect yourself, properly store products, transport products, safely dispose of wastes, and respond to emergencies.

Product MSDS

Product Storage

Product Dispensing

Product Disposal

Use this guide to find out about...
Labeling • Placarding • Storing • Dispensing • Transporting

Determining Whether a Product Is Hazardous

Determining whether a product is hazardous is the first step in protecting yourself and managing hazardous materials. Products that are used as a part of routine activities are often taken for granted. The U.S. Department of Labor Occupational Safety and Health Administration (OSHA) has addressed this concern in two ways. First, facilities that use hazardous materials are required to develop and maintain an active Hazard Communication (HazCom) program. This program ensures that employees are trained to deal with hazardous materials, use proper personal protective equipment (PPE), and identify hazardous materials through Material Safety Data Sheets, which are to be made readily available to employees in every work area where hazardous materials are stored or used.

Every product that contains regulated chemicals must have an MSDS that presents a range of information about the steps that must be taken to ensure personal safety. Additionally, OSHA requires every manufacturer of a hazardous product to label those products with health warnings so a worker can quickly determine the nature of dangers that are being encountered.

The facility's HazCom program, the manufacturer's MSDS, and the product labeling help you determine the chemicals in the product you are using, what you must do to protect yourself, and what workers and facility managers must do to ensure proper storage and disposal. You will need the facility's HazCom program, the manufacturer's MSDS, and the product labeling in addition to the *Everyday Hazmat User's Training Guide*.

Labels on products are your first source of safety information. Look closely at the label for words like highly flammable, flammable, combustible, poison, and acid. If you find these words, you will know that you must use caution when dealing with the product, and that the product probably will require special handling, storage, and disposal. If you dispense materials from a container that has been labeled by the manufacturer into another container, the new container must have a label with at least this much information:

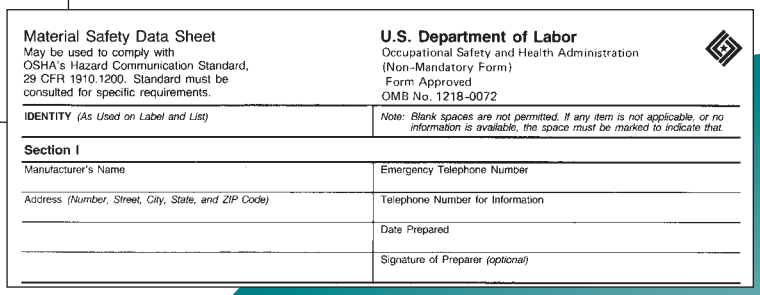
- Product name
- Hazard warning
- Emergency contact

A product's Material Safety Data Sheet (MSDS) is the second most important source of information on every product you use. The MSDS contains a listing of chemical constituents in the product, the product's physical characteristics, and much more. This information is critical to ensuring safety for personnel and facilities, and for protecting the environment through careful handling, storage, and disposal. Manufacturers may organize their MSDS differently than the one shown, but every MSDS must contain the same information.

The following two pages will help you find critical information in a product's MSDS.

Material Safety Data Sheets (MSDS)

Check in MSDS **section I** to make sure you have the right MSDS for the product you are going to use. Call the manufacturer to get the proper MSDS or find the most recent release.



Material Safety Data Sheet
May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072

IDENTITY *(As Used on Label and List)*

Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name

Emergency Telephone Number

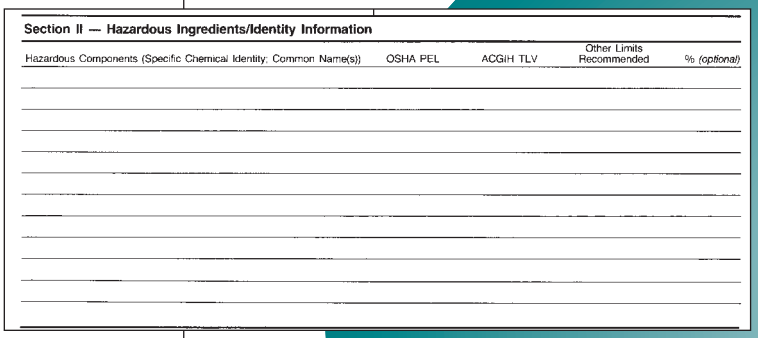
Address *(Number, Street, City, State, and ZIP Code)*

Telephone Number for Information

Date Prepared

Signature of Preparer *(optional)*

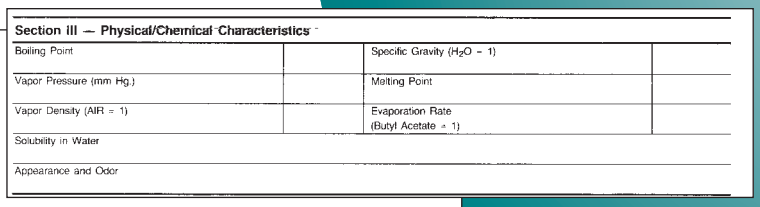
Check in MSDS **section II** to see if any chemicals are listed. If so, this product probably has environmental and health concerns. If any chemicals are listed in this section, the product will become a hazardous waste only if it is declared a waste. If it is used for its intended purpose, it is not a hazardous waste.



Section II — Hazardous Ingredients/Identity Information

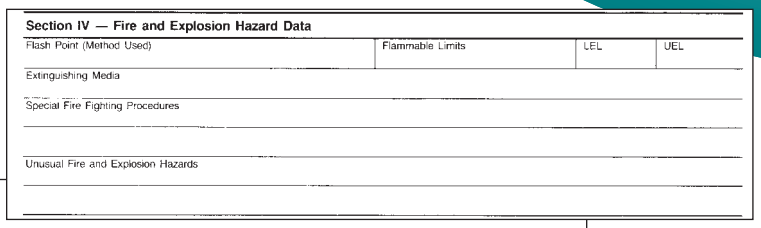
Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% *(optional)*

MSDS **section III** will tell you the specific gravity (multiply the specific gravity by 8.34 pounds and get the weight of the product per gallon); if specific gravity is less than 1.0, the product will float on water. The boiling point is used to determine the class of a flammable product. If vapor density is greater than 1.0, the vapor will settle on the floor or ground. If a pH is listed and it is lower than 2.5 or higher than 12.5, the product will become a hazardous waste only if it is declared a waste; if it is used up for its intended purpose, it is not a hazardous waste.



Section III — Physical/Chemical Characteristics

Boiling Point		Specific Gravity (H_2O = 1)	
Vapor Pressure (mm Hg.)		Melting Point	
Vapor Density (AIR = 1)		Evaporation Rate (Butyl Acetate = 1)	
Solubility in Water			
Appearance and Odor			

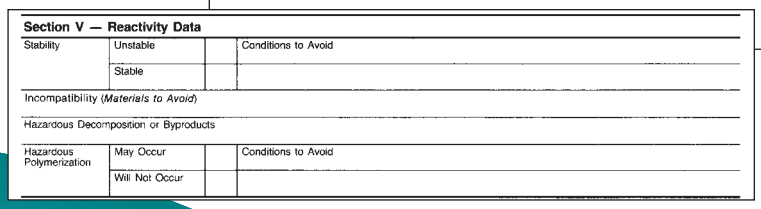


Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
Extinguishing Media			
Special Fire Fighting Procedures			
Unusual Fire and Explosion Hazards			

Check in MSDS **section IV** to find the product's flashpoint to determine if the product is flammable or combustible. If the flashpoint is less than 140 °F, the product will become a hazardous waste only if it is declared a waste; if it is used up for its intended purpose, it is not a hazardous waste.

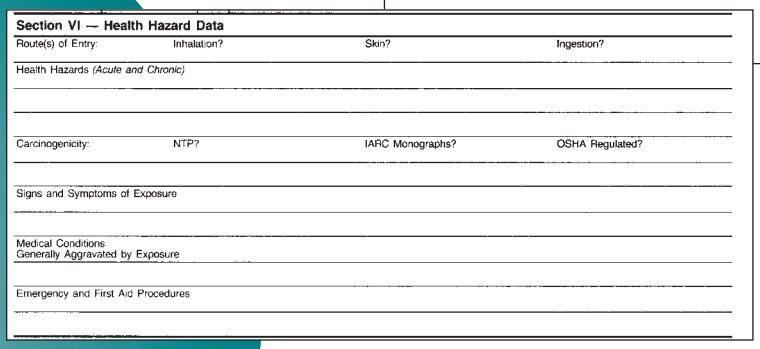
Check in MSDS **section V** to see if this product is reactive; if so, the product will be a reactive hazardous waste if it becomes a waste.



Section V — Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable		
Incompatibility *(Materials to Avoid)*			
Hazardous Decomposition or Byproducts			
Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur		

Check in MSDS **section VI** to learn of the nature of any health effects, how they may appear, and what to do if they appear.



Section VI — Health Hazard Data

Route(s) of Entry: Inhalation? Skin? Ingestion?

Health Hazards *(Acute and Chronic)*

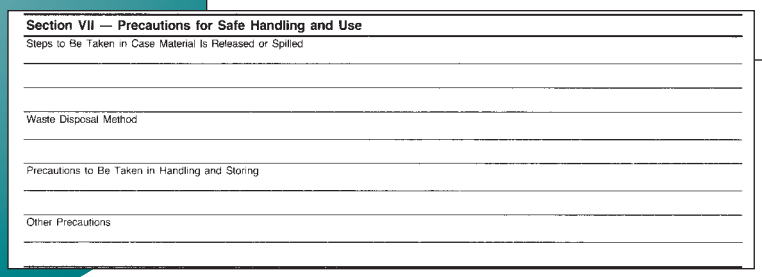
Carcinogenicity: NTP? IARC Monographs? OSHA Regulated?

Signs and Symptoms of Exposure

Medical Conditions Generally Aggravated by Exposure

Emergency and First Aid Procedures

Check in MSDS **section VII** to determine how you are supposed to handle, use, and dispose of this product.



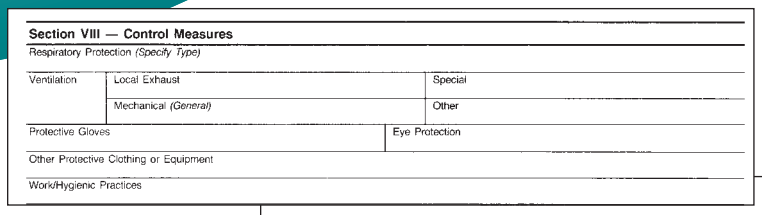
Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Waste Disposal Method

Precautions to Be Taken in Handling and Storing

Other Precautions



Section VIII — Control Measures

Respiratory Protection *(Specify Type)*

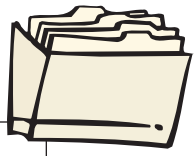
Ventilation	Local Exhaust	Special
	Mechanical *(General)*	Other
Protective Gloves		Eye Protection
Other Protective Clothing or Equipment		
Work/Hygienic Practices		

Check in MSDS **section VIII** to find the steps you need to take to protect yourself when using this product.

Environmental Recordkeeping

Environmental recordkeeping is an important part of the USDA Forest Service's overall environmental management system and is required by a variety of Federal and State environmental regulations. The suggestions summarized below are designed to identify important U.S. Environmental Protection Agency (EPA) and USDA Forest Service forms, and to institute a process to collect critical information.

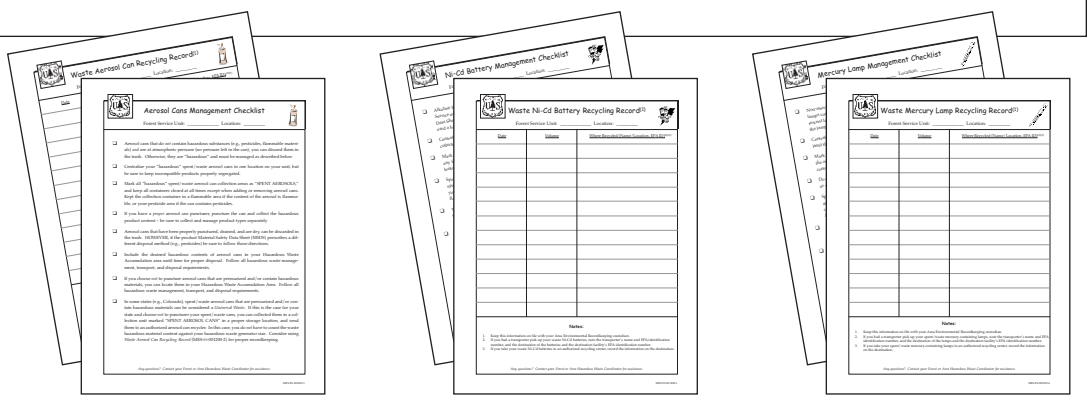
Environmental recordkeeping is not complete without some overall guidance on how to maintain these records, where, and for how long. The following suggestions are for an overall environmental recordkeeping system.



A USDA Forest Service unit's environmental records should be located where they are most convenient for all workers, but accessible whenever there may be a regulatory inspection or management review. Using a file cabinet, establish a series of hanging folders for major areas (EPA identification number and correspondence, hazardous waste manifests, recycling records, training records). Be sure that someone can access these files if the primary recordkeeping custodian is not around.

While most Federal regulations require maintaining environmental records for 5 years, it would be best to maintain environmental records indefinitely.

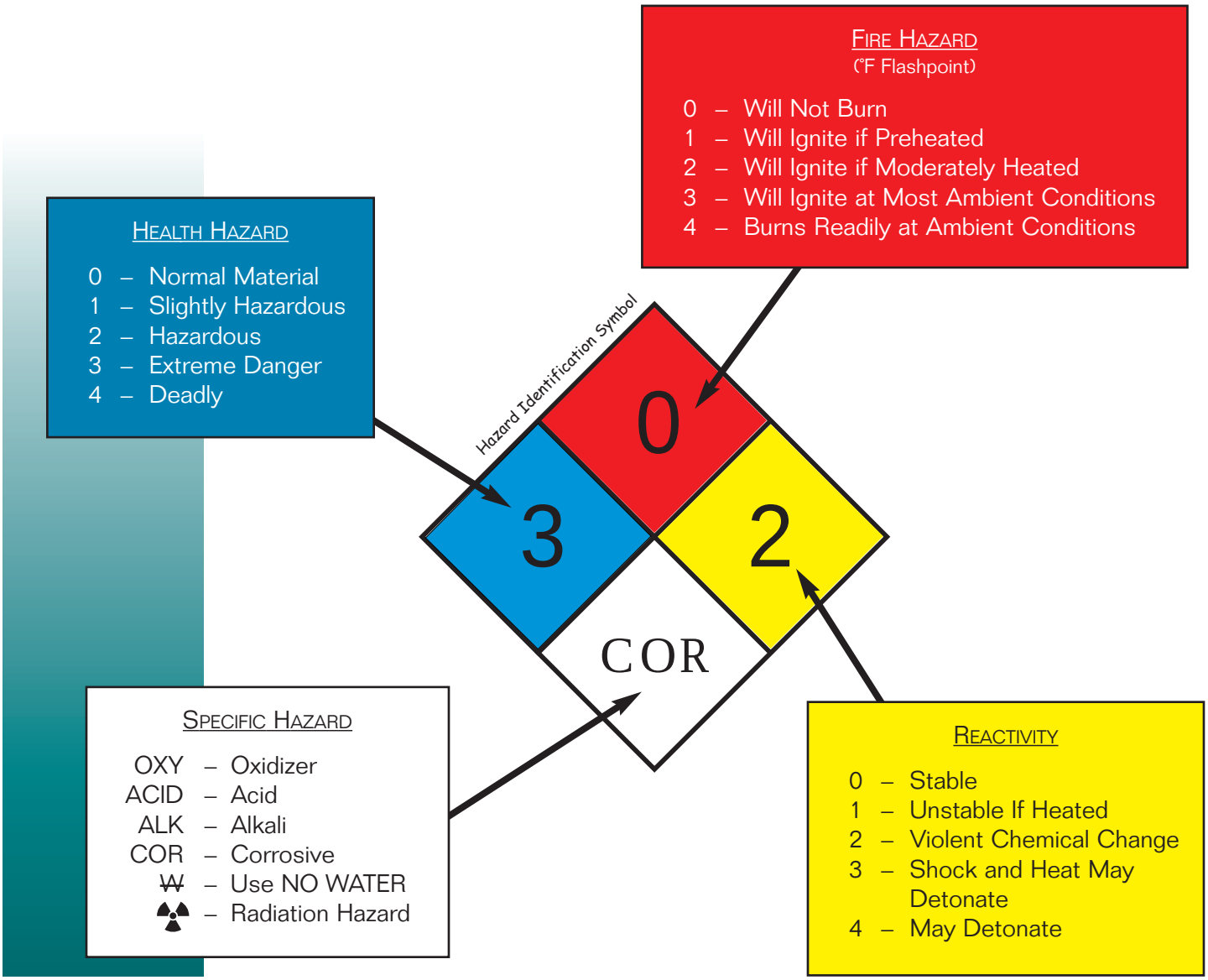
Throughout this guide, we refer to specific USDA Forest Service checklists and forms. USDA Forest Service and U.S. Department of the Interior, Bureau of Land Management employees can find these forms at the Everyday Hazmat Web page on the USDA Forest Service Technology and Development Program's Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat*. The forms are in the Adobe Acrobat (PDF) format. You can download the forms and print them from your computer. The forms are in the appendix that begins on page 105.



Hazard Identification

Products come in all types of containers and are formulated with a wide range of chemicals. Through the combination of chemical ingredients and resulting physical properties, these products take on their own unique combination of hazards to the user. Manufacturers and distributors of these products are required by law to inform all users of these hazards. The NFPA has devised a simple graphic means of communicating this information known as the *hazard identification* symbol.

As prescribed by the OSHA HazCom standard, original product labels are not to be removed or defaced. If they do become unreadable or come off, you must put a new label on the container identifying the product's hazards or dangers. One way to do so is to use a *hazard identification* label containing the proper information. The information required for you to complete an accurate *hazard identification* label can be found in the product's MSDS.



Product Shipment Identification Numbers

Many products have a unique *identification number* that must be posted on tanks and vehicles carrying more than 119 gallons of flammable or combustible liquids or more than 1,001 pounds of hazardous materials. Identification numbers are *not* required on consumer quantities of materials or limited quantity materials. Usually you will see *identification numbers* on a rectangular orange panel (6.3 inches high and 15.7 inches wide, with a 0.6-inch black outer border); sometimes you will see identification numbers imprinted across the center of a primary hazard placard. The letters *UN* in identification numbers are associated with proper shipping names considered appropriate for international and domestic transportation. The letters *NA* are associated with proper shipping names recognized only for international transportation to and from Canada.

You will see *identification numbers* on tanks and vehicles that may deliver or pick up products from your facility. If you have a portable tank mounted on a vehicle that may be transporting fuel, you should consider using the rectangular orange panel with the correct *identification number*, or the primary hazard placard with the proper *identification number*; this *identification number* must go on opposite sides of the tank if the tank is smaller than 1,000 gallons, and on all sides if the tank is 1,000 gallons or larger. In later sections of this guide, we have associated the proper *identification number* with various product names.

Identification Number

This is the identification number for gasoline using the rectangular orange-panel sign.

Hazardous Materials Placards

The U.S. Department of Transportation Hazardous Materials Regulations have established a family of placards, or graphic symbols, that uniquely identify certain chemicals and products. These placards are found on packages that have been prepared for shipment, and are often found on trucks transporting hazardous materials. These placards also can be used as signs to identify the contents of hazardous materials storage units. Most placards must measure at least 10.8 inches on each side, and conform to the color, lettering, and graphic symbols established by regulation.

Hazardous materials placards shall, with some exceptions, be used when you transport hazardous materials. Placards are required when any container exceeds 119 gallons, regardless of weight. Placards are not required on a vehicle or freight container loaded with less than 1,001 pounds of most hazardous materials, including some explosives, flammable gases, nonflammable gases, flammable liquids, combustible liquids, flammable solids, spontaneous combustibles, oxidizers, some forms of organic peroxides, poisons, and corrosives. Those hazardous products that *always* require placarding during shipment include some explosives, poisonous gases, *dangerous when wet* products, some forms of organic peroxides, poisons with inhalation hazards, and radioactive products. There are some specific requirements on shipments of combinations of hazardous materials; contact your hazmat coordinator for clarifications. If placards are required on your vehicles when transporting hazardous materials, the placard must be displayed on each end and each side of the vehicle. There are many different types and combinations of placards, so if you are in doubt, contact your hazmat coordinator.

Numbers at the bottom of many of the placards identify classes of the type of hazardous product that is defined by the general placard design, wording, color, and symbols.

Important Reference Materials

This guide includes information from many sources. These sources include Federal regulations (defined by the Code of Federal Regulations, CFR); International Fire Code (IFC); NFPA; USDA Forest Service policies, procedures, publications, and guidance materials; and other materials. While this guide is intended to provide the information you need to address most activities involving hazardous materials and regulated wastes, you may need to contact your unit's hazmat coordinator for clarification or assistance with specific situations. The following references could be added to your library of environmental information to help you clarify unique and troublesome situations.

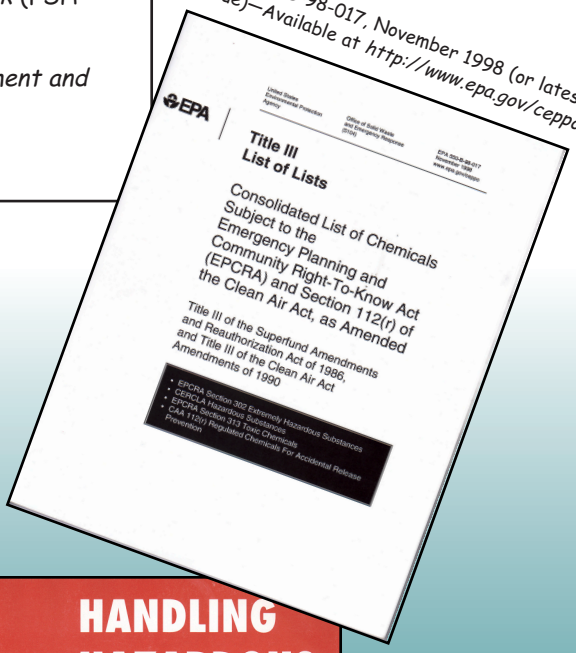
Don't forget these important USDA Forest Service documents:

Interagency Transportation Guide for Gasoline, Mixed Gas, Drip-Torch Fuel, and Diesel (0651-2806-MTDC)

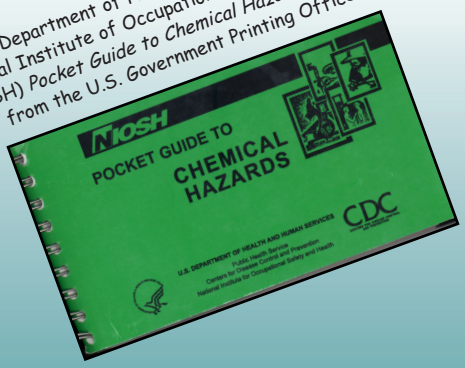
USDA Forest Service *Health and Safety Code Handbook* (FSH 6709.11)

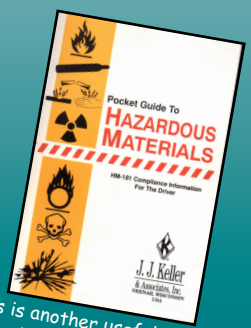
USDA Forest Service Handbook, *Pesticide-Use Management and Coordination Handbook* (FSH 2109.14)

EPA 550-B-98-017, November 1998 (or latest issue)—Available at http://www.epa.gov/ceppo

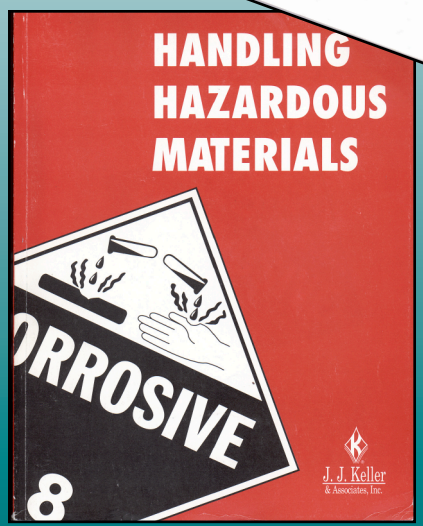


U.S. Department of Health and Human Services National Institute of Occupational Safety and Health (NIOSH) *Pocket Guide to Chemical Hazards*—Available from the U.S. Government Printing Office





This is another useful guide to hazardous materials to keep in your work areas and vehicles—this one is available from J.J. Keller & Associates.



There are several publications on placards, hazardous product identification numbers, and hazard identification symbols—this one is available from J.J. Keller & Associates.

Section I
Common USDA Forest Service Activities

This section of the *Everyday Hazmat User's Training Guide* contains summaries of some of the more common activities that use hazardous materials or generate hazardous wastes. Each activity is subdivided into specific task areas that flag special regulatory concerns either directly, or by referring to hazardous materials management guidelines (section II) or hazardous waste guidelines (section III).

Many regulatory and work and facility safety concerns can be avoided by using products that are not hazardous or that do not create hazardous wastes or air or water pollutants—these are often known as *green* products. Visit the *Everyday Hazmat* Web site for some specific suggestions:

http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat

USDA Forest Service and Bureau of Land Management employees can access that Web site from their internal computer networks at:

http://fsweb.mtdc.wo.fs.fed.us/everyday_hazmat

The guidelines in this section are based on Federal regulations and the requirements of the IFC and NFPA requirements. Your State and local governments may have additional requirements. Your local fire marshal may choose to selectively adopt IFC and NFPA requirements, or may have additional requirements, so contact the fire marshal when appropriate.

Painting

Painting is one of the most common uses of hazardous materials and sources of hazardous waste at all USDA Forest Service units. These activities include interior and exterior painting as well as tree marking. As new types of paints come onto the market, the use of traditional solvent-based and metal-containing paints may end, as may the use of regulated cleaning solvents.

The Activities

Painting Activities—The Processes

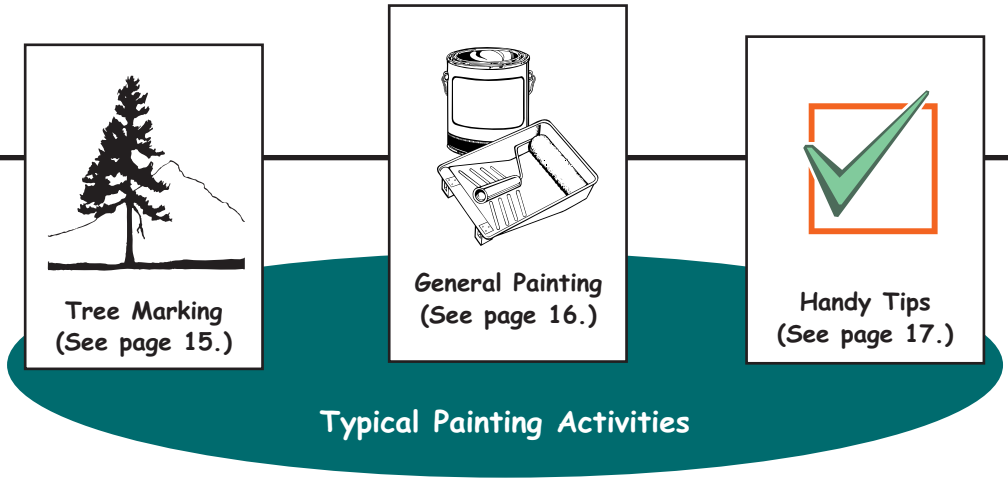
Painting activities within the USDA Forest Service have been a common source of regulated materials and worker safety concerns. This guideline identifies some of the most common painting tasks, outlines certain regulatory obligations, and recommends specific changes to reduce regulatory exposure and costs.

Supplies of tree-marking paint often include large quantities of special paints. You may also find large quantities of regulated cleaning solvents (hazardous) that were used with earlier versions of paint. Most of these paints will be found in secured areas.

Another common painting activity is sign painting, which typically requires small volumes of many types of paints and large quantities of hazardous cleaning solvents. Paint removers may be found in open cans used to clean brushes.

You may find many 1- and 5-gallon cans and aerosol canisters of paint used for building maintenance.

Regulated solvents (hazardous) used with oil-based paints can be eliminated by switching to latex paints that are not hazardous. More latex paints are being used in maintenance activities to reduce worker safety concerns, regulatory obligations, and storage expense.



Tree-marking activities have traditionally been one of the largest uses of regulated paints and sources of hazardous waste. As water-based tree-marking paint becomes available, the old hazardous paints and cleaning solvents can be eliminated.

Tree Marking

Lead-Based Tree-Marking Paints

Immediately mark these paints as hazardous waste and move them to your hazardous waste accumulation area; see the *Hazardous Wastes* guideline (page 35).

Water-Based Tree-Marking Paints

Water-based tree-marking paints are being distributed for widespread use. Keep them from freezing and maintain appropriate security. Flammable storage is no longer needed. Recycle empty containers or dispose of them in the trash if they are not pressurized.

Solvent-Based Tree-Marking Paints

Solvent-based tree-marking paints are being phased out of service. Collect bulk containers and aerosol canisters in a proper storage area (see the *Flammable Liquids* guideline, page 50) and await direction on disposition; maintain appropriate security.

Cleanup Solvents for Tree-Marking Paint

Because regulated paint solvents are not needed with the water-based tree-marking paints, they can be eliminated. If possible, find a way to use unused solvents, and do not order more. If their use is not feasible, move solvents to the hazardous waste accumulation area for disposal (see the *Hazardous Wastes* guideline, page 35).

Be sure to use the MSDS to determine which solvents are hazardous.

Painting will continue to be a USDA Forest Service activity far into the future. In the past, solvent-based paints containing heavy metals were used. However, with today's new products, we have acceptable latex substitutes. All paints containing heavy metals and solvents should be eliminated. With the switch to latex paints, regulated solvents used for cleanup can also be eliminated.

General Painting

Paints Containing Heavy Metals

Unless there is a specific need for these paints, they should be marked as a hazardous waste and moved to the hazardous waste accumulation area; see the *Hazardous Wastes* guideline (page 35).

Latex Paints

Latex paints are available for nearly every painting need. Keep them from freezing. Flammable storage is no longer needed. Recycle empty containers or dispose of them in the trash.

Oil-Based Paints

Except for special area applications, eliminate the use of all solvent-based paints, replacing them with latex paints. Use up the remaining solvent-based paint or treat it as a hazardous waste; see the *Hazardous Wastes* guideline (page 35).

Paint Cleanup Solvents

There is no need to use regulated cleanup solvents with latex paint. If possible, find a way to use unused solvents. Otherwise, treat them as a hazardous waste; see the *Hazardous Wastes* guideline (page 35).

Flammable Aerosol Paints

Unless there is a specific need, eliminate all flammable aerosol paints. These are typically marked *extremely flammable* and *dangerous*. Use up what is left, or dispose of the paint as prescribed in the *Aerosol Cans* guideline (page 32).

Use up all solvent- and oil-based paints so you don't have to dispose of them as hazardous wastes. Buy only as much as you need for a task.

Handy Tips

Beware of cheap, surplus oil-based paint. It may cost more to dispose of leftovers than you save.

Buy only latex paint.

Phase out all aerosol paints—they are costly to buy, costly to store properly, and costly to dispose of properly.

Never use gasoline for paint cleanup!

Check your community recycling centers to see if they take old paints for recycling.

When you have eliminated your oil- and solvent-based paints, you can eliminate all paint-cleaning solvents (such as mineral spirits).

Look for *green* products at the USDA Forest Service *green* purchasing Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm*

Automotive and Small Engine Services

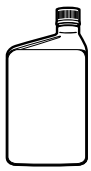
While most automotive maintenance activities have been outsourced, servicing functions are still found in some USDA Forest Service units. Try to eliminate all servicing activities and manage the remaining activities to ensure facility and worker safety and regulatory compliance. Follow these guidelines for specific regulatory concerns and waste reduction recommendations.

The Activities

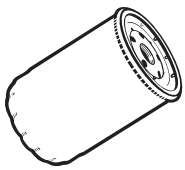
Automotive Servicing—The Processes

Automotive servicing activities at USDA Forest Service units usually range from fueling and fuel storage, to changing oil and oil filters, servicing antifreeze, changing tires, degreasing parts, and changing lead-acid batteries.

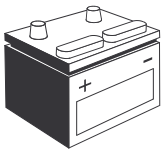
This guideline does *not* cover servicing vehicle air-conditioning systems, repairing and rebuilding engines, cleaning and repairing radiators, repairing brakes, rebuilding transmissions and differentials, and painting vehicles. If some of these activities occur at your USDA Forest Service unit, consider outsourcing them immediately. If you are still performing these tasks, be careful to fulfill your regulatory obligations and to address facility and worker-safety issues.



Used Oil
(See page 19.)



Used Oil Filters
(See page 20.)

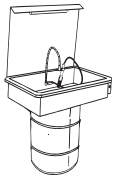


Batteries
(See page 21.)

Tire Changes
(See page 22.)

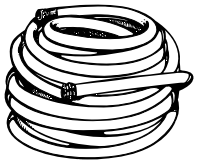
Typical Automotive Servicing Activities

Antifreeze
(See page 23.)



Degreasing
(See page 24.)

Fueling
(See page 25.)

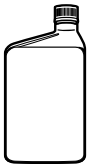


Vehicle Washing
(See page 26.)

Handy Tips
(See page 27.)

Used oil is an automotive servicing waste commonly found at USDA Forest Service units. Following simple procedures that are easy to implement, you can avoid regulatory issues and ensure environmental protection of public land. If you properly collect, store, and recycle your used oil, you do not have to treat it as a hazardous waste. Do not mix other materials with used oil because the used oil will be rejected for recycling if it contains solvents or other hazardous materials that make it a hazardous waste.

Used Oil



Oil Changes

Do NOT throw used oil in the trash or pour it on the ground.

Used Oil Collection Storage

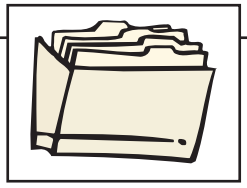
Used oil storage containers (such as tanks or drums) *must* be **sound**, securely **closed** at *all* times except when adding or removing used oil, and *must* be **marked** as *USED OIL*. Lock containers to ensure that only nonhazardous used oil is added to your collection unit. Use secondary containment (such as a metal pan) underneath all used oil collection containers to guard against leakage.

Hazardous Used Oil

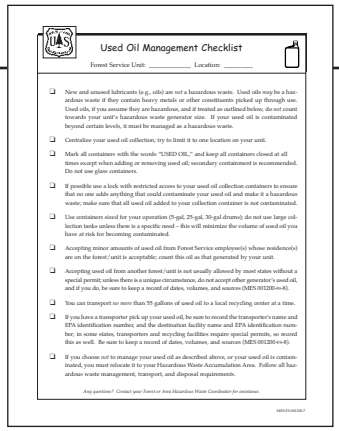
Used oil rejected by a recycler, or used oil mixed with solvent, is probably a hazardous waste; see the *Hazardous Wastes* guideline (page 35).

Used Oil Recycling

Recycling is the best management practice for your used oil. Be sure to use a licensed recycler; you may be able to transport up to 55 gallons of used oil at a time in USDA Forest Service vehicles. Check with your State Highway Patrol. Keep all transportation information, including dates, amounts of used oil, destination, the transporter, and the EPA identification numbers of the recycler in your files.



Keep these records in your files.



Used Oil Management Checklist

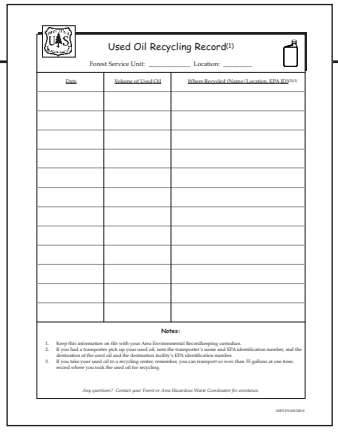
Forest Service Unit: _____ Location: _____

- ❑ New and unused lubricants (e.g., oils) are not a hazardous waste. Used oils may be a hazardous waste if they contain heavy metals or other constituents picked up through use. Used oils, if you assume they are hazardous, and if treated as outlined below, do not count towards your unit's hazardous waste generator size. If your used oil is contaminated beyond certain levels, it must be managed as a hazardous waste.
- ❑ Centralize your used oil collection; try to limit it to one location on your unit.
- ❑ Mark all containers with the words "USED OIL," and keep all containers closed at all times except when adding or removing used oil; secondary containment is recommended. Do not use glass containers.
- ❑ If possible use a lock with restricted access to your used oil collection containers to ensure that no one adds anything that could contaminate your used oil and make it a hazardous waste; make sure that all used oil added to your collection container is not contaminated.
- ❑ Use containers sized for your operation (5-gal, 25-gal, 30-gal drums); do not use large collection tanks unless there is a specific need – this will minimize the volume of used oil you have at risk for becoming contaminated.
- ❑ Accepting minor amounts of used oil from Forest Service employee(s) whose residence(s) are on the forest/unit is acceptable; count this oil as that generated by your unit.
- ❑ Accepting used oil from another forest/unit is not usually allowed by most states without a special permit; unless there is a unique circumstance, do not accept other generator's used oil, and if you do, be sure to keep a record of dates, volumes, and sources (MRS-931200-w-8).
- ❑ You can transport no more than 55 gallons of used oil to a local recycling center at a time.
- ❑ If you have a transporter pick up your used oil, be sure to record the transporter's name and EPA identification number, and the destination facility name and EPA identification number; in some states, transporters and recycling facilities require special permits, so record this as well. Be sure to keep a record of dates, volumes, and sources (MRS-931200-w-8).
- ❑ If you choose not to manage your used oil as described above, or your used oil is contaminated, you must relocate it to your Hazardous Waste Accumulation Area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your Forest or Area Hazardous Waste Coordinator for assistance.

MRS-P1403267

Sample training information for personnel handling used oil. See the appendix.



Used Oil Recycling Record[1]

Forest Service Unit: _____ Location: _____

Date	Volume of Used Oil	Where Recycled (Name/Location, EPA ID)[2][3]

Notes:

1. Keep this information on file with your Area Environmental Recordkeeping custodian.
2. If you had a transporter pick up your used oil, note the transporter's name and EPA identification number, and the destination of the used oil and the destination facility's EPA identification number.
3. If you take your used oil to a recycling center, remember, you can transport no more than 55 gallons at one time; record where you took the used oil for recycling.

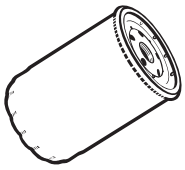
Any questions? Contact your Forest or Area Hazardous Waste Coordinator for assistance.

MRS-P1403268

Sample recordkeeping form for recycling used oil. See the appendix.

Used oil filters are a common automotive servicing waste. If you follow a few simple rules, you can avoid regulatory concerns and ensure environmental protection. *All* used oil filters must be punctured and drained while hot, or crushed to remove residual used oil. Drained or crushed oil filters can be discarded in the trash, but it would be better to collect them for scrap metal recycling. This guideline provides some pointers on managing your used oil filters.

Used Oil Filters



Oil Filter Changes

Draining Used Oil Filters

Immediately after removing a used oil filter from a vehicle, puncture the dome, drain the filter while the oil is still hot, and crush or dismantle the filter. The objective is to remove all residual used oil from the filter.

Be sure to collect *all* drained used oil from the filters in your used oil collection units; see the *Used Oil* guideline (page 19).

Do NOT throw used oil filters in the trash unless they have been properly drained.

Recycling Used Oil Filters

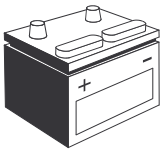
To conserve natural resources, consider recycling all used oil filters as scrap metal.

Used Oil Filter Collection

If you collect used oil filters for recycling, be sure to use a drum that will not leak, and mark the drum *USED OIL FILTERS*. Use secondary containment (such as a metal pan) to guard against leakage.

Automotive lead-acid batteries are found at all USDA Forest Service units. All lead-acid batteries contain lead and sulfuric acid, both regulated by the EPA. When a lead-acid battery is spent, return it to a local vendor for recycling; if you do not return the battery to the vendor, you must treat it as a hazardous waste. Be sure to find all unusable lead-acid batteries in boneyards, around buildings, and in abandoned structures—they are an environmental hazard.

Batteries



Lead-Acid Battery Changes

Do NOT discard lead-acid batteries in the trash.

Used Lead-Acid Battery Collection Storage

When you remove a lead-acid battery from service, store it in secondary containment (such as a metal pan) in an area where it will not freeze. Unusable lead-acid batteries should be taken to a local recycler as soon as practical; you can transport them in USDA Forest Service vehicles. Mark your lead-acid battery collection area with *UNIVERSAL WASTE–BATTERIES*, *WASTE BATTERIES,* or *USED BATTERIES*. Be sure to store the batteries in a well-ventilated area to prevent explosive hydrogen gas from building up. Do not store or transport batteries or battery acid with flammable liquids or solids.

Discarded Lead-Acid Batteries

Make every effort to locate abandoned lead-acid batteries at your units and move them to your lead-acid battery collection area.

If you find a battery with a cracked case, you can assume that most of the acid has drained into the soil where it may become an environmental hazard.

Battery Acid and Other Batteries

Battery acid (sulfuric) is a corrosive material; be sure you follow the suggestions for storage and use contained in the *Corrosives* guidelines (page 38).

Check the MSDS of batteries that are sealed. If the MSDS indicates they do not contain hazardous materials, you can throw them in the trash.

See section III.

Used tires can be found in many USDA Forest Service boneyards. Used tires present a health concern because they can be a breeding ground for insects. Large quantities of tires present a fire hazard. Check with your local fire marshal for specific local regulations. This guideline offers a few suggestions.

Tire Changes

Tire Changes

Used Tire Collection

When you remove tires from a vehicle, store them *inside* a structure, or *cover* them to prevent rainwater from providing a place where mosquitoes can breed.

Recycle the tires when it is cost effective to do so. You may have to pay a small recycling fee per tire, but it is better to recycle the tires than to discard them in the landfill or keep them in your boneyard.

Discarded Used Tires

Make every effort to locate discarded tires at your units. Move them to a designated collection area and recycle them as soon as practical.

Sometimes antifreeze is removed from vehicles and other winterized water systems. This antifreeze could be a regulated waste, so handle it properly to ensure the safety of workers and wildlife. Animals find antifreeze very tasty, but it is DEADLY. This guideline contains some tips on managing used antifreeze.

Antifreeze

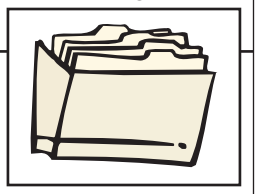
Antifreeze Servicing

Do NOT throw used antifreeze in the trash or pour it on the ground or into a sewer.

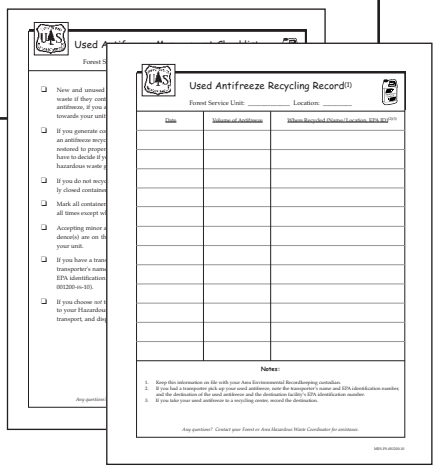
Used Antifreeze Collection and Storage

When you remove antifreeze from a vehicle, the antifreeze may be hazardous because of the heavy metals it has picked up during use. Consider using an antifreeze recycling unit and returning the antifreeze to service. In this case, only the filter in the recycling unit is a hazardous waste.

If you cannot justify an onsite antifreeze recycling unit, collect your used antifreeze in a **sound** drum, securely **closed** at *all* times (except when adding or removing used antifreeze). Label the drum *USED ANTIFREEZE FOR RECYCLING*. Use secondary containment (such as placing the drum in a metal pan) to prevent leakage.



Keep these records in your files.



Sample checklist and recordkeeping form for recycling used antifreeze. See the appendix.

Used Antifreeze Recycling

Recycling is the best management practice for your used antifreeze. Do not mix used antifreeze with other waste products. Use a licensed recycler. Keep all transportation information, including dates, amounts, transporter, and the EPA identification numbers of the recycler. If you treat your used antifreeze as a hazardous waste, see the *Hazardous Wastes* guideline (page 35).

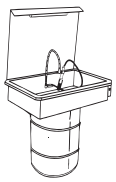
Ethylene Glycol or Propylene Glycol?

Propylene glycol is a less toxic replacement for traditional ethylene glycol antifreeze. Neither type of antifreeze is considered hazardous until it has been used. Both types can become hazardous after use. Treat both types of antifreeze the same, but do not mix them.

See section II.

Degreasing units and solvents are found in many USDA Forest Service units to support automotive activities, chain saw maintenance, and all-terrain vehicle (ATV) and snowmobile servicing. Many degreasing solvents are flammable liquids in use and a hazardous waste when being disposed. There are many options that may improve worker safety and eliminate regulatory obligations.

Degreasing



Degreasing

Eliminating Hazardous Degreasing Solvents

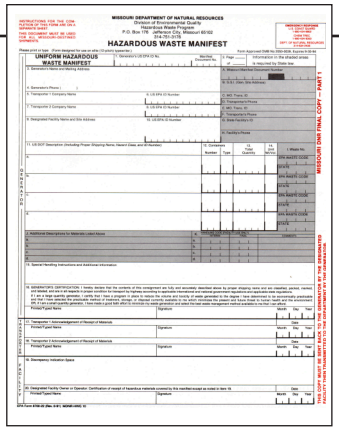
Many degreasing systems are available that can totally eliminate regulatory concerns. Some of these systems use products that are *not* flammable and do *not* contain regulated constituents, some are aqueous solutions, and some use one or more inline filter stages to extend useful degreasing life.

Select a system that is nonhazardous when the solvent is used and when it becomes a waste. Check the MSDS before purchasing, and talk to other USDA Forest Service units that use these new alternatives.

When evaluating costs, consider the total life-cycle cost rather than just the product cost. Take into account the useful life span of the degreaser—the new ones almost always have much longer useful lives.

Some Management Tips

- Never use gasoline as a degreaser, because it is flammable and contains toxic ingredients.
- Do not evaporate used solvents to dispose of them.
- Be sure to mark your degreasing *sinks* with the solvent's health hazards information.
- Do not use open cans for cleaning parts.
- Keep lids closed on parts washers.

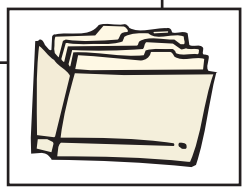


MISSOURI DEPARTMENT OF NATURAL RESOURCES
Division of Environmental Quality
P.O. Box 176 Jefferson City, Missouri 65102
(314) 751-3176

HAZARDOUS WASTE MANIFEST

UNIFORM HAZARDOUS WASTE MANIFEST

EPA Hazardous Waste Manifest
(EPA Form 8700-22)
(multicopy form)
You may need to use this form for hazardous degreasing solvents picked up by a service provider.
See section II.



Keep these records in your files.

Fueling chain saws, ATVs, snowmobiles, and vehicles is a common activity at USDA Forest Service units. Diesel fuels and gasoline can be found in aboveground and underground storage tanks. Most USDA Forest Service units have a *gas house* where smaller quantities of fuel are stored in 55-gallon drums or in containers no larger than 5 gallons. All fuels are flammable or combustible, so take note of the *Flammable Liquids* (page 50) or *Combustible Liquids* guidelines (page 58).

Fueling

Vehicle Fueling

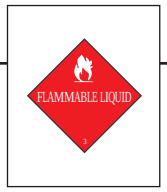
Fueling Activities

Most fuels are flammable liquids and contain toxic chemicals. There are certain restrictions on use of containers and how they can be stored; see the *Flammable Liquids* guidelines for more information.

Wherever possible, reduce the fuel stored at your unit by using local service providers. Remove old gasoline or diesel tanks that are no longer being used. Check all fueling stations to make sure that labels, dispensing hoses and nozzles, product monitoring devices, and overfill protection meet all fire codes.

Transport fuels only in approved containers and only using methods that meet fire codes.

If you use mixed fuels, mix only the amount that you will use for a project or season.



See section III.

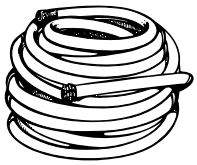
See section III.

Used Fuels

If you have diesel, gasoline, or mixed fuels that are no longer usable, consider using them as slash fuel or drip torch fuel. Be sure to mark and store them correctly. Do not accumulate more than you can realistically use.

The local National Guard unit may be able to use your obsolete fuel in multifuel vehicles.

Vehicles are commonly washed at maintenance garages and outdoor wash pads. Water quality discharge has become a major regulatory issue, so consider the following suggestions.



Vehicle Washing

Vehicle Washing

Vehicle Washing

All vehicle washing should take place in commercial facilities to avoid wash water discharge concerns.

Wash water discharge may not meet minimum water quality standards because of greases and oils, detergents and soaps, and even weed seeds that may be removed from the vehicle during washing.

If you have extensive vehicle washing needs, consider installing a system designed to meet all water quality standards and to conserve water through a process that captures, cleans, and reuses the wash water.

Consider permanently sealing all floor drains in your vehicle washing areas to avoid discharges of hazardous materials.

Sludge removed from oil-water separators could be hazardous because of the oils and other debris it contains. Collect this sludge and consider it a hazardous waste until you can confirm that it is not; see the *Hazardous Wastes* guideline (page 35).

Wash Water Discharge

Do not wash vehicles on wash racks or wash pads that drain into the sewer system, the ground, or navigable waters unless you have confirmed that water quality and discharge points meet all Federal and State regulations.

Use local service providers for all possible vehicle and small engine servicing to avoid costly product handling. See if a local service provider can come to your work center to service vehicles and remove wastes.

Handy Tips

Buy only the quantity you need for a task.

Use re-refined oil.

Avoid servicing lead-acid batteries so you don't have to store and handle acids.

Post simple handling instructions for used oil, used oil filters, lead-acid batteries, and used antifreeze; consider using washable oil filters to avoid discarding used oil filters.

Check your community recycling centers to see if they take used oil, lead-acid batteries, or antifreeze for recycling.

Use cloth wipes and send them to an industrial laundry for cleaning; don't throw wipes in the trash.

Keep lids closed on degreasing units except when they are in use; replace all degreasing solvents with nonhazardous products.

Look for *green* products at the USDA Forest Service *green* purchasing Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm*

Section II
Waste Management

This section of the *Everyday Hazmat User's Training Guide* contains guidelines for hazardous waste activities common to most USDA Forest Service facilities. Hazardous waste management is prescribed by Federal regulations, as well as USDA Forest Service handbooks and policies. Care should be taken to ensure full compliance. The guidelines in this report include some of the more common areas and are not intended to be a comprehensive review of all related regulations, or to include all situations. You are responsible for full compliance, so if you have any questions about the material presented, or some unique situation, contact your unit management. While most State regulations parallel Federal regulations, some States have more restrictive requirements; they are not included in these guidelines.

Many regulatory and work and facility safety concerns can be avoided by using products that are not hazardous or do not create hazardous wastes or air or water pollutants—known as *green* products. Visit the USDA Forest Service Technology and Development Program's Web site for some specific suggestions:
http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm

The following guidelines are based on EPA and OSHA regulations, and IFC and NFPA requirements; your State and local governments may have additional requirements. Your local fire marshal may choose to selectively adopt IFC and NFPA requirements, or may have additional requirements.

Common Regulated Wastes

Any waste that is flammable, reactive, corrosive, or toxic is considered a hazardous waste (see page 99). Some common wastes in most USDA Forest Service units are now regulated. These wastes include lamps that contain mercury (such as fluorescent lamps), nickel-cadmium (Ni-Cd) batteries, and even aerosol cans. Wastes that are of particular concern include containers with unknown contents found in many boneyards. These containers must be handled carefully.

Common Regulated Wastes

Common Regulated Wastes—What Are They?

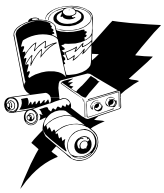
Wastes from some routine activities within the USDA Forest Service have new environmental significance and must be handled differently now. This guideline summarizes some of these common wastes, presents selected regulatory restrictions, and recommends specific changes to reduce costs.

Mercury-containing lamps are found in most buildings. As these lamps are removed, they have traditionally been discarded in the trash. These lamps must be handled more carefully to ensure worker safety, protect the environment, and comply with regulations.

Aerosol cans can be found throughout the USDA Forest Service. If an aerosol can is still under pressure, or if its contents are hazardous, you cannot throw it into the trash. The proper way to handle it is discussed in this guideline.

Nickel-cadmium batteries are another common waste in most USDA Forest Service units. Because these batteries contain nickel and cadmium, they cannot be thrown into the trash. Look at these guidelines for recommendations.

Lastly, there are unknown wastes that are buried in boneyards and storage sheds that need immediate attention. Hazardous products that become a waste also need special management.



Ni-Cd Batteries
(See page 31.)

Aerosol Cans
(See page 32.)

Fluorescent Lamps
(See page 33.)

Unknown Wastes
(See page 34.)

Common Regulated Wastes

Hazardous Wastes
(See page 35.)

Handy Tips
(See page 36.)

Nickel-cadmium batteries are often found in radio communication equipment used by USDA Forest Service units. These batteries can no longer be thrown into the trash because their ingredients make them hazardous and could pollute the soil in a landfill. The proper method for managing Ni-Cd batteries is summarized in this guideline.

Ni-Cd Batteries

Ni-Cd Batteries

Ni-Cd Battery Collection Areas

When you remove a Ni-Cd battery from service, you must store it in a container that is marked with *WASTE BATTERIES*, *USED BATTERIES*, or *UNIVERSAL WASTE—BATTERIES*. The container must be composed of a material that will not leak if the batteries are damaged.

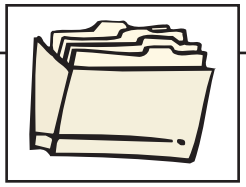
Do NOT discard Ni-Cd batteries in the trash.

Storage Limits

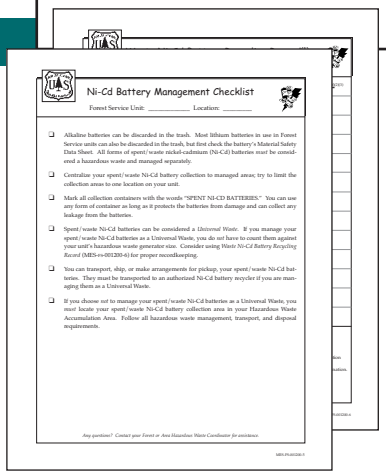
You can keep your discarded Ni-Cd batteries in your unit if they are stored properly until it is cost effective to transport them to a recycling center. Ideally, they would not be stored longer than 1 year.

Ni-Cd Battery Recycling

Recycling is the best management practice for your discarded Ni-Cd batteries. Be sure to use a licensed recycler; you can transport your Ni-Cd batteries in USDA Forest Service vehicles. Keep recycling information, including dates, amounts, destination, transporter, and recycler in your recordkeeping files.



Keep these records in your files.



Ni-Cd Battery Management Checklist

Forest Service Unit: _____ Location: _____

- ❑ Alkaline batteries can be discarded in the trash. Most lithium batteries in use in Forest Service units can also be discarded in the trash, but first check the battery's Material Safety Data Sheet. All forms of spent/waste nickel-cadmium (Ni-Cd) batteries *must* be considered a hazardous waste and managed separately.
- ❑ Centralize your spent/waste Ni-Cd battery collection to managed areas; try to limit the collection areas to one location on your unit.
- ❑ Mark all collection containers with the words "SPENT NI-CD BATTERIES." You can use any form of container as long as it protects the batteries from damage and can collect any leakage from the batteries.
- ❑ Spent/waste Ni-Cd batteries can be considered a *Universal Waste*. If you manage your spent/waste Ni-Cd batteries as a Universal Waste, you do not have to count them against your unit's hazardous waste generator size. Consider using *Waste Ni-Cd Battery Recycling Record* (MES-ev-001200-6) for proper recordkeeping.
- ❑ You can transport, ship, or make arrangements for pickup, your spent/waste Ni-Cd batteries. They must be transported to an authorized Ni-Cd battery recycler if you are managing them as a Universal Waste.
- ❑ If you choose not to manage your spent/waste Ni-Cd batteries as a Universal Waste, you *must* locate your spent/waste Ni-Cd battery collection area in your Hazardous Waste Accumulation Area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your Forest or Area Hazardous Waste Coordinator for assistance.

Sample checklist and recordkeeping form for personnel handling spent Ni-Cd batteries. See the appendix.

Other Batteries

Alkaline batteries can be recycled or discarded in the trash. Most lithium batteries in use at USDA Forest Service units are nonhazardous and can be recycled or discarded in the trash. Be sure to check with the manufacturer because some special lithium batteries are regulated.

Aerosol products are used in many USDA Forest Service activities, from janitorial work to automotive maintenance and general painting. When aerosol products are no longer useful, they must be discarded in a way that avoids regulatory issues and environmental pollution. Some suggestions are summarized in this guideline.

Aerosol Cans

Aerosol Cans

Aerosol Can Collection Area

When an aerosol can becomes a waste, you must take special precautions if it is still under pressure or if it contains a product that is hazardous. Store discarded aerosol cans in a container that is marked: *AEROSOL CAN COLLECTION AREA*. The container must be composed of a material that will not leak if one or more of the cans are damaged; consider using secondary containment for added protection.

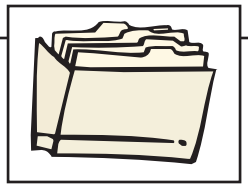
Do NOT discard aerosol cans in the trash.

Puncturing Aerosol Cans

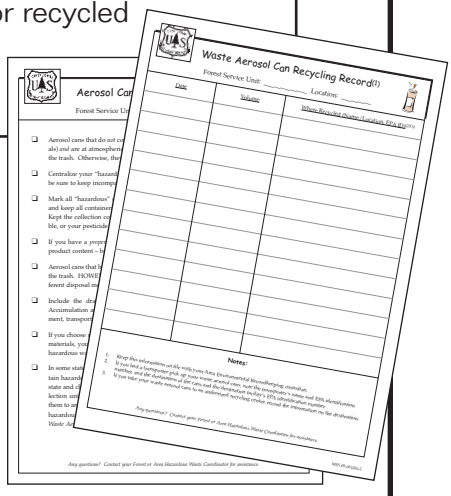
You can puncture your discarded aerosol cans *if* you use a proper can puncturer and collect the waste product. If the waste product is hazardous, it must be managed as a hazardous waste; see the *Hazardous Wastes* guideline (page 35). If the product is not hazardous, it can be disposed of in the manner specified by the manufacturer. A punctured, drained aerosol can may be discarded in the trash or recycled as scrap metal.

Aerosol Can Recycling

Waste aerosol can recyclers remove and manage the contents of aerosol cans properly. Consider taking or shipping your waste aerosol cans that contain a hazardous product to one of these recyclers. Maintain a record of these transfers in your recordkeeping files.



Keep these records in your files.



Sample checklist and recordkeeping form for recycling aerosol cans. See the appendix.

Mercury-containing lamps are found in nearly every USDA Forest Service building. Most common fluorescent lamps contain mercury that can leak into the soil of a landfill or into the air as a dangerous pollutant. Buy low-mercury fluorescent lamps to avoid regulatory issues. Fluorescent lamp ballasts that do not say *No PCBs* cannot be disposed of in the trash; they are a hazardous waste.

Fluorescent Lamps

Fluorescent Lamps

Mercury Lamp Collection Area

When a mercury-containing lamp (a fluorescent lamp) becomes a waste, you must take special precautions. Store discarded fluorescent lamps in a container marked: *MERCURY-CONTAINING LAMPS FOR RECYCLING*. The container must be composed of a material that will prevent the fluorescent lamps from breaking.

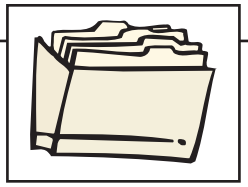
Do NOT discard fluorescent lamps or PCB ballasts in the trash.

Crushing Mercury Lamps

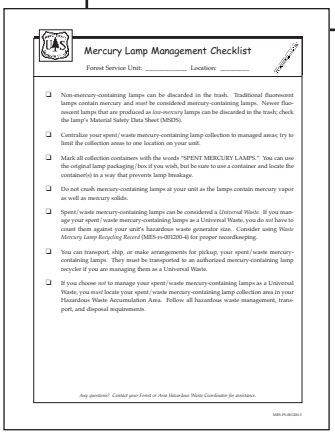
Crushing mercury lamps is not recommended. If lamps are crushed, you must ensure that all vapor (which contains mercury) is captured and contained, as well as all glass shards and residues.

Fluorescent Lamp Recycling

Some recycling centers take discarded mercury-containing fluorescent lamps. These centers properly crush them, remove the contents, and manage the waste for you. You can transport discarded fluorescent lamps in USDA Forest Service vehicles. Keep recycling information, including dates, amounts, destination, and transporter and recycler in your files.



Keep these records in your files.



Mercury Lamp Management Checklist

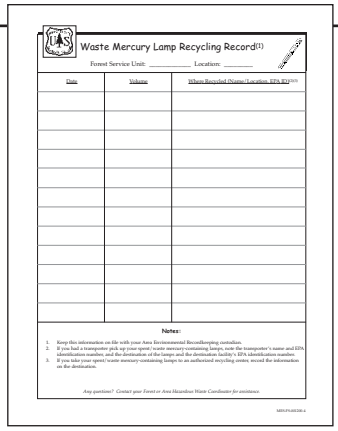
Forest Service Unit: _____ Location: _____

- ❑ Non-mercury-containing lamps can be discarded in the trash. Traditional fluorescent lamps contain mercury and must be considered mercury-containing lamps. Newer fluorescent lamps that are produced as *low-mercury* lamps can be discarded in the trash; check the lamp's Material Safety Data Sheet (MSDS).
- ❑ Centralize your spent/waste mercury-containing lamp collection to managed areas; try to limit the collection areas to one location on your unit.
- ❑ Mark all collection containers with the words "SPENT MERCURY LAMPS." You can use the original lamp packaging/box if you wish, but be sure to use a container and locate the container(s) in a way that prevents lamp breakage.
- ❑ Do not crush mercury-containing lamps at your unit as the lamps contain mercury vapor as well as mercury solids.
- ❑ Spent/waste mercury-containing lamps can be considered a *Universal Waste*. If you manage your spent/waste mercury-containing lamps as a Universal Waste, you do *not* have to count them against your unit's hazardous waste generator size. Consider using *Waste Mercury Lamp Recycling Record* (MBS-rs-001200-4) for proper recordkeeping.
- ❑ You can transport, ship, or make arrangements for pickup, your spent/waste mercury-containing lamps. They must be transported to an authorized mercury-containing lamp recycler if you are managing them as a Universal Waste.
- ❑ If you choose *not* to manage your spent/waste mercury-containing lamps as a Universal Waste, you *must* locate your spent/waste mercury-containing lamp collection area in your Hazardous Waste Accumulation Area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your Forest or Area Hazardous Waste Coordinator for assistance.

MBS-PS-001200-3

Sample checklist for personnel handling fluorescent lamps that contain mercury.
See the appendix.



Waste Mercury Lamp Recycling Record(1)

Forest Service Unit: _____ Locations: _____

Date	Volume	Where Recycled (Name/Location, EPA ID)(2)(3)

Notes:

1. Keep this information on file with your Area Environmental Recordkeeping custodian.
2. If you had a transporter pick up your spent/waste mercury-containing lamps, note the transporter's name and EPA identification number, and the destination of the lamps and the destination facility's EPA identification number.
3. If you take your spent/waste mercury-containing lamps to an authorized recycling center, record the information on the destination.

Any questions? Contact your Forest or Area Hazardous Waste Coordinator for assistance.

MBS-PS-001200-4

Sample recordkeeping form for recycling fluorescent lamps that contain mercury.
See the appendix.

Containers with unknown contents can be found at some USDA Forest Service units, often in their original container, but with no label. Other times you might find an open 55-gallon drum in a boneyard. Are its contents just water? You must use certain precautions when you find unknown wastes.

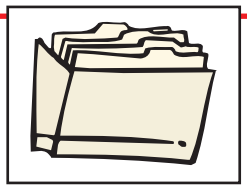
Unknown Wastes

Unknown Wastes

Do NOT discard containers with unknown contents in the trash.

A Potentially Dangerous Situation

- *Never* open a closed container to determine its contents!
- Notify your hazmat coordinator of the container.
- *Never* move a container with unknown contents.
- Immediate action is required, especially if damaged or rusted containers might leak.
- Be absolutely sure your information is accurate before relying on prior knowledge to determine the contents of an unmarked container.
- A laboratory analysis of unknown substances may be required to determine the contents of unmarked containers; leave this task to experts.
- If your unknown wastes are determined to be hazardous, refer



Keep these records in your files.

What If the Unknown Wastes Are Just Used Oil?

Usually a container with unknown contents turns out to contain a nonhazardous or easily managed substance like used oil or antifreeze. BUT, until you *know* what the waste is, you must assume it is one of the most dangerous substances that can be found—it just might be!

Hazardous wastes are highly regulated by Federal and State laws. Hazardous wastes usually begin as hazardous products and become wastes when they are no longer usable. While it is wise to minimize hazardous wastes, dealing with them is straightforward. Some suggestions are presented in this guideline.

Hazardous Wastes

Do NOT discard hazardous wastes in the trash.

How To Determine if a Waste Is Hazardous

If the product to be discarded has a flashpoint below 140 °F, or a pH below 2.5 or above 12.5, it is a hazardous waste; you can find this information on the product's MSDS.

If the product contains chemicals regulated by the EPA, it is a hazardous waste. Look in section II of the MSDS (page 6) to determine whether the product has such chemicals. If any such chemicals are listed, the product *will* become a hazardous waste; if no chemicals are listed, it will probably *not* be a hazardous waste.

If you are uncertain, ask your hazmat coordinator for help.

Expected User Actions for a Hazardous Waste

- Make sure the hazardous waste has the original product label; label it again if necessary.
- Move the material to your unit's designated hazardous waste accumulation area.
- Make sure the container is securely closed.
- Inform the hazardous waste accumulation area manager that you have just moved some hazardous waste into the area. The container will need to be labeled as a hazardous waste with the date it was moved to the area. The container must be checked to make sure it is sound and securely closed. The accumulation area log will need to be updated.

Minimize hazardous wastes by buying nonhazardous (green) products.

Handy Tips

Buy only the quantity you need for a task.

Use up or transfer obsolete hazardous products to other USDA Forest Service units that can use them, to avoid having them become hazardous wastes.

Keep all records; the records could be important in the future.

Involve everyone in hazardous waste management and explain the cost of management to help everyone appreciate the expense of using hazardous products.

Move to low-mercury and high-efficiency fluorescent lamps and electronic ballasts to conserve energy.

Do a ranger district cleanup to find all old products and unknown containers.

Look for *green* products at the USDA Forest Service *green* purchasing Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm*

Section III
Hazardous Materials Management

This section of the *Everyday Hazmat User's Training Guide* covers various types of hazardous materials commonly found in the USDA Forest Service. Federal regulations govern the management and transport of hazardous materials. Additional requirements are found in the NFPA and IFC. The guidelines summarize those requirements. However, these guidelines are not intended to be a comprehensive review of all regulations. Be sure to contact managers at your unit if you have questions. Your State or local fire marshal is also an important contact. Nearly every product that is a hazardous material will become a hazardous waste, so refer to section II for more details on properly managing these products when you declare them to be a waste.

Many safety concerns can be avoided by using products that are not hazardous or that do not create hazardous wastes or air or water pollutants—these products are often known as *green* products. Visit the USDA Forest Service Technology and Development Program's Web site for some specific suggestions:
http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm

The guidelines in this section are based on Federal regulations, and IFC and NFPA requirements; your State and local governments may have additional requirements. Your local fire marshal may choose to selectively adopt IFC and NFPA requirements or may have additional requirements.

Corrosives

Corrosives include acids and bases. They can be liquid or solid, and they can destroy human skin or cause other serious problems.

Definitions

Corrosives—What Are They?

Common bases and acids include hydrochloric (also known as muriatic) and sulfuric acids. Some bases you might find include ammonium and sodium hydroxide.

See Hazardous Product Containers (page 96).

Corrosives—The Dangers

Corrosives present a health hazard to workers. It is extremely important to refer to the MSDS for a corrosive product to understand the personal protective equipment needed to handle the product, and the actions needed in case of accidents.

Some corrosives also present other hazards (for example, nitric acid is also an oxidizer). Refer to the product MSDS to understand the breadth of dangers for any product.

See Hazardous Materials Storage Cabinets (page 94).

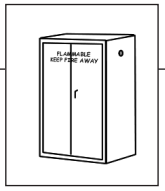
See Keeping Incompatible Hazardous Materials Separated (page 100).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

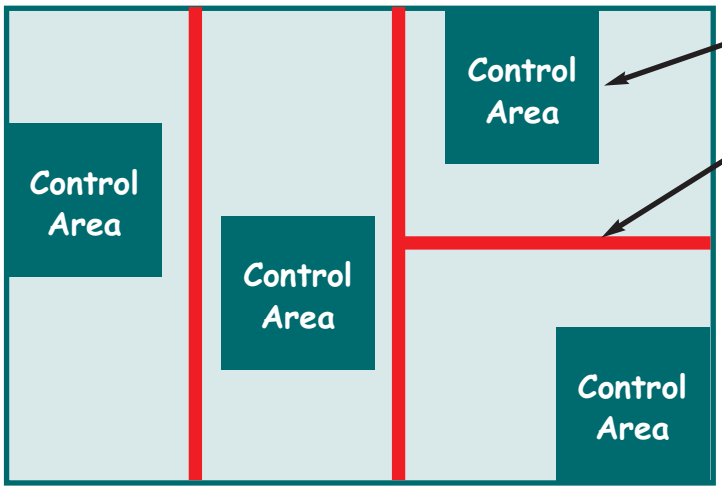
Proper storage cabinets can protect workers and the environment, and can allow you to store more corrosives safely.



See page 94.

Storing corrosive products inside buildings is acceptable as long as certain precautions are taken. These precautions are based on fire code requirements; be sure to check with your local fire marshal because there may be additional restrictions. We will use the concept of a *control area* to clarify storage and use restrictions. Control areas are separate, contiguous areas, where corrosives are to be stored or used. Storing corrosives in USDA Forest Service residences is not recommended.

Indoor Storage



Floor Plan

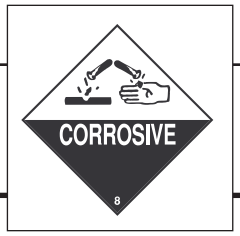
No more than four control areas per structure.

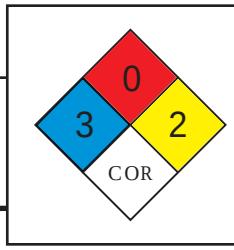
Each control area is separated from other areas by a 1-hour firewall.

No more than 5,000 pounds of solid and 500 gallons of liquid corrosive products can be stored in a control area. The amount can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers.

Other Important Requirements

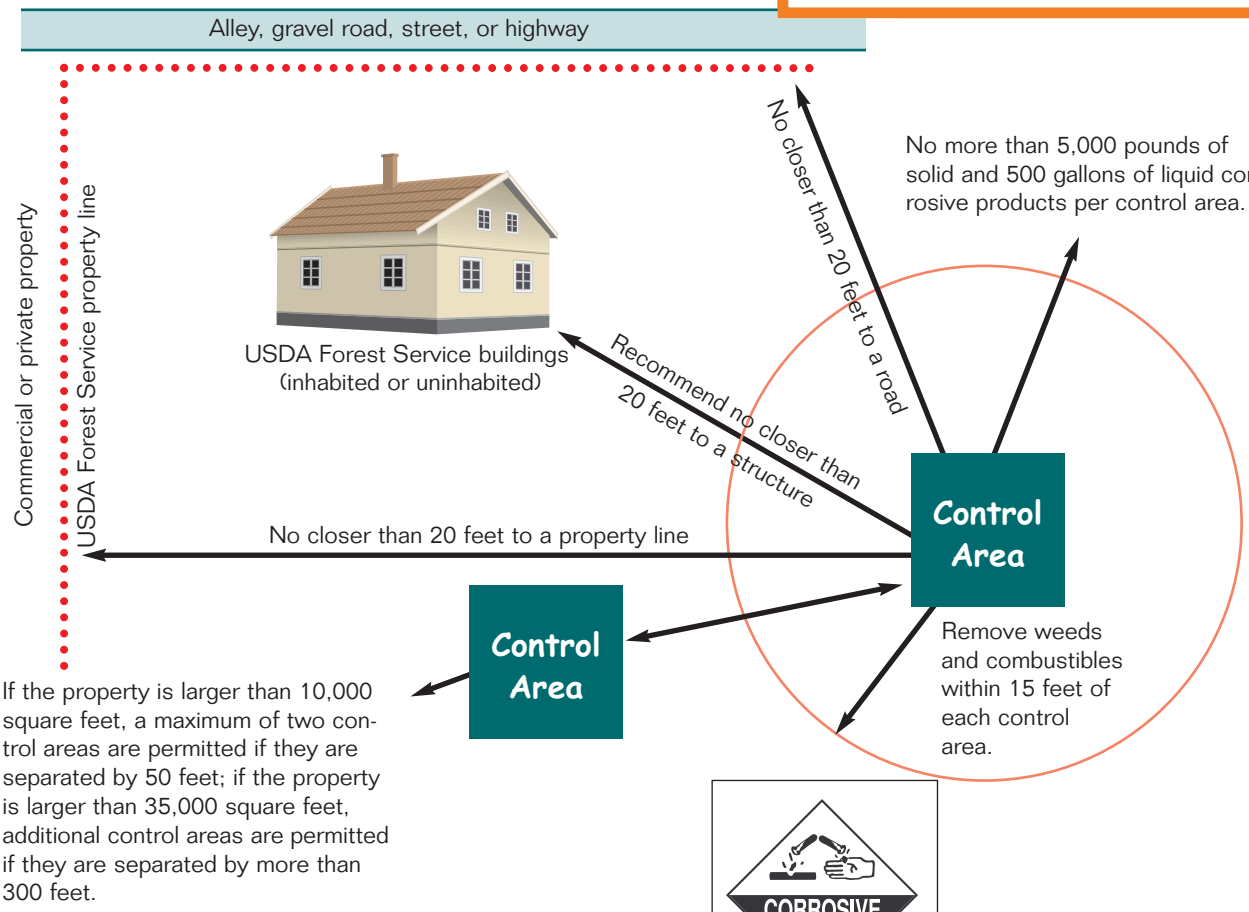
- Control area ventilation is not required, but is recommended.
- Secondary containment is not required, but is recommended; containment material must be compatible with the corrosives.
- All products must have the label for corrosives (see below).
- Each control area must have a *NO SMOKING* sign.
- Each control area must have a hazard identification sign.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.
- Control areas can be in offices, basements, and garages.





Corrosive products can be stored outside as well as inside, as long as storage does not degrade the quality of the product. You can have up to two control areas, possibly more, but each control area has restrictions. Keep the total corrosive volumes stored below the allowed levels (5,000 pounds of corrosive solids and 500 gallons of corrosive liquids) to avoid more complicated storage requirements.

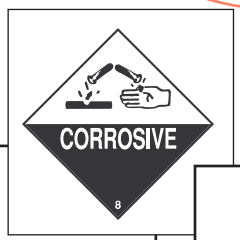
Outdoor Storage

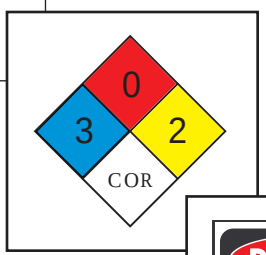


If the property is larger than 10,000 square feet, a maximum of two control areas are permitted if they are separated by 50 feet; if the property is larger than 35,000 square feet, additional control areas are permitted if they are separated by more than 300 feet.

Other Important Requirements

- Secondary containment is not required, but is recommended.
- All products must have the label for corrosives.
- Each control area must have a *NO SMOKING* sign.
- Each control area must have hazard identification.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.





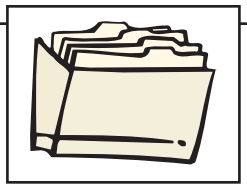
Having more than a minimum quantity of corrosives on USDA Forest Service property may require a permit from your local fire marshal.

Permitting

Permits May Be Required

If you have a *total* of more than 500 pounds of solid corrosives *or* more than 55 gallons of liquid corrosives onsite, in storage, or in use at any one time, regardless of the number of different products, you may need a permit; check with your local fire marshal for more information.

The local fire marshal may not elect to require permits based on quantities of hazardous materials stored; be sure to check with your local fire marshal for specific permitting requirements.



Keep these records in your files.

Regulations restrict the transportation of corrosive products, even on USDA Forest Service property. Check with your local fire marshal and State Department of Transportation (DOT) to see if they may have more restrictive requirements. If you plan to move corrosives by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*.

Transportation

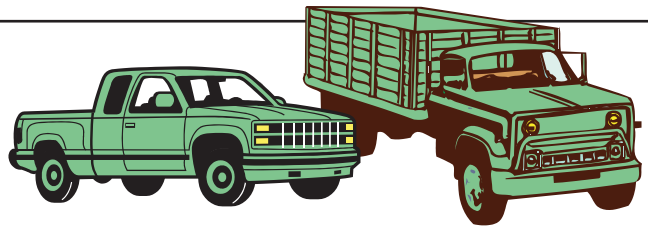
Other Requirements

- No smoking during loading and unloading.
- Keep fire away from the vehicle.
- Prevent the vehicle from moving (set brakes).
- Use tools that will not damage packaging.
- Brace packages to prevent movement.
- Do not ship incompatible materials with corrosives.
- Do not ship nitric acid with other corrosives.
- Have shipping papers in order.
- If the load exceeds 119 gallons or is 1,001 pounds or more, the driver must have a commercial driver's license, hazmat endorsement, medical certificate, and the training required by the DOT.
- Make sure each container is marked with the proper shipping name of the product (as defined by the DOT), identification number for the specific product, and the sender or receiver's name and address. The technical name of the product also may be required.
- All products must have the label for corrosives.

Vehicle Placard

2796

Identification Number (Be sure to select the proper number based on the specific product.)



USDA Forest Service-Operated Pickups and Trucks

- You can avoid placarding and shipping papers by transporting battery acid, muriatic acid, hydrochloric acid, or any combination of these acids in containers that do not weigh more than 66 pounds (including packaging) or hold more than 8 gallons. The total weight of all containers may not exceed 440 pounds. See your hazmat coordinator for details or if you are transporting other acids.
- When batteries are being transported, they should not be carried with other hazardous materials unless they are packaged to prevent them from mixing with or being damaged by these materials. Batteries should be stored in a way that prevents short circuits when they are being transported.
- Regardless of how much hazardous materials are being shipped, the driver *must* be informed of the product types and quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of *all* hazardous materials *below* 440 pounds.

Examples of Corrosive Products Used in the USDA Forest Service

	UN (United Nations) Identification Number
• Sulfuric acid (battery acid)	2796
• Muriatic acid	1789
• Hydrochloric acid	1789
• Lye or sodium hydroxide solution	1824
• Sodium hypochlorite	1791

Oxidizers

Oxidizers can provide oxygen, allowing other materials to ignite more easily and burn more violently. The classes of oxidizers have specific regulations regarding their storage, use, and disposal. Only NFPA classes I and II are addressed in these guidelines; if you have products in classes III or IV, be sure to check with your unit's hazmat coordinator. Oxidizers in classes III or IV are more dangerous and have additional requirements.

Definitions

Oxidizers—What Are They?

Most USDA Forest Service units have only NFPA class I (for example, ammonium nitrate fertilizers) or class II (for example, potassium permanganate) oxidizers. NFPA class III oxidizers react more violently than those in classes I and II. Class IV oxidizers are explosive and react significantly more violently. Watch for products with chemicals that end in *ite*, *ate*, or *ide*. These endings may indicate oxidizers.

Use the MSDS (page 6) to determine which class of oxidizer you have.

Oxidizers—The Dangers

Oxidizers present a health hazard to workers. Always refer to the MSDS to understand the personal protective equipment needed to handle an oxidizer safely and the actions needed in case of accidents.

See *Hazardous Materials Storage Cabinets* (page 94).

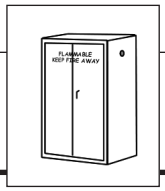
See *Keeping Incompatible Hazardous Materials Separated* (page 100).

See *The Transition to Hazardous Waste* (page 98).

See *Hazardous Product Containers* (page 96).

Storage Cabinets

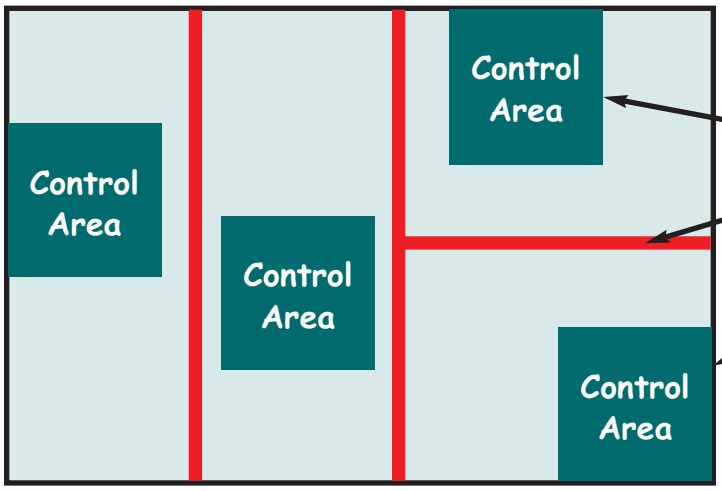
Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of an oxidizer safely.



See page 94.

Storing class I and II oxidizers inside buildings is acceptable as long as certain precautions are taken; check with your local fire marshal for additional restrictions. We will use the concept of a control area to clarify storage and use restrictions. Control areas are separate areas where oxidizers are stored or used. If you have class III or IV oxidizers, contact your hazmat coordinator for specific guidance.

Indoor Storage



Floor Plan

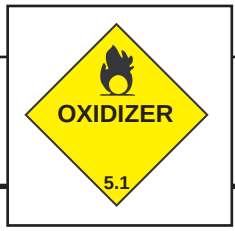
No more than four control areas per structure

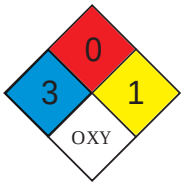
Each control area is separated from other areas by a 1-hour firewall.

No more than 4,000 pounds of class I or 250 pounds of class II liquid or solid oxidizers can be stored in a control area. The amount can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers.

Other Important Requirements

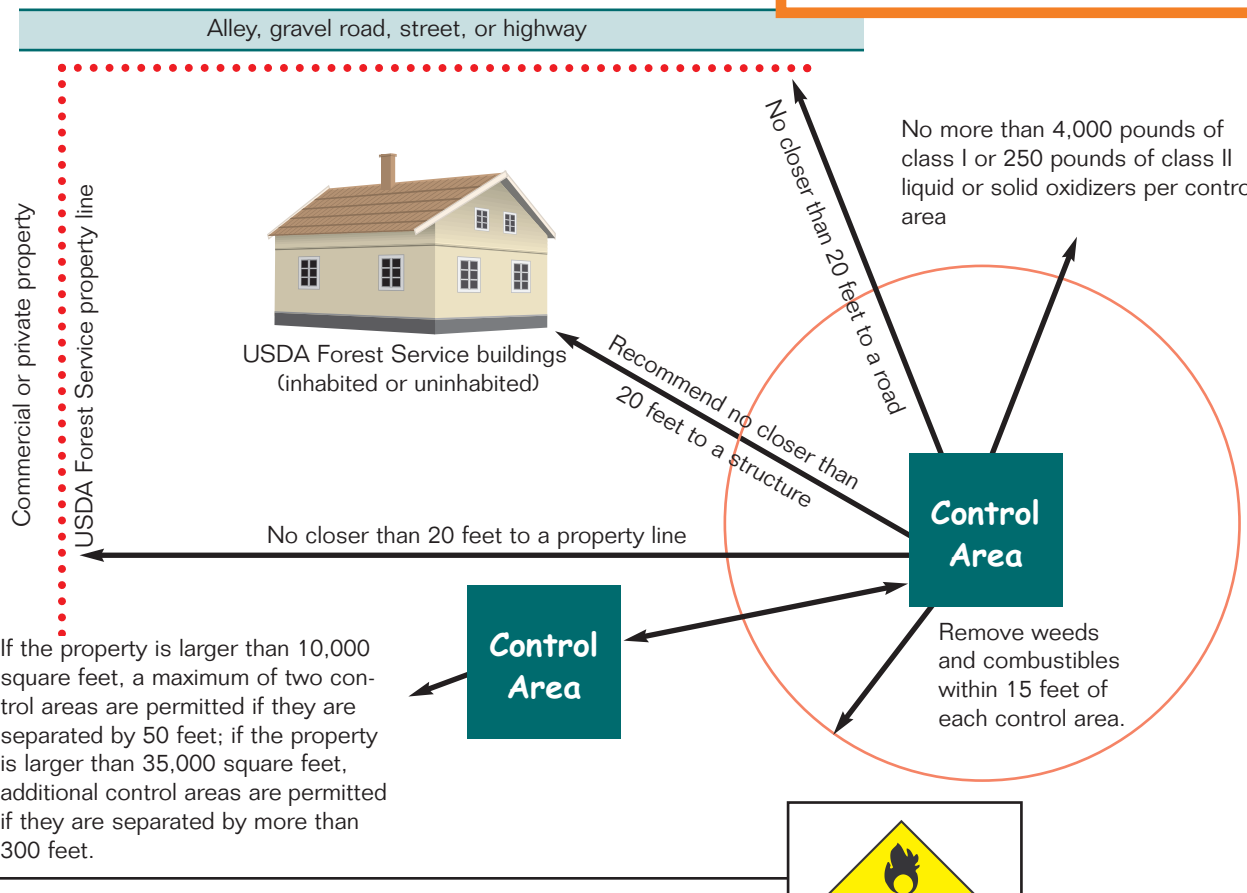
- Control area ventilation is not required, but is recommended.
- Secondary containment is not required, but is recommended.
- Noncombustible shelving and liquid-tight floors are a requirement; you can use wood shelving if the shelving is at least 1 inch thick and coated.
- All products should be labeled with an oxidizer label.
- Each control area must have a *NO SMOKING* sign.
- Each control area must have a hazard identification sign.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.
- Control areas can be in offices, basements, and garages; storing oxidizers in USDA Forest Service residences is not recommended.
- A maximum of 200 pounds (solid) or 20 gallons of class III oxidizers (for example, calcium hypochlorite) may be stored for maintenance, operations, or sanitation. Storage containers and methods must be approved by the local fire marshal.





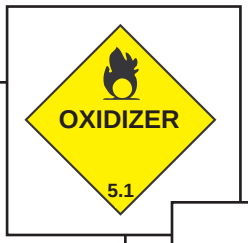
Oxidizers can be stored outside as well as inside, as long as storage does not degrade the quality of the product. You can have up to two control areas, possibly more, but each control area has restrictions. Keeping the total oxidizer volumes stored below the allowed levels (4,000 pounds of class I oxidizers or 250 pounds of class II oxidizers) will avoid more complicated storage requirements.

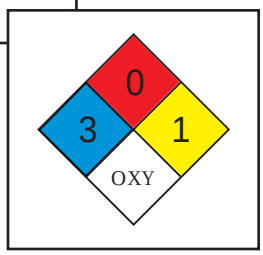
Outdoor Storage



Other Important Requirements

- Secondary containment is not required, but is recommended.
- All products should be labeled with an oxidizer label.
- Each control area must have a *NO SMOKING* sign.
- Each control area must have a hazard identification sign.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.





Having more than a minimum quantity of oxidizers onsite may require a permit from your local fire marshal.

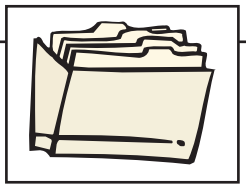
Permitting

Permits May Be Required

If you have in storage, or in use at any one time, a *total* of more than:

- NFPA class I: 55 gallons liquid or 500 pounds solid
- NFPA class II: 10 gallons liquid or 100 pounds solid
- NFPA class III: 1 gallon liquid or 10 pounds solid
- NFPA class IV: Contact your hazmat coordinator

The local fire marshal may not elect to require permits based on quantities of hazardous materials stored; be sure to check with your local fire marshal for specific permitting requirements.



Keep these records in your files.

Regulations restrict the transportation of oxidizers, even on USDA Forest Service property. Check with your local fire marshal and the State Department of Transportation to see if they may have more restrictive requirements. If you plan to move spheres containing potassium permanganate by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*. These spheres are used as ignition sources in prescribed burning.

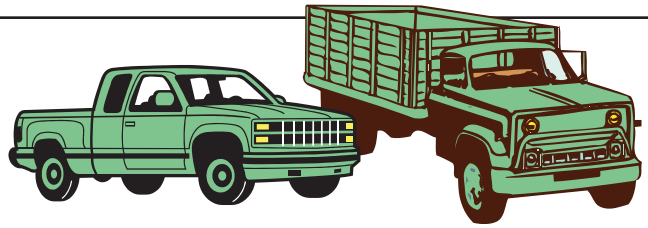
Transportation

Other Requirements

- No smoking during loading and unloading.
- Keep fire away from the vehicle.
- Prevent the vehicle from moving (set brakes).
- Use tools that will not damage packaging.
- Brace packages to prevent movement.
- Do not ship incompatible materials with oxidizers.
- Keep packages dry during shipment.
- Have shipping papers in order.
- If the load exceeds 119 gallons or is 1,001 pounds or more, the driver must have a commercial driver's license, hazmat endorsement, a medical certificate, and the training required by the DOT.
- Make sure each container is marked with the proper shipping name of the product (as defined by the DOT), identification number for the specific product, and the sender or receiver's name and address. The technical name of the product may also be required.
- All products must have an oxidizer label.

Vehicle Placard

Identification Number (Be sure to select the proper number based on the specific product.)



USDA Forest Service-Operated Pickups and Trucks

- You can avoid placarding and shipping papers by transporting ammonium nitrate fertilizer, calcium hypochlorite, potassium permanganate, or any combination of these oxidizers in containers that do not weigh more than 66 pounds (including packaging) or hold more than 8 gallons. The total weight of all containers may not exceed 440 pounds. See your hazmat coordinator for details or if you are transporting other oxidizers.
- Regardless of how much hazardous materials are being shipped, the driver *must* be informed of the types of products and their quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of *all* hazardous materials *below* 440 pounds.

Examples of Oxidizers Used in the USDA Forest Service

	UN (United Nations) Identification Number
• Ammonium nitrate fertilizer (NFPA Class I)	2071
• Potassium permanganate "Ping-Pong balls" (NFPA Class II)	1490
• Calcium hypochlorite (NFPA Class III)	1748

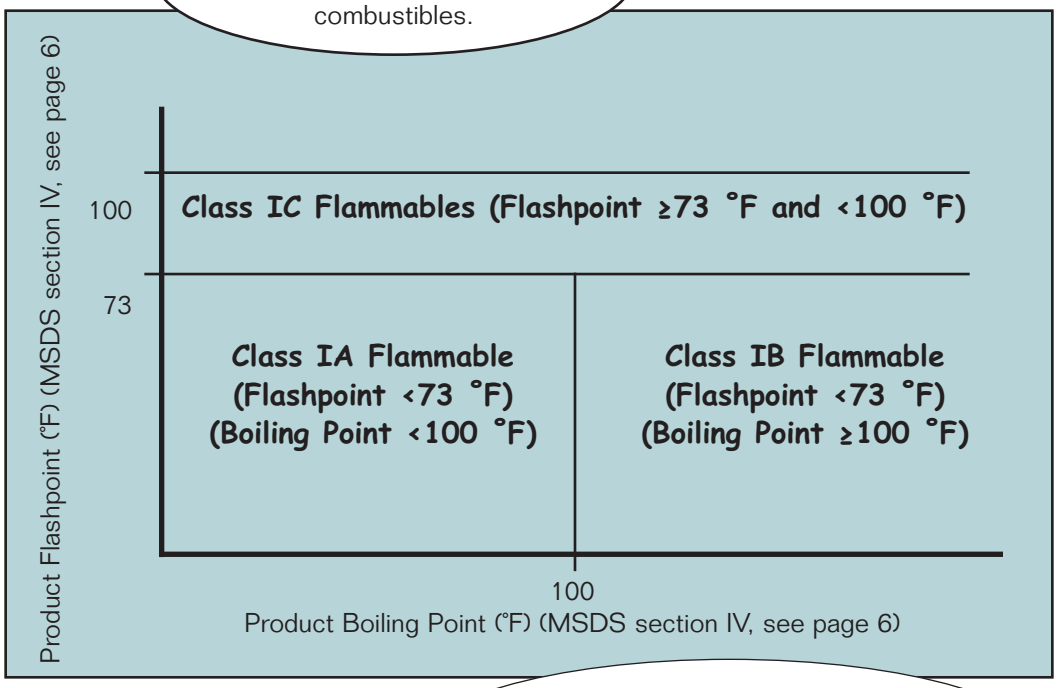
If you have any oxidizers other than those listed above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly greater than for the oxidizers described here.

Flammable Liquids

Flammable liquids and aerosols are very common in the USDA Forest Service. Examples are gasoline, solvents, and janitorial products. The label on the container will say *flammable* or *extremely flammable*; the MSDS will also provide identifying information. Because these products are flammable, they must be labeled, stored, used, and managed according to regulations and USDA Forest Service policy. Any wastes must be considered a hazardous waste.

Definitions

Products with flashpoints equal to or greater than 100 °F are combustibles.



See Keeping Incompatible Hazardous Materials Separated (page 100).

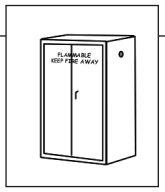
See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of a flammable liquid safely.

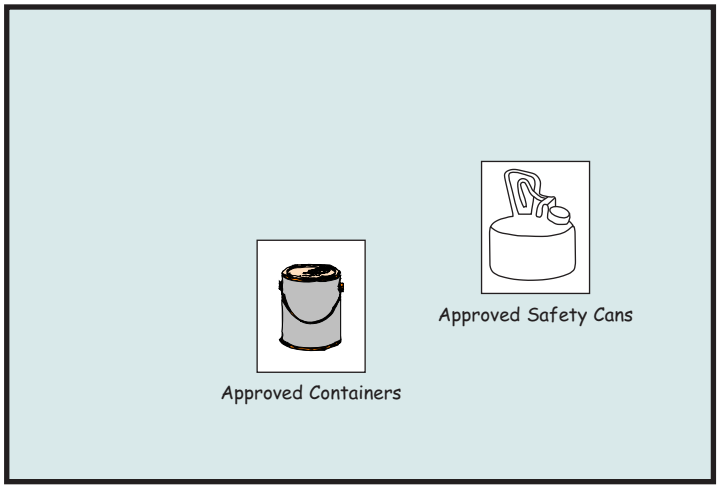


See page 94.

Storage of flammable liquids is strictly regulated for the safety of personnel and facilities. Incidental storage of flammables is permissible as long as the quantity does not exceed the amount allowed, and proper storage containers are used. Permissible quantities differ depending on the occupancy of the structure. Empty containers previously used for flammable liquids must be stored as if they still contain a flammable liquid.

Indoor Storage

Incidental Storage



Floor Plan

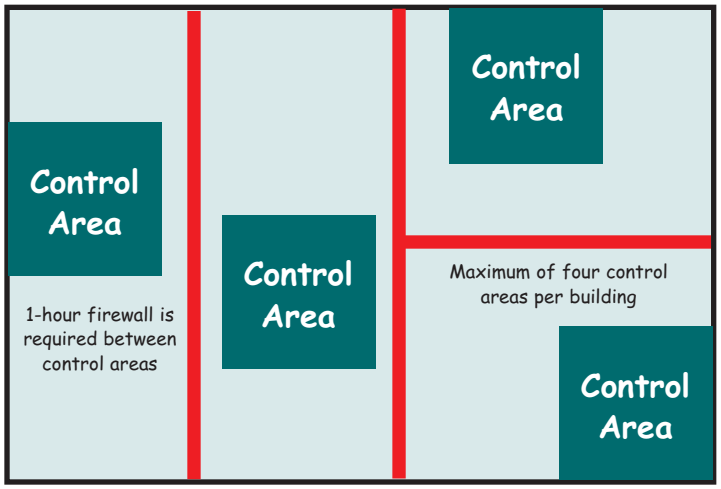
Important Requirements

- No more than 10 gallons of flammable and combustible liquids incidental to the operation and maintenance of equipment, and for demonstration, treatment, and laboratory work, may be stored outside of an approved cabinet.
- Incidental liquids must be stored in approved containers and in a garage or other approved location.
- In offices and educational and institutional facilities, the container size is limited to 1 gallon for class I liquids unless safety cans are used.
- If safety cans are used for incidental class I flammables, the maximum container size is 2 gallons.
- An approved cabinet must be used to store more than 10 gallons of flammable or combustible liquids incidental to the operation and maintenance of equipment and for demonstration, treatment, and laboratory work.

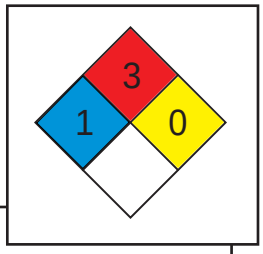
Control areas increase the quantity of flammable liquids you can store. However, there are limits. These quantities can be increased if you use approved cabinets and if the area has sprinklers. Multiple control areas also can be used if they are properly separated. Empty containers previously used for flammable liquids must be stored as if they still contained a flammable liquid.

Indoor Storage

Control Areas



Floor Plan



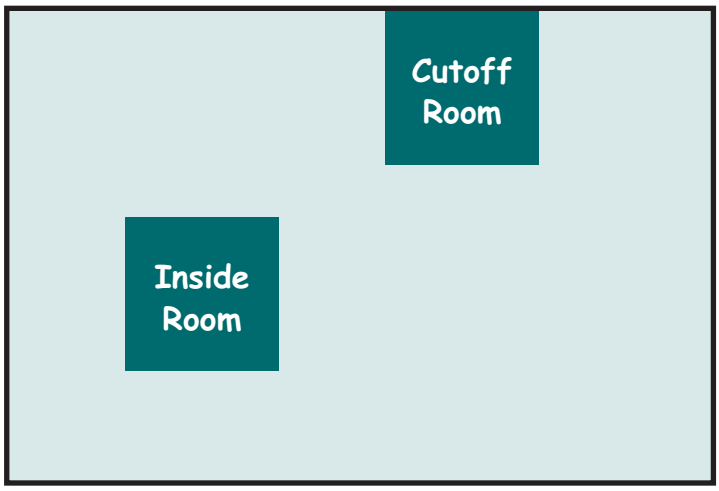
Important Requirements

- Class I liquids may not be stored in basements; avoid storing flammables in basements.
- Containers with a capacity of less than 30 gallons may not be stacked more than two containers or 3 feet high, unless they are on shelving or are otherwise secured.
- Containers with a capacity greater than 30 gallons may not be stacked.
- Containers must be stored in an upright position.
- Combustible commodities must not be stored above flammable and combustible liquids.
- Flammable liquids must be a minimum of 3 feet from beams, girders, or other obstructions.
- Flammable liquids must be a minimum of 3 feet below sprinkler deflectors, discharge orifices, or other overhead fire protection systems.
- Flammable liquids must not be stored in the same rack or group as combustible materials.
- The maximum amount of flammable liquids that can be stored in a control area is: 30 gallons of class IA, 60 gallons of class IB, and 90 gallons of class IC—or 120 gallons of any combination, as long as the limits for any given class are not exceeded.
- Amounts can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers.
- Spill control and secondary containment are required if any individual container has a capacity of more than 55 gallons or if the total capacity of all containers exceeds 1,000 gallons.

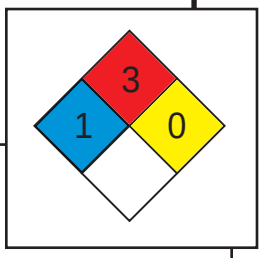
For larger quantities of flammable and combustible liquids, you can use cutoff and inside rooms. A room with an outside wall is a cutoff room, and a room with no outside walls is an inside room. Empty containers previously used for flammable liquids must be stored as if they still contained a flammable liquid.

Indoor Storage

Interior Rooms



Floor Plan

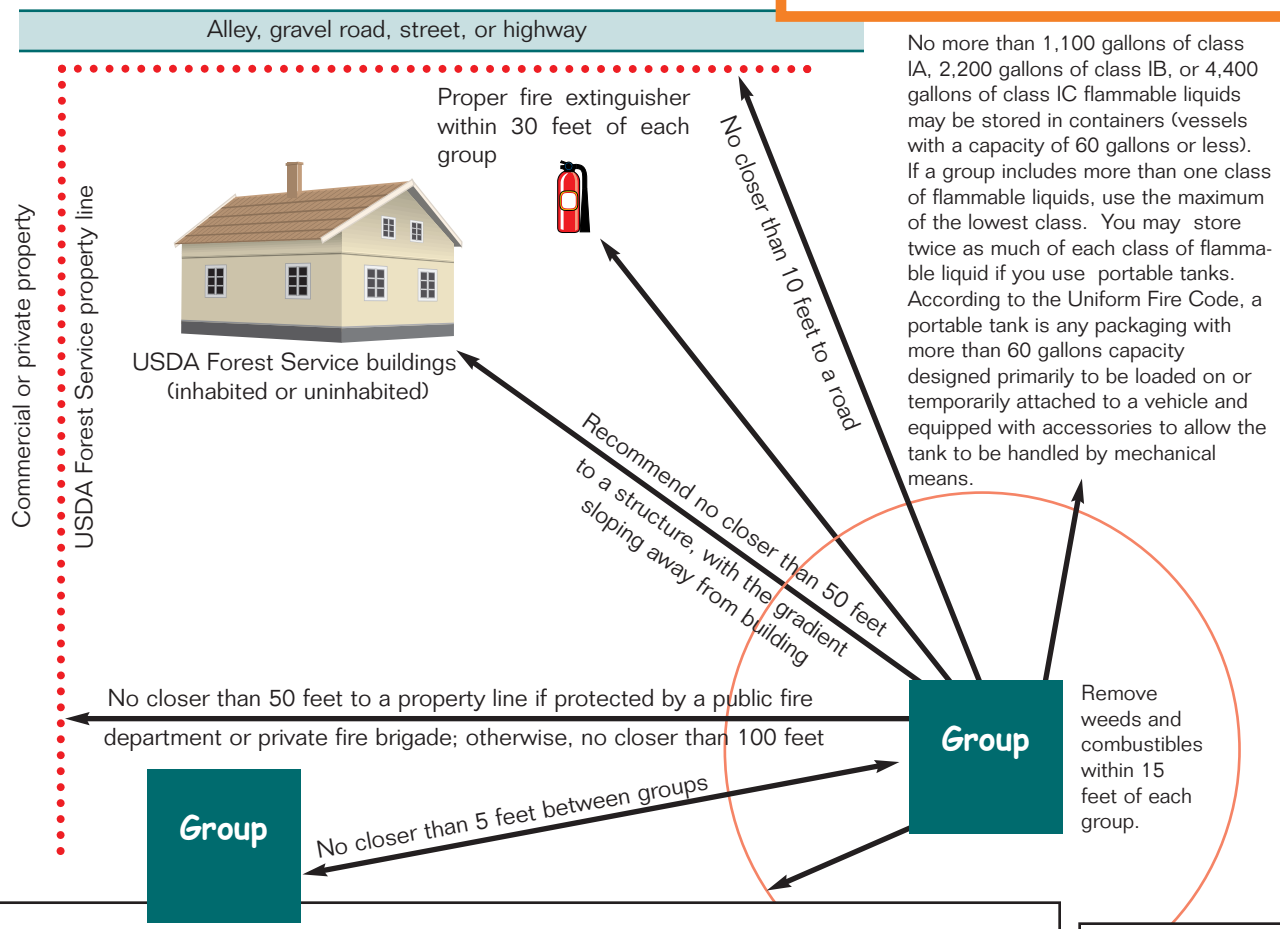


Important Requirements

- Cutoff and inside rooms can be used if more class I, II, and III liquids need to be stored than can be stored as incidentals or within control areas within a building.
- The quantities of class I, II, and III liquids that can be stored in cutoff and inside rooms depend on the size of the building and its structural features.
- Check with your hazmat coordinator for specific structural requirements and safety features before designating an existing room for liquid storage or before constructing a new storage room.
- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity or if the total capacity of all containers exceeds 1,000 gallons.

USDA Forest Service policy and Federal regulations also determine how to store flammable liquids outside buildings. The primary considerations are the amount of flammable liquids being stored and how close the materials are to structures, property lines, and roads. Empty containers previously used for flammable liquids must be stored as if they still contain a flammable liquid.

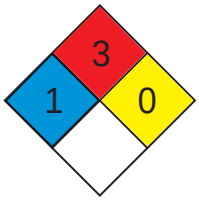
Outdoor Storage



No more than 1,100 gallons of class IA, 2,200 gallons of class IB, or 4,400 gallons of class IC flammable liquids may be stored in containers (vessels with a capacity of 60 gallons or less). If a group includes more than one class of flammable liquids, use the maximum of the lowest class. You may store twice as much of each class of flammable liquid if you use portable tanks. According to the Uniform Fire Code, a portable tank is any packaging with more than 60 gallons capacity designed primarily to be loaded on or temporarily attached to a vehicle and equipped with accessories to allow the tank to be handled by mechanical means.

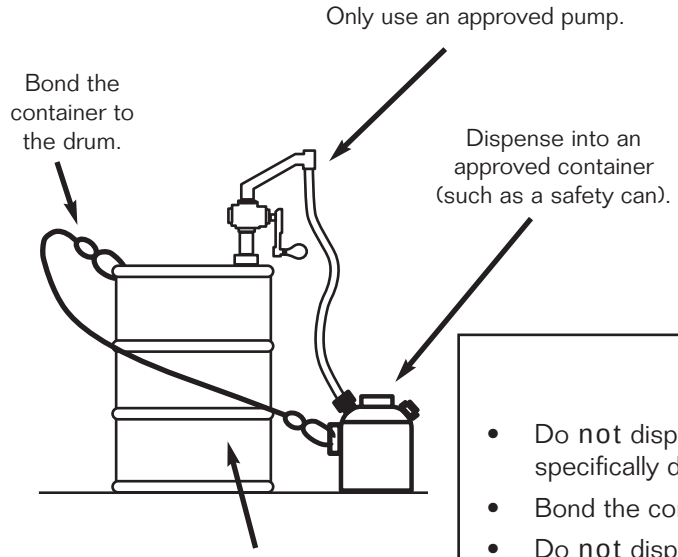
Other Important Requirements

- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity, or if the total capacity of all containers exceeds 1,000 gallons.
- All drums and portable tanks *must* be properly labeled.
- Each storage area must have a *NO SMOKING* sign.
- All containers must be sound and tightly closed at all times.
- Drums must be protected from the weather.
- Each group must be protected from tampering; use guard posts to prevent stored materials from being damaged by vehicles.
- If a canopy or roof is used, the walls and supports must not restrict more than 25 percent of the perimeter of the storage area, or the configuration must be considered an inside storage area. The canopy and roof must be constructed of noncombustible materials.
- Access must be available for firefighting equipment to reach each group.



Dispensing class IA, IB, and IC flammable liquids can be dangerous, especially in enclosed areas. Follow the regulatory restrictions on dispensing all flammable products and check with your local fire marshal to see whether your area may have more restrictive requirements.

Dispensing



Other Important Requirements

- Do not dispense flammable liquids inside a building unless the building is specifically designed for indoor dispensing.
- Bond the container to the drum before dispensing.
- Do not dispense fuels into a container in a plastic-lined truck bed.
- Never pressurize the drum to aid in dispensing flammable liquids.
- Have spill containment and cleanup materials readily available.
- Have the MSDS on hand.
- Use personal protective equipment as specified by the MSDS.
- Use secondary containment for drums when dispensing.
- Do not dispense flammable liquids within 25 feet of any ignition source.
- Do not dispense flammable liquids near open flames or *hot* work.
- Post *NO SMOKING* signs in areas where you are dispensing flammable liquids.
- Do not dispense flammable liquids within 25 feet of building openings, property lines, alleys, or public ways.
- All but class IA liquids can be gravity dispensed through a self-closing or automatic-closing valve.
- Spill control and secondary containment are required if:
  - Flammable liquid is dispensed into a container exceeding 1.1 gallons.
  - Any container exceeds 55 gallons.
  - The total capacity of all containers inside a building exceeds 100 gallons.
  - The capacity of all containers outdoors exceeds 5.3 gallons.

Requirements for flammable liquids depend on the amount of liquids being transported. The requirements include placarding, the type of vehicle that can be used, and the types of roads that can be traveled. Transportation by aircraft must be coordinated with the aircraft's owners/operators. If you plan to move flammable liquids by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*.

Transportation

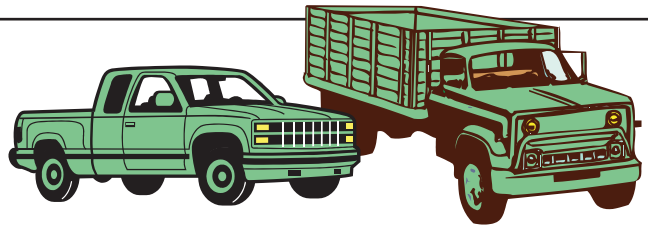
Other Requirements

- No smoking during loading and unloading.
- Keep fire away from the vehicle.
- Prevent the vehicle from moving (set brakes).
- Use tools that will not damage packaging.
- Brace packages to prevent them from moving.
- Keep packages dry during shipment.
- Have shipping papers in order.
- If the load exceeds 119 gallons or is 1,001 pounds or more, the driver must have a commercial driver's license, hazmat endorsement, a medical certificate, and the training required by the DOT.
- Make sure each container is marked with the proper name, shipping name, and identification number.

Vehicle Placard

1203

Identification Number (Be sure to select the proper number based on the specific product.)



USDA Forest Service-Operated Pickups and Trucks

- You can avoid placarding and shipping papers by transporting gasoline in containers that do not weigh more than 66 pounds (including packaging) or hold more than 8 gallons. The total weight of all containers may not exceed 440 pounds. See your hazmat coordinator for details or if you are transporting other flammable liquids.
- Regardless of how much hazardous materials are being shipped, the driver *must* be informed of the types of products and their quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of *all* hazardous materials *below* 440 pounds, and the weight of each compressed gas cylinder *below* 220 pounds.
- Do not transport materials that are incompatible with each other.
- Fuel may be carried in the tanks of powered equipment such as ATVs, snowmobiles, and chain saws. All powered equipment must be carried outside the passenger compartment.

Examples of Flammable Liquid Products Used in the USDA Forest Service

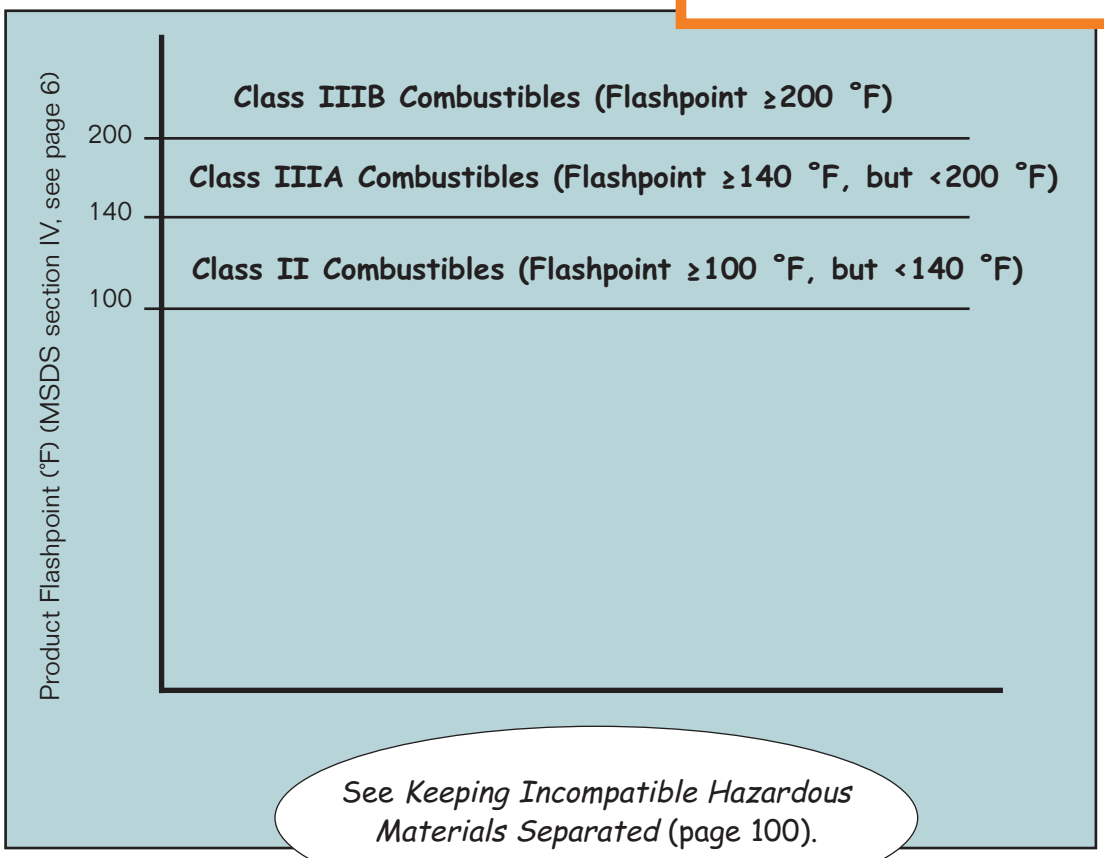
	UN (United Nations) Identification Number
Flammable Liquids NFPA Class IA	
• Ether (starting fluid)	3271
Flammable Liquids NFPA Class IB	
• Acetone	1090
• Ethanol	1170
• Gasoline	1203
• Drip torch fuel	1993
• Isopropyl alcohol	1219
Flammable Liquids NFPA Class IC	
• Mineral spirits	1268
• Turpentine	1299

If you have anything other than the products shown above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly greater than for the flammable liquids described here.

Combustible Liquids

Combustible liquids are less dangerous than flammable liquids because they have higher flashpoints. Class II combustible liquids have flashpoints between 100 and 140 °F. Class IIIA combustible liquids have flashpoints between 140 and 200 °F. Class IIIB combustible liquids have flashpoints higher than 200 °F. Follow the specific storage, use, and transportation requirements for the appropriate type of combustible liquid.

Definitions



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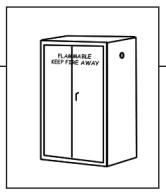
See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment, and can allow you to store larger quantities of combustible liquids safely.

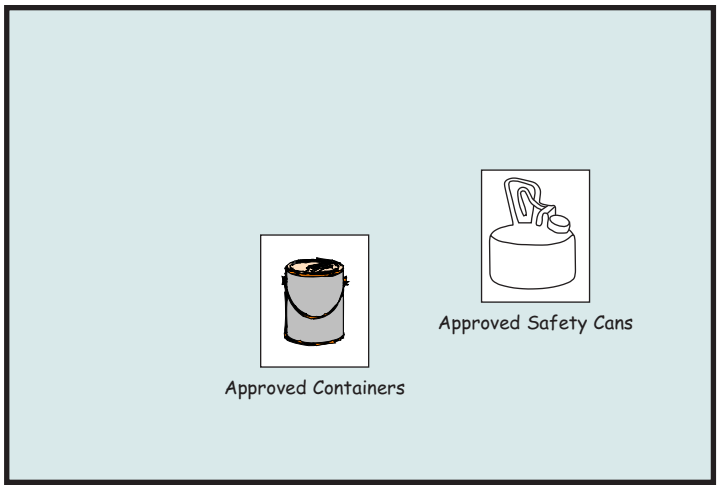


See page 94.

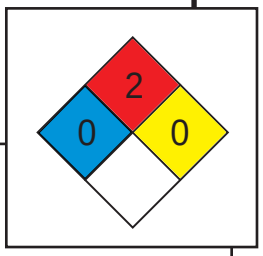
Storage of combustible liquids is strictly regulated for the safety of personnel and facilities. Incidental storage of combustibles is permissible as long as the quantity does not exceed the maximum allowed, and proper storage containers are used. Permissible quantities differ depending on the occupancy of the building where the incidentals are located. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

Indoor Storage

Incidental Storage



Floor Plan



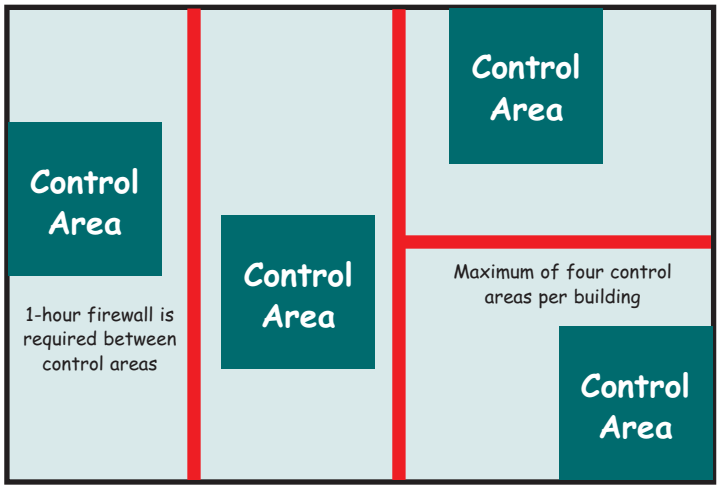
Important Requirements

- No more than 10 gallons of flammable and combustible liquids incidental to the operation and maintenance of equipment, and for demonstration, treatment, and laboratory work, outside of an approved cabinet.
- Incidental liquids must be stored in approved containers and in a garage or other approved location.
- An approved cabinet must be used to store more than 10 gallons of flammable and combustible liquids incidental to the operation and maintenance of equipment, and for demonstration, treatment, and laboratory work.

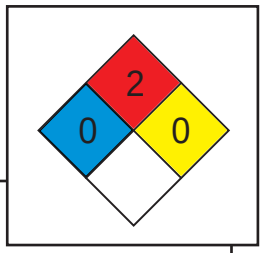
Control areas increase the quantity of liquids you can store. However, there are limits. These amounts can be increased if you use approved cabinets and if the area has sprinklers. Several control areas can be used if they are properly separated. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

Indoor Storage

Control Areas



Floor Plan



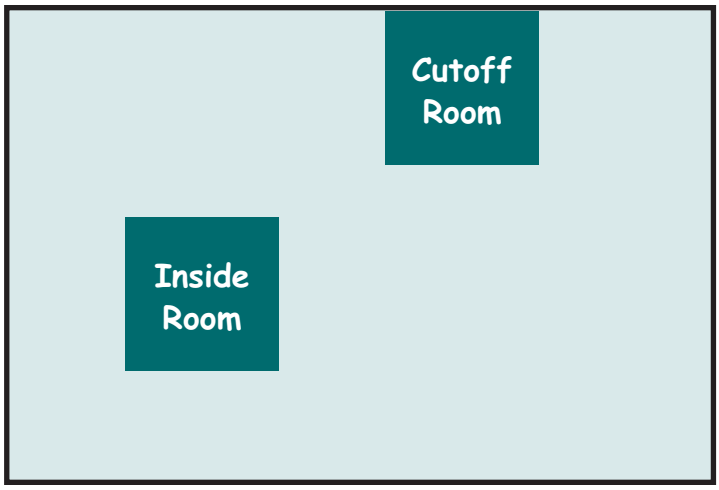
Important Requirements

- Avoid storing combustible liquids in basements.
- Containers with less than 30 gallons capacity may not be stacked more than two containers or 3 feet high unless they are on shelving or are otherwise secured.
- Containers that hold more than 30 gallons may not be stacked.
- Containers must be stored in an upright position.
- Combustible commodities must not be stored above flammable and combustible liquids.
- Combustible liquids must be at least 3 feet from beams, girders, or other obstructions.
- Combustible liquids must be at least 3 feet below sprinkler deflectors, discharge orifices, or other overhead fire protection systems.
- Combustible liquids must not be stored in the same rack or group as flammable materials.
- The maximum amount of combustible liquids that can be stored in a control area is: 120 gallons of class II liquids, 330 gallons of class IIIA liquids, and 13,200 gallons of class IIIB liquids.
- Amounts can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers. An unlimited amount of class IIIB liquids can be stored in buildings with sprinklers.
- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity or if the total capacity of all containers exceeds 1,000 gallons.

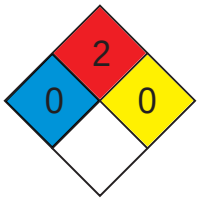
For larger quantities of flammable and combustible liquids, you can use cutoff and inside rooms. A room with one outside wall is a cutoff room, and a room with no outside walls is an inside room. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

Indoor Storage

Interior Rooms



Floor Plan

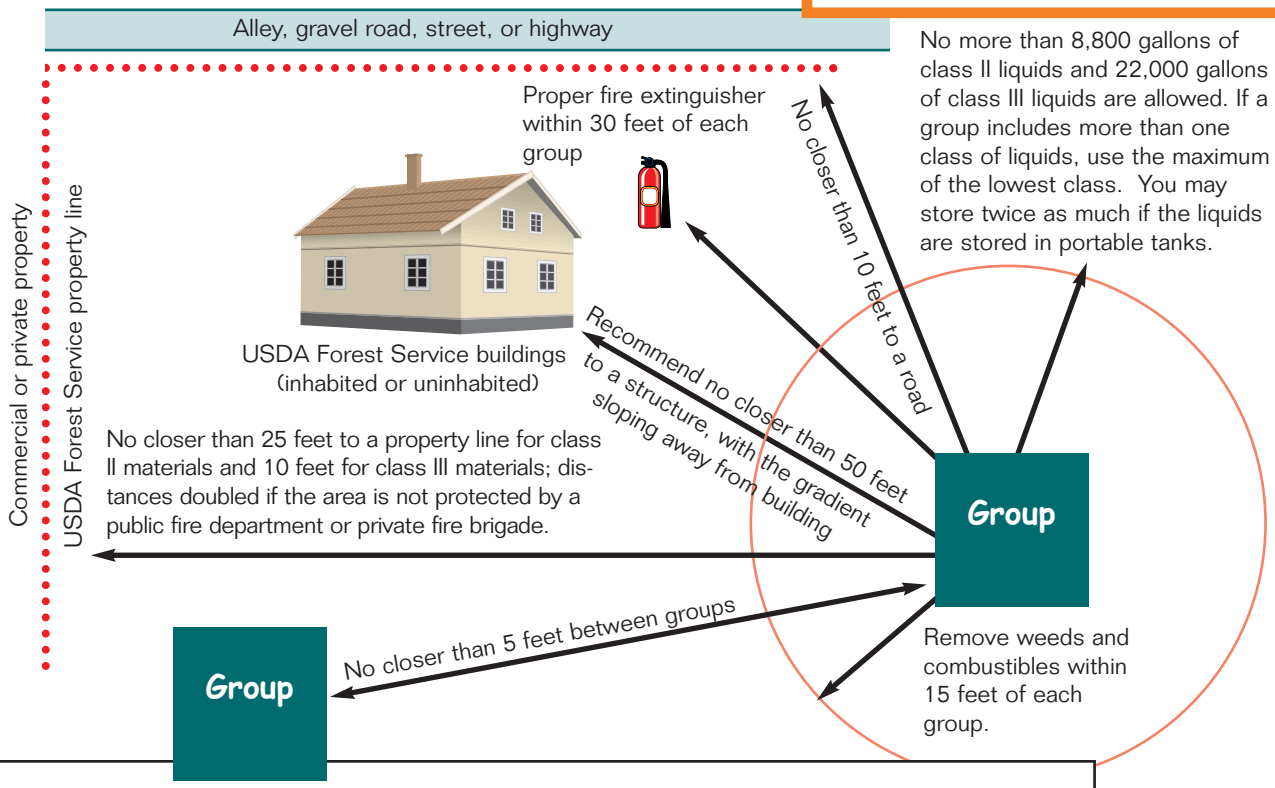


Important Requirements

- Cutoff and inside rooms can be used if the storage volumes of class I, II, and III liquids exceed the amount that can be stored as incidentals or within control areas inside a building.
- The quantities of class I, II, and III liquids that can be stored in cutoff and inside rooms depend on the size of the building and its structural features.
- Check with your hazmat coordinator for specific structural requirements and safety features before designating an existing room for liquid storage or constructing a new room.
- Spill control and secondary containment are required if any individual container has more than a 55-gallon capacity, or if the total capacity of all containers exceeds 1,000 gallons.

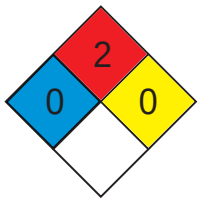
USDA Forest Service policy and regulations determine how to store combustible liquids outside of buildings on USDA Forest Service land. The primary considerations are the amount of combustible liquids being stored and how close they are to structures, property lines, and roads. Keeping the amount of combustibles stored below the permitted levels per group will avoid more complicated storage requirements. Empty containers previously used for combustible liquids must be stored as if they still contained a combustible liquid.

Outdoor Storage



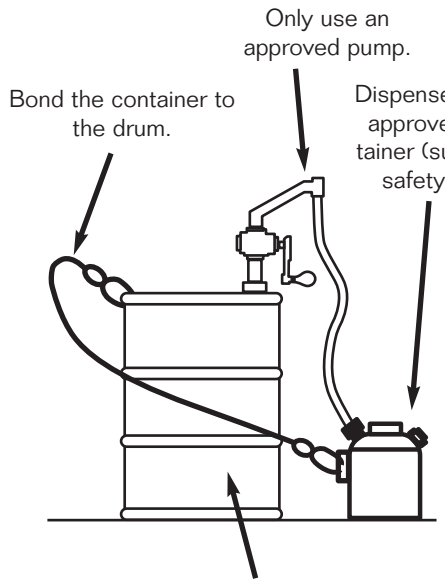
Other Important Requirements

- Spill control and secondary containment are required if any individual container has more than 55-gallon capacity or the total capacity of all containers exceeds 1,000 gallons.
- All drums and portable tanks *must* be properly labeled.
- Each storage area must have a *NO SMOKING* sign.
- All containers must be sound and tightly closed at all times.
- Drums must be protected from the weather.
- Each group must be protected from tampering; use guard posts to prevent vehicles from damaging the stored materials.
- If a canopy or roof is used, the wall and supports must not restrict more than 25 percent of the perimeter of the storage area, or the configuration must be considered an inside storage area. Canopy and supports must be of noncombustible construction.
- Access must be available for firefighting equipment to reach each group.



Dispensing combustible liquids can be dangerous, especially in enclosed areas. Follow the regulatory restrictions on dispensing all combustible products and be sure to check with your local fire marshal to see if your area has more restrictive requirements.

Dispensing



Other Important Requirements

- Do not dispense combustible liquids inside a building unless the building is specifically designed for indoor dispensing.
- Bond the container to the drum before dispensing combustible liquids.
- Do not dispense combustible liquids into a container in a plastic-lined truck bed.
- Never pressurize the drum to aid in dispensing combustible liquids.
- Have spill containment and cleanup materials readily available.
- Have the MSDS on hand.
- Use secondary containment for drums when dispensing combustible liquids.
- Do not dispense combustible liquids within 25 feet of an ignition source.
- Post *NO SMOKING* signs in areas where you are dispensing combustible liquids.
- Do not dispense combustible liquids near open flames or *hot* work.
- Do not dispense combustible liquids within 25 feet of building openings, property lines, alleys, or public ways.
- Use personal protective equipment as specified by the MSDS.
- Combustible liquids can be gravity dispensed, but only if you use a self-closing or automatic-closing valve.
- Spill control and secondary containment are required if:
  - Combustible liquid is dispensed into a container exceeding 1.1 gallons.
  - Any container exceeds 55 gallons or the total capacity of all containers inside a building exceeds 100 gallons.
  - The capacity of all containers outdoors exceeds 5.3 gallons.

The regulations for transporting combustible liquids are far less stringent than those for transporting flammable liquids. The primary concern is marking packages if you transport large quantities. Use the following guideline to identify some of these situations. If you plan to move combustible liquids by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*.

Transportation

Pickup Trucks

- There are no special quantity, packaging, or operator restrictions for transporting diesel on the highway in containers smaller than 119 gallons. To transport diesel or other combustible liquids by air, see chapter 4 of the *Interagency Aviation Transport of Hazardous Materials*.
- Diesel containers must be leak free, tightly closed, and secured to the vehicle to prevent them from moving during transportation.
- The transportation of combustibles other than diesel may not be exempt from DOT regulations.
- Drip-torch fuel is considered a flammable liquid because it contains gasoline. Flammable liquid regulations apply.

Vehicle Placard and ID Number

Placards and ID numbers are generally not required when transporting combustible liquids in containers smaller than 119 gallons, although it would be a good practice to use them.

Flammable Liquid Placards (May be used when transporting combustible liquids.)

Vehicle Placard

Identification Number (Be sure to select the proper number based on the specific product.)

Examples of Combustible Liquid Products Used in the USDA Forest Service

	UN (United Nations) Identification Number
NFPA Class II	
• Acetic acid	2790
• Fuel oils	1993
• Kerosene	1223
• Stoddard solvent	1268
• Diesel fuel	1202
• Jet fuel	1863
• Heating oils	1202
NFPA Class IIIA	
• Linseed oil	
• Most motor oils	
• Hydraulic oils	
NFPA Class IIIB	
• Ethylene glycol	

Flammable Solids

Flammable solids include self-reactive materials that can catch fire even without oxygen, readily combustible solids that can ignite from friction, and powdered or granular substances that can ignite. Federal regulations for flammable solids are noted in this guideline. You should also check with your local fire marshal to see if your area has more restrictive requirements.

Definitions

Flammable Solids—The Dangers

Flammable solids are dangerous because they can cause a fire easily. The fire could give off toxic combustion products. Some flammable solids are difficult to extinguish. Common firefighting materials (water, CO_2) may increase the risk of damage if they are used on some flammable solids.

See Keeping Incompatible Hazardous Materials Separated (page 100).

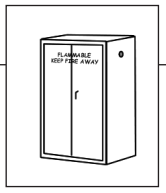
See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

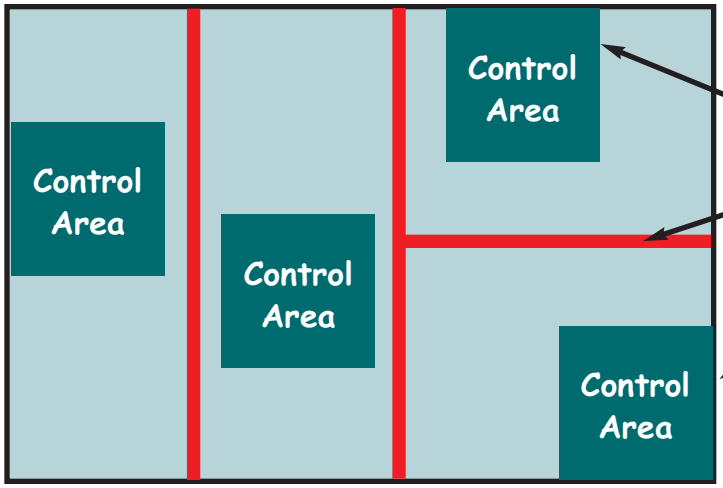
Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of flammable solids safely.



See page 94.

Flammable solids can be stored inside buildings so long as certain precautions are taken. These precautions are based on fire code requirements. Check with your local fire marshal because your area may have additional restrictions. Keeping the total volume of flammable solids below the exempt amount (125 pounds) per control area will avoid additional restrictions; see your hazmat coordinator if you have more than 125 pounds of flammable solids per control area.

Indoor Storage



Floor Plan

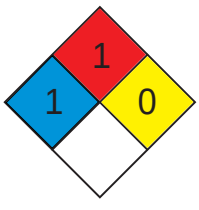
No more than four control areas per structure.

Each control area is separated from other areas by a 1-hour firewall.

No more than 125 pounds of flammable solids per control area. Amounts can be increased by 100 percent if proper cabinets are used, and by another 100 percent if the area has sprinklers—not to exceed 300 percent of the original volume with both cabinets and sprinklers.

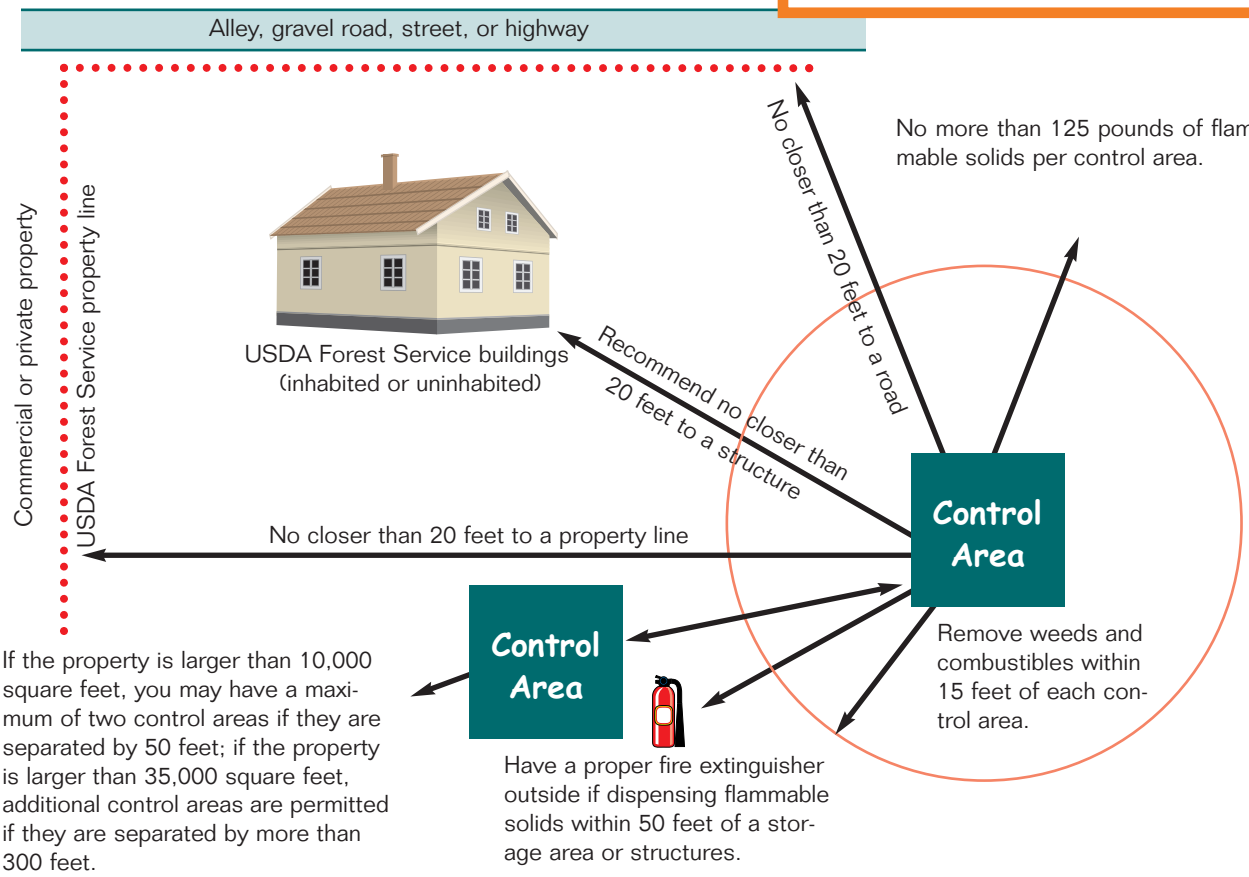
Other Important Requirements

- Floors in flammable solid storage areas should be noncombustible.
- Noncombustible shelving should be used.
- Notify your local fire department if you have more than 100 pounds of flammable solids *onsite*.
- All products should be labeled with a flammable solid label.
- Each control area must have a *NO SMOKING* sign.
- Each control area must have a flammable solid hazard identification sign.
- Don't store or transport damaged fusees.



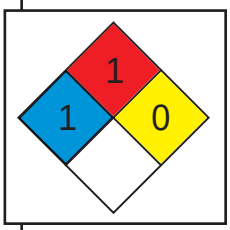
Flammable solids can be stored outside as well as inside, as long as storage does not degrade the quality of the product. You can have up to two control areas, possibly more if you have a large area, but each control area has restrictions. Keeping the total storage volume of flammable solids below the exempt amount (125 pounds) per control area will avoid additional restrictions.

Outdoor Storage



Other Important Requirements

- Notify your local fire department if you have more than 100 pounds of flammable solids *onsite*.
- All products should be labeled with a flammable solid label.
- Each control area must have a *NO SMOKING* sign.
- Each control area must have a flammable solid hazard identification sign.



When transporting flammable solids, you must meet requirements that depend on the amounts being transported. These include placarding, the type of vehicle that can be used, and the types of roads that can be traveled. Transportation by aircraft must be coordinated with the aircraft owners or operators. If you plan to move flammable solids by air, refer to the USDA Forest Service *Interagency Aviation Transport of Hazardous Materials*.

Transportation

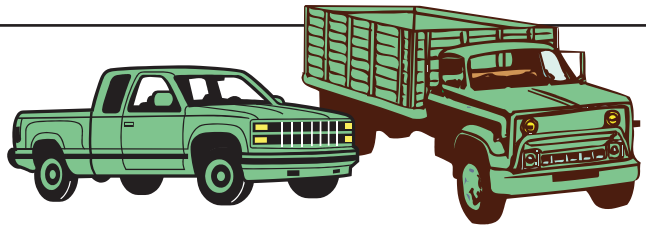
Other Requirements

- No smoking during loading and unloading.
- Keep fire away from the vehicle.
- Prevent the vehicle from moving (set brakes).
- Use tools that will not damage packaging.
- Brace packages to prevent them from moving.
- Do not ship incompatible materials with flammable solids (see page 101 for an explanation of incompatible materials).
- Have shipping papers in order.
- If the load is 1,001 pounds or more, the driver must have a commercial driver's license, hazmat endorsement, medical certificate, and the training required by the DOT.
- Make sure each container is marked with the proper shipping name of the product (as defined by the DOT), the identification number for the specific product, and the sender's or receiver's name and address. The technical name of the product may be required.
- All products must have the flammable solid label.

Vehicle Placard

1325

Identification Number (Be sure to select the proper number based on the specific product.)



USDA Forest Service-Operated Pickups and Trucks

- You can avoid placarding and shipping papers by transporting fusees and matches in packages that do not weigh more than 66 pounds (including packaging) per package. The total weight of all packages may not exceed 440 pounds. See your hazmat coordinator for further details or if you are shipping other flammable solids.
- Regardless of how much hazardous materials are being shipped, the driver *must* be informed of the types of products and their quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of *all* hazardous materials *below* 440 pounds.

Examples of Flammable Solid Products Used in the USDA Forest Service

	UN (United Nations) Identification Number
• Matches (safety)	1944
• Fusees	1325

For fusees, North American Number-United States and Canada only

Buy only the quantity you need for a task.

Handy Tips

Use up all inventory so you don't have to handle it as a hazardous waste.

Centrally locate all hazardous products to minimize storage cabinets and storage areas.

Store fusees in the original box.

If the original box for fusees is not available, use a metal storage box that is secure.

Look for *green* products at the USDA Forest Service *green* purchasing Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm*

Pesticides

Pesticides are another group of hazardous materials that are commonly found at USDA Forest Service facilities. Pesticides include insecticides, herbicides, insect repellents, deer repellents, rodenticides, and fungicides. Federal regulations and USDA Forest Service requirements specify how these materials must be stored and managed. Check with your local fire marshal to see if your area has more restrictive requirements.

Definitions

Poisons—What Are They?

Poisonous materials are defined as highly toxic and toxic liquids and highly toxic and toxic solids that can be dangerous if ingested, inhaled, or allowed to contact your skin. Exposure dangers are often stated in terms of lethal dose concentrations. Most USDA Forest Service *poisons* are insecticides and herbicides (both are commonly referred to as pesticides). Information on pesticides can be found at:

http://www.fs.fed.us/foresthealth/pesticide/

See Keeping Incompatible Hazardous Materials Separated (page 100).

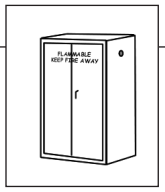
See Hazardous Materials Storage Cabinets (page 94).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Storage Cabinets

Proper storage cabinets can protect workers and the environment and can allow you to store larger quantities of poisons safely.



See page 94.

The USDA Forest Service and environmental management agencies have established specific requirements for facilities and the location of facilities that store pesticides. This guideline contains many of these requirements. If you have specific questions about your situation, contact your regional pesticide coordinator or hazmat coordinator.

Facilities

Storage Facilities

- Storage time in permanent facilities should be less than 1 year unless the planned application is delayed due to appeal or litigation. Temporary storage may include: small quantities of pesticides (1 pound of active ingredient or 1 gallon of formulated product), microbial pesticides that have low mammalian toxicity, and pesticides needed onsite for a project. Temporary storage should not exceed 60 days.
- Permanent facilities must be well illuminated for inspection of labels and containers in storage.
- Permanent facilities must have flooring that is continuous and that will not absorb pesticides.
- Permanent facilities must have secondary containment for 110 percent of the largest container in storage, or for the contents of a 55-gallon drum, whichever is larger.
- Temporary facilities may include research labs, fenced compounds, trucks, boxcars, tankcars, empty paint sheds, storerooms, and warehouses.
- Temporary facilities must have an eyewash station.
- All facilities must protect products from sunlight, heat, freezing temperatures, and humidity, and must provide the environment specified by the manufacturer.
- All facilities must be locked when they are not in use or have access restricted to authorized personnel.
- All facilities must have one or more visible and readily accessible ABC-type fire extinguishers.
- All facilities must have 10 gallons of clean water, soap, and towels for decontamination.
- All facilities must have spill kits on hand for cleanup.
- All facilities must have ventilation (natural or mechanical) to prevent the buildup of fumes.
- All containers must be sound and tightly closed at all times; if you smell a product in your cabinet or room, either a container is not securely closed or there has been a spill.
- Personal protective equipment (for example, respirators) must be readily accessible and protected from contamination when they are not being used.

Managing pesticide inventories is as critical as providing the proper facilities where pesticides are stored. The USDA Forest Service imposes specific requirements on *permanent* storage and *temporary* storage. Pesticides cannot be in temporary storage longer than 60 days, or in permanent storage longer than 1 year. Do not stockpile pesticides.

Inventory

Pesticide Inventory in Storage

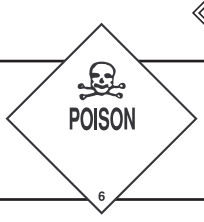
- The storage area should be neat with all original container labels visible; do not deface labels.
- Keep all containers tightly closed. Add a separate label indicating whether the container is full or empty. Do not transfer pesticides into other storage containers.
- Store containers off the ground and only on the first floor.
- Store pesticides with the same active ingredients together and segregate them from other pesticides or poisons by a 4-foot aisle; post signs identifying different pesticides.
- Inspect the storage area regularly for *leakers*. Separate leakers from clean and undamaged containers. Isolate containers that have been contaminated by leakers for cleanup later. Clean the outside of leaking containers, collect residue, and repackage by overpacking or by putting the contents into a new, approved container. Relabel and date the new container. Clean up the contaminated area after repackaging.
- Notify the local fire department of the types and quantities of pesticides in storage.
- Employees who have access to pesticide storage areas should be trained in hazards and mitigation measures as stated on product MSDSs; a trained emergency response coordinator must be available to act as incident commander.
- Do not allow eating, drinking, or smoking in or near pesticide storage facilities.
- Separate pesticides from incompatible materials such as explosives, flammables, compressed gases, corrosives, oxidizers, peroxides, combustible materials, fertilizers, potable water, clothing, all food and animal feed, personal items, and furniture.
- Store pesticides 25 feet from incompatible materials or use a 1-hour liquid-tight firewall.
- Label all pallets, tools, and applicators used in pesticides operations as *CONTAMINATED WITH PESTICIDES*.
- Keep all tools and applicators used with pesticides in the pesticide storage area.
- Mark applicators that are used for pesticides and do not use them for other purposes.
- Do not store pesticides in containers meant for food, feed, or beverages.
- Treat empty containers as if they were full. Wear full personal protective equipment and triple rinse or pressure wash the containers for at least 30 seconds (or clean empty containers following the manufacturer's recommendations). Store empty containers in a pesticide storage facility with empty containers segregated according to disposal method. Mark empty containers with *FOR DISPOSAL ONLY*. Recycle empty containers if possible. Destroy containers if they are to be sent to a landfill. Do not reuse empty containers or allow them to be reused.

Poisons, especially pesticides, are associated with increased health risks and risks to the environment. To control health risks, specific signs are required, inventories are needed, and MSDSs must be readily available. This guideline includes some of these important requirements.

Signs

Storage Facility Signs and Information

- Post identification signs warning of the materials stored and of their hazards (for example, *DANGER*, *POISON*, *PESTICIDE STORAGE*). A *POISON* sign must be posted if highly toxic materials are stored. The MSDS will identify products as toxic or highly toxic.
- Post hazard signs (flammability, health, reactivity) depending on the specific poisons or pesticides.
- Post a *PESTICIDES* sign in 2-inch letters on a white background.
- Post *NO SMOKING, EATING, OR DRINKING* signs in storage areas.
- Each permanent storage facility must post phone numbers for the local poison control center, fire department, and the USDA Forest Service unit emergency coordinator. If the unit subscribes to CHEMTREC, the unit must post that number as well.
- Post the inventory of stored pesticides on the inside and the outside of the facility.
- Maintain an MSDS (see page 6) for each product at the storage facility and at the administrative office.
- Post the 24-hour telephone number for the person or persons responsible for the storage facility.



If the unit subscribes to CHEMTREC:
Post the Chemical Transportation Emergency Center (CHEMTREC) phone number:

1–800–424–9300

Regulations restrict the amount of pesticides you can have in temporary storage on a USDA Forest Service unit. Larger quantities of pesticides may require a permit from your local fire marshal. Be sure to check the MSDS to determine if you have a highly toxic or a toxic product.

Permits and Plans

Permits From the Fire Marshal

- A permit may be required if you store any amount of highly toxic liquids or highly toxic solids.
- A permit may be required if you store more than 10 gallons of a toxic liquid.
- A permit may be required if you store more than 100 pounds of toxic solids.
- A permit is required for any amount of a toxic gas or a highly toxic gas.

The local fire marshal may not elect to require permits based on the quantities of hazardous materials stored. Be sure to check with your local fire marshal for specific permitting requirements.

Pesticides can be transported in USDA Forest Service vehicles. However, you will need to follow several precautions to minimize safety risks. These guidelines are not intended to cover all regulations. For more information, contact your regional pesticide coordinator.

Transportation

Other Requirements

- Transport pesticides in their original containers.
- Do not transport pesticides with food, animal feed, clothing, or potable water.
- Do not transport poisons or pesticides in the cab or passenger compartment of a vehicle.
- Transport only the amount of pesticide that is needed for the day's operations.
- Keep all containers tightly closed.
- Check containers for leakage during transportation.
- Protect containers from direct sunlight.
- Prepare a manifest for each item in your cargo.
- Ship containers of liquids with a sign indicating *THIS END UP*.
- Do not use a truck with a wooden bed to transport pesticides.

USDA Forest Service-Operated Pickups and Trucks

- Do not transport open, damaged, or contaminated containers of poisons or pesticides.
- Keep copies of the spill and accident plan in the vehicle regardless of the volume of pesticide being transported.
- Do not leave the vehicle unattended unless the pesticides are in a locked area.
- You may be able to transport up to 440 pounds of pesticides without training, emergency response information, shipping papers, and placarding. The maximum allowable package size may be from 1 to 66 pounds (including container weight) or a capacity of 1 pint to 8 gallons, depending on the pesticide. Contact your pesticide coordinator for the shipping requirements of specific pesticides.
- The driver *must* be informed of the types of pesticides and their quantities.

1580

Identification Number (Be sure to select the proper number based on the specific product.)

Examples of Pesticides Used in the USDA Forest Service

UN (United Nations) Identification Number

Fungicides and Fumigants

- Chloropicrin **1580**
- Borax

Herbicides

- 2,4-D
- Glyphosate (Roundup)
- Picloram (Tordon)

Insecticides

- Carbaryl (Sevin)
- Diazinon

Rodenticides

- Strychnine **1692**

If you have anything other than the products shown above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly greater than for the pesticides described here.

Handy Tips

Buy and mix only the quantity you need for a specific application.

Do not dispose of excess pesticides on the ground or in water; do not bury empty pesticide containers.

Consider outsourcing all pesticide applications to avoid the costly and complex management of pesticides at USDA Forest Service facilities.

Search for alternative, nonchemical methods for pest control.

Get the proper MSDS and make sure you understand the health and safety issues of the product before acquiring any pesticide.

Before disposing of an empty container, rinse it three times with water that will become part of the application mixture and be used immediately.

Look for *green* products at the USDA Forest Service *green* purchasing Web site: *http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat/green.htm*

Compressed Gases

Compressed gases are any gases or mixture of gases exerting a gauge pressure of 26 pounds per square inch at 68 °F. Federal regulations specify how these gases must be stored and managed. You should also check with your local fire marshal to see if your area has more restrictive requirements.

Definitions

Compressed Gases—The Dangers

Compressed gases are dangerous because they are under pressure and because they may be oxidizers and they may be corrosive, flammable, toxic, or highly toxic. Be sure you know the type of compressed gas you are dealing with so you know the proper management requirements.

See Hazardous Materials Storage Cabinets (page 94).

See Keeping Incompatible Hazardous Materials Separated (page 100).

See The Transition to Hazardous Waste (page 98).

See Hazardous Product Containers (page 96).

Gas values in this guide are given in standard cubic feet. The capacities of some types of gas cylinders in standard cubic feet are given in Table A–2–1 on page 55–11 of *NFPA 55*.

Many types of compressed gas cylinders may be used in USDA Forest Service operations. This page and the next page outline some restrictions that would apply to all types of gas cylinders. Later pages provide additional restrictions for specific types of compressed gases.

General Requirements

Managing Compressed Gas Cylinders

- Only trained personnel should handle compressed gases.
- Do not allow cylinder valves to become contaminated.
- Do not place cylinders so they are part of an electrical circuit.
- Do not expose cylinders to temperature extremes; do not use cylinders that have been exposed to fire.
- Notify the supplier if a cylinder is leaking, corroded, or has been exposed to fire.
- Cap the valve when the cylinder is not in use.
- Move cylinders with a handtruck—not by dragging or carrying.
- Do not weld sling attachments to cylinders.
- Use backflow preventers as part of compressed gas systems.
- Only use tools provided by the supplier to open or close valves.
- Use pressure regulators; keep valves closed when cylinders are not being used.
- Do not refill cylinders or store them in boneyards; return them to the supplier.
- Mark empty cylinders as *EMPTY* and close the valves; return cylinders to the vendor or dispose of them properly.
- Check cylinders for corrosion, leaks, or damage; remove defective cylinders from service.
- Partially full cylinders or cylinders with residual gas must be treated as full cylinders.
- Secure cylinder storage areas against unauthorized entry.
- Secure cylinders to a fixed object, mobile devices designed for moving compressed gas cylinders, or within a rack, framework, cabinet, or similar assembly.
- Do not position cylinders where they could drop more than half of their height.
- Do not expose cylinders to falling objects.
- Separate gases by compatibility; when gases present multiple hazards, use the most stringent restrictions.
- Separate cylinders of incompatible gases by 20 feet or by 5-foot-tall barrier with a ½-hour fire rating (see page 101 for an explanation of incompatible gases).

Storage restrictions differ depending on whether compressed gases are stored indoors or outdoors. These restrictions are in addition to the general requirements on the preceding page.

Compressed Gas Storage

Indoor Restrictions

- Floors of storage areas must be noncombustible or constructed so their combustibility is limited (see *NFPA 55*).
- Shelves used for storing cylinders must be noncombustible.
- Rooms and cabinets where compressed gases are stored must be labeled *COMPRESSED GAS*.
- Indoor heating must not spot-heat cylinders to more than 125 °F.

Be sure to check pages 82 to 92 for specific compressed gas restrictions.

Outdoor Restrictions

- Outdoor storage areas may be covered with noncombustible materials, so long as the materials obscure no more than 25 percent of the perimeter.
- Outdoor storage areas must be kept clear of dry vegetation and combustible materials for at least 15 feet.
- Outdoor control areas must be at least 20 feet from property lines that can be built on, and any street, alley, or public way.
- For properties larger than 10,000 square feet, up to two control areas are allowed if they are separated by 50 feet.
- For properties larger than 35,000 square feet, additional control areas are allowed if they are separated by at least 300 feet.
- Provide physical barriers to prevent cylinders from being damaged by vehicles.
- Do not store cylinders on the ground or in an area where water can accumulate.

Special restrictions apply to corrosive gases, especially on the amounts of corrosive gases that may be stored. These restrictions are in addition to those on the previous two pages.

Corrosive Gases

Inside Storage

No more than 810 cubic feet of corrosive gas may be stored in each control area.

The amount of corrosive gas allowed in a control area may be increased by 100 percent if the cylinders are stored in an approved gas cabinet or in an enclosure with exhaust ventilation.

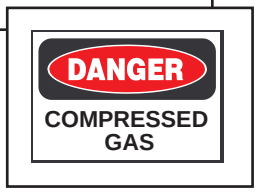
Outside Storage

No more than 810 cubic feet of corrosive gas may be stored in each control area.

Permit/Exempt Amounts

Storing more than 200 cubic feet of corrosive compressed gas *onsite* requires a permit from your local fire marshal.

The local fire marshal may not elect to require permits based on the quantities of hazardous materials stored. Check with your local fire marshal for specific permitting requirements.

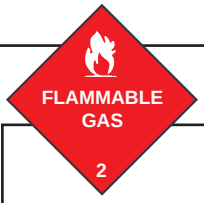


Special restrictions apply to flammable gases. These restrictions are in addition to those on pages 81 and 82.

Flammable Gases

General Storage of Flammable Compressed Gases

- Have a fire extinguisher (carbon dioxide or dry chemical) available.
- Use nonsparking tools.
- Segregate cylinders of flammable gases from oxidizing, pyrophoric (capable of spontaneous ignition), and toxic gases (20 feet minimum).
- Do not allow smoking or open flames within 20 feet of the storage area.
- Keep flammable compressed gases at least 20 feet away from flammable liquids and solids.
- Store cylinders in the upright position (no more than 45 degrees from vertical) unless the cylinder is designed to operate in the horizontal position or has a water volume of less than 1.3 gallons.



The *preferred* storage locations for flammable compressed gas cylinders (listed in the order of priority) are outdoors, in a separate building, or in a separate room.

Cylinders of flammable compressed gas can be stored inside a building, but outside storage is recommended. If you wish to store larger quantities of flammable gas indoors, contact your hazmat coordinator.

Flammable Gases

Indoor Storage (Not Recommended)

The only exception is for cylinders that do not hold more than 250 standard cubic feet of gas used for maintenance or to operate equipment. Flammable gas must not be used or stored inside a building unless it is a specially designed hazmat building.

Permit/Exempt Amounts

Storing more than 200 cubic feet of flammable compressed gas *onsite* requires a permit from your local fire marshal.

Storing flammable compressed gas cylinders outdoors is preferred. If you wish to store large quantities of flammable gas outdoors, contact your hazmat coordinator.

Flammable Gases

Outdoor Storage (Recommended)

A maximum of 750 cubic feet of gas may be stored in each control area.

A maximum of 15 gallons of liquefied gas may be stored in each control area.

Permit/Exempt Amounts

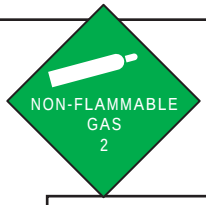
Storing more than 200 cubic feet of flammable compressed gas *onsite* requires a permit from your local fire marshal.

Special restrictions apply to oxidizer gases. These restrictions are in addition to those on pages 81 and 82. Outdoor storage is recommended for oxidizer gases.

Oxidizer Gases

General Requirements—Oxidizer Gases

- Ensure that equipment and valves used with oxygen and nitrous gases do not become contaminated with oil, grease, or other hydrocarbons.
- Store cylinders of oxidizer gases at least 20 feet away from flammable gases, combustibles, oils, and greases.
- Limit sources of ignition.



Indoor Storage of Oxidizer Gases (Not Recommended)

The only exception is for cylinders that do not hold more than 250 standard cubic feet of oxidizer gases used for maintenance or to operate equipment. Oxidizer gas must not be used or stored inside a building unless the building is specially designed for hazardous materials.

Outdoor Storage of Oxidizer Gases (Recommended)

No more than 1,500 cubic feet of oxidizer gas can be stored in each control area.

No more than 15 gallons of liquefied oxidizer gas may be stored in each control area.

Permit/Exempt Amounts

A permit from a fire marshal is required to store more than 504 cubic feet of oxidizer compressed gas *onsite*.

The local fire marshal may not elect to require permits based on the quantities of hazardous materials stored. Check with your local fire marshal for specific permitting requirements.

There is no limit on the amount of compressed inert and asphyxiant gases that may be stored in one storage area.

Inert Gases

Permit/Exempt Amounts

A permit is required if you are storing more than 6,000 standard cubic feet of inert compressed gas.

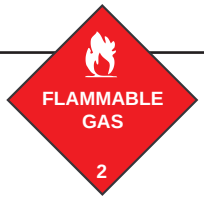
The local fire marshal may not elect to require permits based on the quantities of hazardous materials stored. Check with your local fire marshal for specific permitting requirements.

This guideline applies to storing and transporting portable cylinders of liquefied petroleum gas (LPG). It does not cover dispensing or system installation. If you have liquefied petroleum gas at your USDA Forest Service unit, a service provider can service the units or you can replace depleted cylinders with full ones. Transporting and servicing LPG compressed gas cylinders is included in the regulations. These restrictions are in addition to those on pages 81 and 82. See your hazmat coordinator for dispensing requirements.

Liquefied Petroleum Gas Storage

LPG Storage Restrictions (General Requirements)

- Only a trained service supplier should dispense LPG.
- *NO SMOKING* signs should be posted and enforced; do not allow open flames, smoking, welding, or other sources of ignition within 20 feet of LPG.
- NO LPG should be vented to the atmosphere.
- Storage areas must have *COMPRESSED GAS* and *NO SMOKING* signs.
- If LPG is stored near vehicles, pipes or other suitable barriers should protect the cylinders from being damaged by vehicles.
- Cap all valves when storing LPG.
- Store LPG cylinders in an upright position (or at least no more than 45 degrees from vertical); the relief valve must be in contact with vapor in the cylinder. This requirement does not apply to cylinders with water volume less than 1.3 gallons (such as fuel canisters for lanterns or camp stoves) or cylinders designed to be used in the horizontal position.
- Store LPG cylinders at least 20 feet from flammable and combustible liquids and solids.
- Treat empty LPG cylinders as if they were full.
- A permit may be required to store, use, handle, or dispense LPG. Check with your local fire marshal.



The storage of containers (cylinders and tanks) of LPG is regulated to minimize hazards and protect the safety of personnel. Some specific requirements apply; check with your local fire marshal for possible additional requirements. Indoor storage of LPG is NOT recommended. For additional information on indoor storage of LPG, contact your hazmat coordinator.

Liquefied Petroleum Gas Storage

Indoors
(NOT Recommended)

LPG Indoor Storage (NOT Recommended)

- Minimize the cylinders' exposure to excessive temperatures, physical damage, or tampering.
- Do not store cylinders near exits, stairways, or areas used to leave a building.
- Do not store cylinders on roofs.
- Do not store LPG cylinders in basements or low areas where gases could accumulate.

Storage Limits in Areas Accessible to the Public

Cylinders stored in locations *accessible* to the public may have a maximum water capacity of 2.5 pounds (about 1 pound of LPG). The amount of LPG in all of the containers must not exceed 200 pounds.

Storage Limits in Residences

LPG storage in residences is limited to two DOT-approved cylinders with a maximum water capacity of 2.7 pounds each (about 1 pound of LPG each); for smaller cylinders, their total water capacity must not exceed 5.4 pounds.

Storage Limits in Areas That Are Not Accessible to the Public

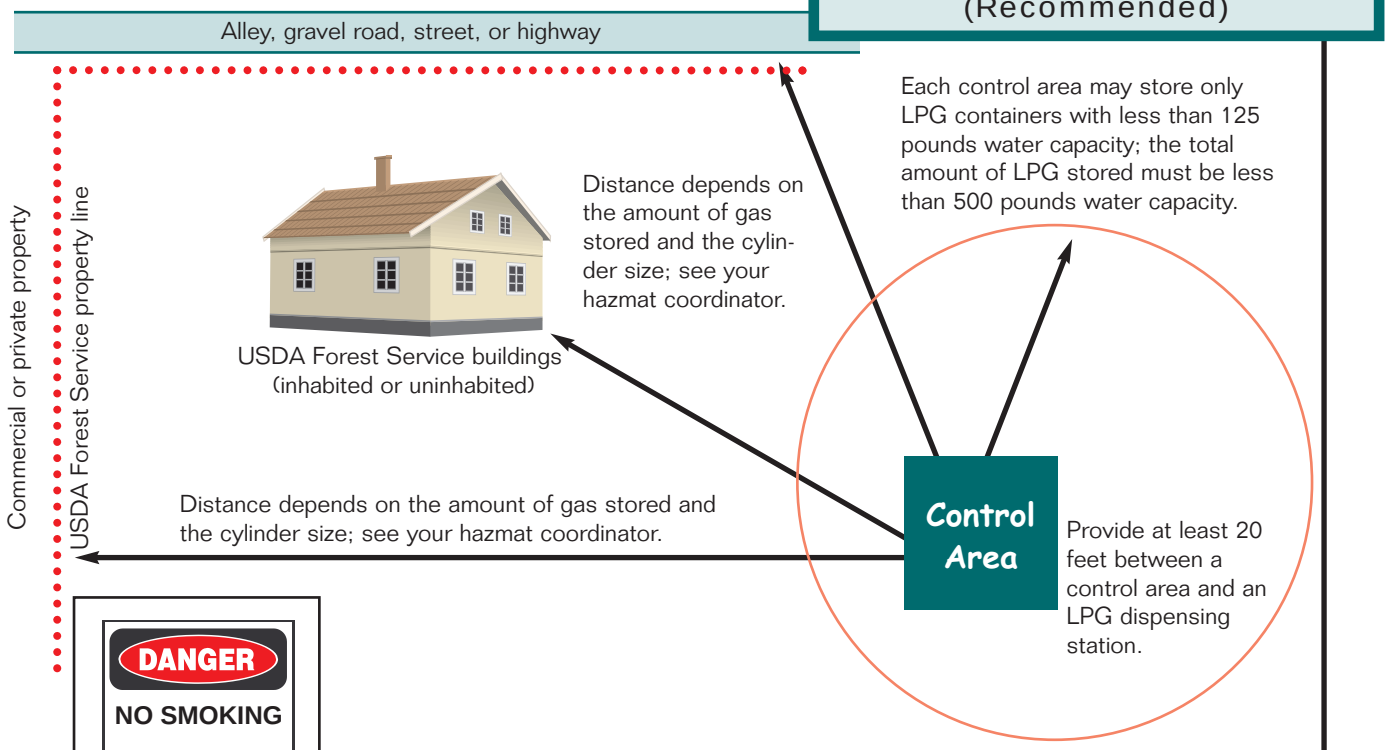
Cylinders stored in locations that are *not* accessible to the public are limited to a maximum of 735 pounds water capacity (three 25-gallon or fifteen 5-gallon cylinders of LPG) per area. Storage areas must be separated by 300 feet if they are on the same floor.

DANGER
COMPRESSED GAS

There are some restrictions on outdoor storage of LPG. Check with your fire marshal to see how these regulations are applied in your area. **Outdoor storage of LPG is recommended.** For outdoor storage of large quantities of LPG, contact your hazmat coordinator.

Liquefied Petroleum Gas Storage

Outdoors (Recommended)



LPG Outdoor Storage (Recommended)

- Minimize the cylinders' exposure to excessive temperatures, physical damage, or tampering.
- Cylinders stored in locations accessible to the public must be enclosed in a lockable, well-ventilated enclosure or rack.
- The storage area must be at least 20 feet from any doorway or opening in a building.
- An outdoor storage area may be covered if the cover and supports are of noncombustible construction and no more than 25 percent of the area's perimeter is obstructed.
- Combustible materials (such as weeds) must be removed within 10 feet of LPG cylinders.

Requirements depend on the amount of compressed gases being transported. These requirements include placarding, the type of vehicle that can be used, and the types of roads that can be traveled. Transportation by aircraft must be coordinated with aircraft owners or operators. Transportation of compressed gases by aircraft is discussed in chapter 6 of *Interagency Aviation Transport of Hazardous Materials*.

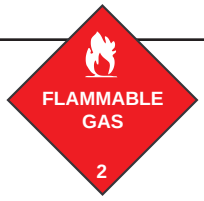
Transportation

General Requirements

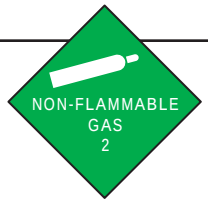
- Do not transport cylinders in closed-body vehicles.
- Ventilate shipping compartments.
- Secure cylinders with racks, boxes, cartons, or lashing.
- Transport cylinders upright with all valves closed and protected.
- Do not transport compressed gases with incompatible materials.
- Use the labels, *FLAMMABLE GASES*, *NON-FLAMMABLE GAS*, *OXYGEN*, or *INHALATION HAZARD*, as appropriate.
- Use vehicle placards if you are transporting 1,001 pounds or more of compressed gases or any quantity of compressed gas that represents an inhalation hazard.
- If the load is 1,001 pounds or more, the driver must have a commercial driver's license, hazmat endorsement, a medical certificate, and training.
- Carry a fire extinguisher (18 pounds, B:C) in a vehicle transporting LPG.
- Do not transport leaking cylinders.

USDA Forest Service-Operated Pickups and Trucks

- Shipping papers are required when transporting a total weight of more than 440 pounds (including cylinders) of most corrosive, flammable, oxidizer, and inert gases (such as ammonia, acetylene, oxygen, argon, nitrogen, butane, and propane) or when transporting any cylinder that weighs 220 pounds or more (including the cylinder). See your hazmat coordinator for details.
- Regardless of how much hazardous materials are being shipped, the driver *must* be informed of types of products and their quantities.
- Remember, to avoid the complexities of shipping papers, placarding, and emergency response training, keep the total weight of *all* hazardous materials *below* 440 pounds and the weight of each cylinder *below* 220 pounds.
- Do not park a vehicle loaded with LPG inside a building.
- No smoking while loading and unloading.
- Use care to avoid dropping cylinders during loading and unloading.



Vehicle Placard



Vehicle Placard

Vehicle Placard

Vehicle Placard

Examples of Compressed Gases Used in the USDA Forest Service

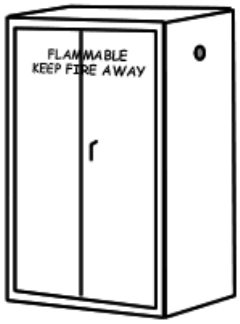
	UN (United Nations) Identification Number
Corrosive (and Poisonous) Gases	
• Anhydrous ammonia (nonflammable)	1005
Flammable Gases	
• Acetylene	1001
Oxidizing Gases	
• Oxygen (nonflammable)	1072
Inert Gases	
• Argon	1006
• Nitrogen	1066
Liquefied Petroleum Gases	
• Butane	1011
• Propane	1978

If you have anything other than the products shown above, contact your hazmat coordinator for specific guidance—restrictions and dangers may be significantly higher than for the compressed gases described here.

Hazardous Materials Storage Cabinets

Design and Construction

- The cabinets you purchase for hazardous materials storage must have:
  - Double-walled construction of metal with welded or riveted joints.
  - A built-in secondary containment or *sill* in the bottom of the cabinet.
  - Three-point door latches.
- Wooden cabinets are allowed only for storing flammable and combustible liquids. They must be made of 1-inch-thick exterior plywood with rabbeted joints fastened in two directions.
- Self-closing doors may be required in some jurisdictions. Check with your local fire marshal.
- Flammable and combustible liquid cabinets must have red lettering on a contrasting background saying: *FLAMMABLE—KEEP FIRE AWAY*.
- Cabinets containing other types of hazardous materials must have red lettering on a contrasting background saying: *HAZARDOUS—KEEP FIRE AWAY*.



Commercial storage cabinets can be purchased in a range of sizes for many different hazardous materials. However, all cabinets must meet certain design and construction criteria to be acceptable.

Cabinet Venting

Venting generally is not recommended because it may reduce the cabinet's fire resistance. However, some jurisdictions may require venting.

If you vent the cabinet, you must vent to the outside, the vent must have a flashback protection device, and there must be an internal fan to ensure air circulation.

Cabinet Storage Limits

Every commercial cabinet that meets the OSHA codes is designed to store a certain volume of product. In addition, there are limits of how much of a particular product can be stored in a container. Here are some guidelines:

- Store no more than a total of 60 gallons of class I flammable liquids and class II combustible liquids. Do not exceed the cabinet's design size; all containers must be sound and tightly closed.
- Store no more than 120 gallons of class III combustibles.
- Do not store more flammable solids than the maximum specified for the cabinet.
- Do not store more oxidizers than the maximum specified for the cabinet.
- Do not store more corrosives than the maximum specified for the cabinet.

Label the cabinet for the type of product being stored.

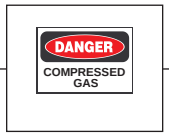
Other Considerations

- Only compatible materials can be stored in the same cabinet.
- Compressed gas cylinders (no matter how small) cannot be stored in storage cabinets.
- A total of 120 gallons of a combination of class I, II, and IIIA materials may be stored in a single cabinet so long as the capacity of the cabinet is not exceeded; no more than 60 gallons of class I and II materials can be stored in a single cabinet.

Firewall Equivalent

Commercial cabinets that meet OSHA specifications also qualify for the 1-hour firewall or 20-foot separation of incompatible materials. If you store incompatible materials in separate cabinets that meet OSHA specifications, you can put the cabinets next to each other. HOWEVER, there are limits to how many cabinets you can use; refer to the section covering the specific type of hazardous product for more information.

Hazardous Product Containers



Compressed Gases

Compressed gas products come in a variety of sizes. These guidelines address only portable containers. Bulk containers have additional safety and regulatory issues. If you have installed a bulk container, check with your unit's hazmat coordinator. Never rely on the color of the cylinder to determine its contents.

Liquefied Petroleum Gas

Liquefied petroleum gas, propane, propylene, butane, butylenes) suppliers provide containers that are portable or fixed in place. These cylinders are measured in *water capacity* in pounds, LPG capacity in gallons, and tare weight in pounds; the size of each cylinder must be marked. All cylinders must have a pressure relief valve. Liquefied petroleum gas containers must be in good physical shape and not have bulges, dents, gouges, or excessive corrosion; damaged containers must be removed from service. All containers must have barriers protecting them from physical damage.

Container Labeling

ALL containers and cylinders must have the original manufacturer's label or an equivalent label. These labels are the only means workers can use to identify the types of hazardous materials with which they may be working. MSDSs are always a requirement as well—they should be readily available in the work area.

Container Functions

Product containers can be used for transportation, storage, and dispensing. Each function has its own specific set of requirements. A container that is legal for dispensing may not be legal for storage or transportation.

Flammable Liquids

Flammable liquids are a special type of hazardous material that have specific container requirements. Flammable liquids (such as gasoline) are the hazardous product that is most commonly dispensed at USDA Forest Service units. Ensure that proper containers are used. The requirements for class IA, IB, and IC flammable liquids and class II combustible materials are:

- Do not use glass containers of any size.
- Do not use plastic containers for storage; the only exception is the use of Dolmar two-compartment, 1-gallon containers for chain saw fuel. Replace plastic containers (except Dolmars) with the safety transport can.
- Jerricans may be used to store class IB or IC flammable liquids.
- Metal drums up to 55 gallons are acceptable for class IA, IB, and IC flammable liquids so long as the drum is sound, tightly closed, and is approved by the DOT.
- Safety cans holding 5 gallons or less can be used to store class IA, IB, and IC flammable liquids; these containers must be red and have a spring-loaded, self-closing lid and functioning flash arrester.
- Metal containers (pint, quart, gallon, 2 gallon, 5 gallon) provided by the original manufacturer are acceptable as long as they are sound and securely closed.
- Metal containers holding more than 60 gallons, but less than 660 gallons, are portable tanks; all portable tanks must be approved by the DOT and marked with the proper shipping name (as defined by the DOT) and identification numbers.
- Dolmar containers are to be used only for transporting and dispensing gasoline, not for storing gasoline; however, oil can be stored in Dolmar containers.

Recommendation: Plastic containers (except Dolmars) and other unapproved containers should be drained of gasoline, air dried, and recycled as scrap or discarded in the trash (check with your recycler or landfill before discarding) and replaced with an approved container.

**Label, label, label:
proper labels are an extremely important
part of container management.**

The Transition to Hazardous Waste

When Does a Product Become a Waste

A *product* becomes a *waste* when you decide it is no longer useful, it does not meet its original specifications and is not usable, or its shelf life has been exceeded for so long that it probably will not perform satisfactorily.

Find a Use Before Declaring a Product a Waste!

If you no longer need a product, the best approach is to find another use for it. If the product is paint, use it as an undercoating. Consider transferring the product to another USDA Forest Service unit. The more you can use up, the less you will have to deal with as a hazardous waste.

When a Product Becomes a Hazardous Waste

If products cannot be used or transferred, or if they no longer meet specifications or their shelf life has been seriously exceeded, you must declare them hazardous wastes and move them to your hazardous waste accumulation area. First, make sure the product has a proper manufacturer's label. Notify your hazardous waste coordinator when you move wastes to the hazardous waste accumulation area.

All containers of hazardous waste must be labeled as a hazardous waste:

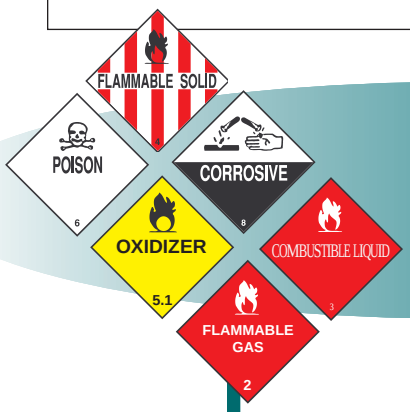
- The date you declared the product a hazardous waste must be marked on the label.
- The marked container must be moved to the hazardous waste accumulation area.
- The amount of hazardous waste moved to the accumulation area must be added to the area log.
- The hazardous waste, along with all other hazardous wastes, must be inspected routinely and disposal arrangements must be made before the allowable storage time onsite has expired.

What is a Hazardous Waste?

Hazardous wastes are any product wastes that:

- Have a flashpoint lower than 140 °F
- Have a pH lower than 2.5 or higher than 12.5
- Are reactive
- Fail the *TCLP* (Toxicity Characteristic Leaching Procedure) test, making it a toxic waste
- Contain a chemical listed by the EPA

See the *Hazardous Wastes* guideline (page 35).



Many of these products will become hazardous wastes; consult the product label and MSDS.

Refer to the *Hazardous Wastes* guideline (page 35).

If a product that becomes a waste no longer has the manufacturer's label (or the equivalent), and you can't positively establish what it is, you have to treat the waste as an *unknown*. See the *Unknown Wastes* guideline (page 34).

When products become wastes, be sure to keep them separated, just as you would keep incompatible products separated.

Keeping Incompatible Hazardous Materials Separated

Incompatible Materials Are Safer When They Are Separated!

Incompatible products and waste must be kept separated. This prevents the materials from reacting in ways that might cause them to burn, explode, produce poisonous gases, or cause other problems.

What Qualifies as Separate?

Except as noted elsewhere in this guideline, keeping incompatible products and wastes separated means physically separating them by at least 20 feet, or by a 1-hour firewall.

Some Storage Pointers

When you are storing flammable or combustible products, be sure you store them on compatible shelving (such as metal shelving). Storing flammable or combustible products on wood shelving is acceptable if the shelving is at least 1 inch thick. All shelving (except in approved cabinets) must have a lip or guard.

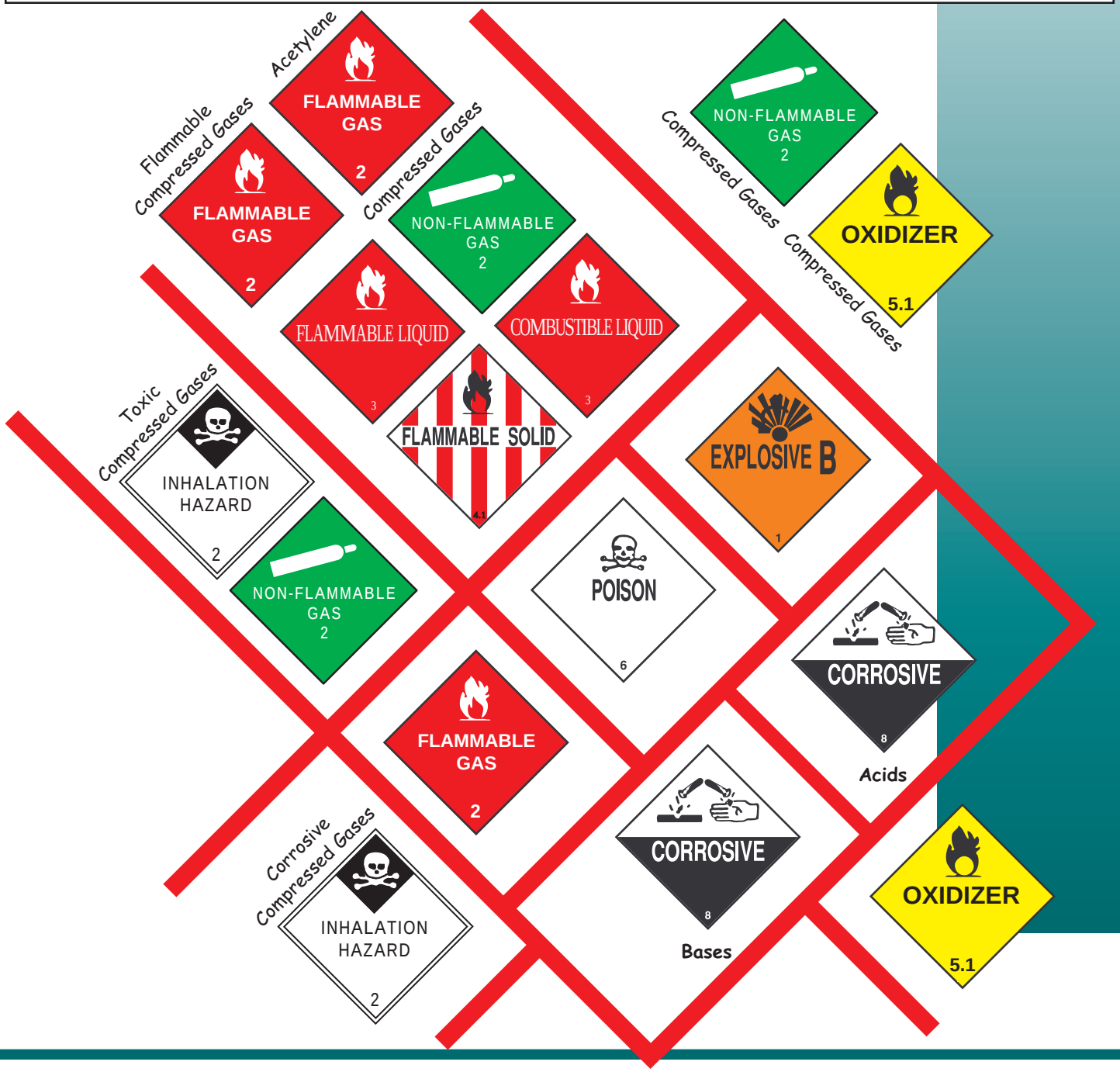
Using Storage Cabinets

Commercially available storage cabinets (such as cabinets for flammable liquids) that meet all OSHA design requirements fulfill the requirements of a 1-hour firewall. Other metal cabinets (such as square cabinets with a pyramidal top often found in USDA Forest Service units) do not have these features and should not be used to meet a 1-hour firewall requirement. Have your forest engineer determine if other types of mobile or portable storage units (such as U.S. Army units) meet the firewall or storage requirements.

Knowing the Hazardous Products That Are Incompatible

The graphic below is a general guide to the types of hazardous products you can store together and the types that you need to separate by 20 feet or a 1-hour firewall. Refer to the product label or MSDS to determine the product type.

The products indicated by the placards are compatible with each other if shown within the same red lines and incompatible with products shown in other areas surrounded by red lines. The red lines indicate a minimum of 20 feet separation or a 1-hour firewall. However, it may still be preferable to separate these products even farther; for instance, try not to store flammable solids with flammable liquids or compressed gases with flammables.



About the Authors

J. Craig Erickson is a project manager for Management and Engineering Services, L.L.C. (MES). He received his bachelor's degree in aeronautical engineering from Wichita State University in 1969 and was a staff member of New Mexico State University for 18 years. Craig was instrumental in establishing a new business in progressive environmental management in the late 1980s and now owns that business, MES. He has worked with the USDA Forest Service to develop environmental management reference materials and conduct field surveys at forests, ranger districts, and work centers in the Rocky Mountain Region.

William H. McMullen is senior engineer and project manager for Management and Engineering Services, L.L.C. He received his bachelor's degree in engineering from the U.S. Air Force Academy in 1972 and has spent more than 20 years in environmental project activities and senior management of a midsized business supporting the nuclear industry and U.S. Department of Energy. Since joining MES in 1999, Bill has supported field surveys within the Rocky Mountain Region of the USDA Forest Service. He continues to support MES in developing computer-based tools for green purchasing and compliance auditing.

Wes Throop is a project engineer at the Missoula Technology and Development Center (MTDC). He received his bachelor's degree in mechanical engineering from the University of Idaho in 1983. Wes has worked as a smokechaser, hotshot, and engine foreman for the USDA Forest Service and as a civilian mechanical engineer for the U.S. Department of the Navy. Before coming to MTDC in 1999, he worked as a mechanical engineer at the test reactor area of the Idaho National Engineering and Environmental Laboratory near Idaho Falls, ID.

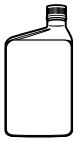
Appendix—Checklists and Recordkeeping Forms

We have prepared checklists and recordkeeping forms for five different types of hazardous materials: used oil, used antifreeze, Ni-Cd batteries, aerosol cans, and mercury (old fluorescent) lamps.

The checklists should serve as a summary of the important items to remember if you are responsible for these materials. The recordkeeping forms should help you keep records that show you have followed the required procedures.

Feel free to modify these checklists or forms in any way that is useful to you. We provide them as a convenience.

Used Oil Management Checklist

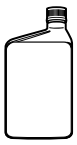


USDA Forest Service Unit _____ Location _____

- ❑ New, unused lubricants (such as oils) are *not* a hazardous waste. Used oils *may* be a hazardous waste if they have picked up heavy metals or similar constituents through use. Used oils, if you assume they are hazardous, and if treated as outlined below, do *not* count towards your unit's hazardous waste generator size. If your used oil is contaminated beyond certain levels, it must be managed as a hazardous waste.
- ❑ Centralize your used oil collection. Try to limit used oil to one location on your unit.
- ❑ Mark all containers with the words, *USED OIL*, and keep all containers closed at all times except when adding or removing used oil. Secondary containment is recommended. Do not use glass containers.
- ❑ If possible, use a lock with restricted access to ensure that no one adds anything that could contaminate your used oil and make it a hazardous waste. Make sure that all used oil added to your collection container has not been contaminated.
- ❑ Use containers sized for your operation (5-, 25-, or 30-gallon drums). Do not use large collection tanks unless there is a specific need. Using small containers will minimize the volume of used oil at risk of becoming contaminated.
- ❑ Accepting minor amounts of used oil from USDA Forest Service employees whose residences are on the forest or unit is acceptable. Count this oil as generated by your unit.
- ❑ Accepting used oil from another forest or unit usually is not allowed by most States without a special permit. Except in special circumstances, do not accept another generator's used oil. If you do, be sure to keep a record of dates, volumes, and sources on the Used Oil Recycling Record.
- ❑ You can transport *no more* than 55 gallons of used oil to a local recycling center at a time.
- ❑ If you have a transporter pick up your used oil, be sure to record the transporter's name and EPA identification number, and the destination facility name and EPA identification number. In some States, transporters and recycling facilities require special permits, so record the permit information as well. Be sure to keep a record of dates, volumes, and sources on the Used Oil Recycling Record.
- ❑ If you choose *not* to manage your used oil as described above, or if your used oil is contaminated, you must relocate it to your hazardous waste accumulation area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Used Oil Recycling Record[1]



USDA Forest Service Unit _____ Location _____

Date	Volume of Used Oil	Where Was It Recycled? (Name/Location, EPA ID)[2][3]

Notes

1. Keep this information on file with your area environmental recordkeeping custodian.
2. If you had a transporter pick up your used oil, note the transporter's name and EPA identification number, the destination of the used oil, and the destination facility's EPA identification number.
3. If you take your used oil to a recycling center, remember, you can transport *no more* than 55 gallons at one time. Record where you took the used oil for recycling.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Used Antifreeze Management Checklist

USDA Forest Service Unit _____ Location _____

- ❑ New, unused antifreeze is *not* a hazardous waste. Antifreeze *may* be a hazardous waste if it has picked up heavy metals or similar constituents through use. Used antifreeze, if you assume it is hazardous, and if it is treated as outlined below, does not count towards your unit's hazardous waste generator size.
- ❑ If you generate a considerable volume of used antifreeze from vehicles, consider using an antifreeze recycler. These units remove antifreeze from a vehicle, clean and restore it to proper specifications, and return it to the vehicle. If you use an antifreeze recycler, you do *not* have to decide if your used antifreeze is hazardous and it does *not* count towards your unit's hazardous waste generator size.
- ❑ If you do not recycle your used antifreeze onsite, you should collect it in sound and tightly closed containers; secondary containment is recommended.
- ❑ Mark all containers with the words, *USED ANTIFREEZE*, and keep containers closed at all times except when adding or removing used antifreeze. Do not use glass containers.
- ❑ Accepting minor amounts of used antifreeze from USDA Forest Service employees whose residences are on the forest or unit is acceptable; count this antifreeze as generated by your unit.
- ❑ If you have a transporter pick up your used antifreeze for recycling, be sure to record the transporter's name and EPA identification number, the destination facility's name, and its EPA identification number. Be sure to keep a record of dates, volumes, and sources on the Used Antifreeze Recycling Record.
- ❑ If you choose *not* to manage your used antifreeze as described above, you must relocate it to your hazardous waste accumulation area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Used Antifreeze Recycling Record[1]

USDA Forest Service Unit _____ Location _____

Date	Volume of Antifreeze	Where Was It Recycled? (Name/Location, EPA ID)[2][3]

Notes

1. Keep this information on file with your area environmental recordkeeping custodian.
2. If you had a transporter pick up your used antifreeze, note the transporter's name and EPA identification number, the destination of the used antifreeze, and the destination facility's EPA identification number.
3. If you take your used antifreeze to a recycling center, record the destination.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Ni-Cd Battery Management Checklist

USDA Forest Service Unit _____ Location _____

- ❑ Alkaline batteries can be discarded in the trash. Most lithium batteries used at USDA Forest Service units also can be discarded in the trash, but first check the battery's Material Safety Data Sheet. All forms of spent nickel-cadmium (Ni-Cd) batteries *must* be considered a hazardous waste and managed separately.

- ❑ Centralize your spent Ni-Cd battery collection in managed areas. Try to limit the collection areas to one location on your unit.

- ❑ Mark all collection containers with the words, *SPENT NI-CD BATTERIES*. You can use any form of container that protects the batteries from damage and contains any leakage.

- ❑ Spent Ni-Cd batteries can be considered a *Universal Waste*. If you manage your spent Ni-Cd batteries as a universal waste, you do *not* have to count them against your unit's hazardous waste generator size. Consider using the *Waste Ni-Cd Battery Recycling Record* for proper recordkeeping.

- ❑ You can transport, ship, or make arrangements for pickup of your spent Ni-Cd batteries. They must be transported to an authorized Ni-Cd battery recycler if you are managing them as a universal waste.

- ❑ If you choose *not* to manage your spent Ni-Cd batteries as a universal waste, you *must* locate your spent Ni-Cd battery collection area in your hazardous waste accumulation area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Waste Ni-Cd Battery Recycling Record[1]

USDA Forest Service Unit _____ Location _____

Date	Volume	Where Was It Recycled? (Name/Location, EPA ID)[2][3]

Notes

1. Keep this information on file with your area environmental recordkeeping custodian.
2. If you had a transporter pick up your waste Ni-Cd batteries, note the transporter's name and EPA identification number, the destination of the batteries, and the destination facility's EPA identification number.
3. If you take your waste Ni-Cd batteries to an authorized recycling center, record the destination.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Aerosol Cans Management Checklist

USDA Forest Service Unit _____ Location _____

- ❑ Aerosol cans that do *not* contain hazardous substances (such as pesticides or flammable materials) *and* are at atmospheric pressure (no pressure left in the can), can be discarded in the trash. Otherwise, they are *hazardous* and must be managed as described below.
- ❑ Centralize your *hazardous* waste aerosol cans in one location on your unit. Be sure to keep incompatible products properly segregated.
- ❑ Mark all *hazardous* spent aerosol can collection areas as *SPENT AEROSOLS*. Keep all containers closed at all times except when adding or removing aerosol cans. Keep the collection container in an area for flammable materials if the content of the aerosol is flammable, or in area for pesticides if the can contains pesticides.
- ❑ If you have a *proper* aerosol can puncturer, puncture the can and collect the hazardous product. Be sure to collect and manage different product types separately.
- ❑ Dry aerosol cans that have been properly punctured and drained can be discarded in the trash. HOWEVER, if the product's Material Safety Data Sheet prescribes a different disposal method (as would be required for pesticides), follow those directions.
- ❑ Include the drained hazardous contents of aerosol cans in your hazardous waste accumulation area until it is time for proper disposal. Follow all hazardous waste management, transport, and disposal requirements.
- ❑ If you choose *not* to puncture aerosol cans that are pressurized or that contain hazardous materials, you can locate them in your hazardous waste accumulation area. Follow all hazardous waste management, transport, and disposal requirements.
- ❑ In some States (Colorado, for instance), spent aerosol cans that are pressurized or that contain hazardous materials can be considered a *Universal Waste*. If this is the case for your State, and you choose *not* to puncture your spent cans, you can collect them in a collection unit marked *SPENT AEROSOL CANS* in a proper storage location before sending them to an authorized aerosol can recycler. In this case, you do *not* have to count the waste hazardous materials content against your hazardous waste generator size. Consider using the *Waste Aerosol Can Recycling Record* for proper recordkeeping.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Waste Aerosol Can Recycling Record[1]

USDA Forest Service Unit _____ Location _____

Date	Volume	Where Was It Recycled? (Name / Location, EPA ID)[2][3]

Notes

1. Keep this information on file with your area environmental recordkeeping custodian.
2. If you had a transporter pick up your waste aerosol cans, note the transporter's name and EPA identification number, the destination of the cans, and the destination facility's EPA identification number.
3. If you take your waste aerosol cans to an authorized recycling center, record the destination.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Mercury Lamp Management Checklist

USDA Forest Service Unit _____ Location _____

- ❑ Lamps that do not contain mercury can be discarded in the trash. Traditional fluorescent lamps contain mercury and *must* be considered mercury-containing lamps. Newer fluorescent lamps that are produced as *low-mercury* lamps can be discarded in the trash. Check the lamp's Material Safety Data Sheet.

- ❑ Centralize your collection of spent lamps that contain mercury to managed areas. Try to limit the collection areas to one location on your unit.

- ❑ Mark all collection containers with the words, *SPENT MERCURY LAMPS*. You can use the original lamp's packaging if you wish, but be sure to use a container that prevents the lamps from being broken.

- ❑ Do not crush lamps that contain mercury at your unit because the lamps contain mercury vapor and mercury solids.

- ❑ Spent lamps that contain mercury can be considered a *Universal Waste*. If you manage your spent lamps that contain mercury as a universal waste, you do *not* have to count them against your unit's hazardous waste generator size. Consider using the *Waste Mercury Lamp Recycling Record* for proper recordkeeping.

- ❑ You can transport, ship, or make arrangements for pickup of your spent lamps that contain mercury. If you are managing them as a universal waste, they must be transported to an authorized recycler for lamps that contain mercury.

- ❑ If you choose *not* to manage your spent lamps that contain mercury as a universal waste, you *must* put your collection area for spent lamps that contain mercury in your hazardous waste accumulation area. Follow all hazardous waste management, transport, and disposal requirements.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Waste Mercury Lamp Recycling Record[1]

USDA Forest Service Unit _____ Location _____

Date	Volume	Where Was It Recycled? (Name / Location, EPA ID)[2][3]

Notes

1. Keep this information on file with your area environmental recordkeeping custodian.
2. If you had a transporter pick up your spent lamps that contain mercury, note the transporter's name and EPA identification number, the destination of the lamps, and the destination facility's EPA identification number.
3. If you take your spent lamps that contain mercury to an authorized recycling center, record the destination.

Any questions? Contact your forest or area hazardous waste coordinator for assistance.

Library Card

Erickson, J. Craig; McMullen, William H.; Throop, Wes. 2004 (revised 2006). Everyday hazmat user's training guide. Tech. Rep. 0471–2810–MTDC. Missoula, MT: U.S. Department of Agriculture, USDA Forest Service, Missoula Technology and Development Center. 116 p.

Covers safe storage, handling, dispensing, transportation, and disposal of hazardous materials used by USDA Forest Service employees. This reference is intended to explain the appropriate rules, laws, and regulations in terms that a layman can understand.

Keywords: compressed gases, corrosive materials, dispensing, facilities, flammable materials, hazardous materials, pesticides, poisons, storage, safety at work, transportation, toxic substances, wastes

Additional single copies of this document may be ordered from:

USDA Forest Service
Missoula Technology and Development Center
5785 Hwy. 10 West
Missoula, MT 59808–9361
Phone: 406–329–3978
Fax: 406–329–3719
E-mail: *pubs_wo_mtdc@fs.fed.us*

For additional technical information, contact Wes Throop at MTDC.

Phone: 406–329–3957
Fax: 406–329–3719
E-mail: *wthroop@fs.fed.us*

Information on everyday hazmat is available on the Internet at:

http://www.fs.fed.us/eng/t-d.php?link=everyday_hazmat

Electronic copies of MTDC's documents are available on the Internet at:

http://www.fs.fed.us/eng/t-d.php

USDA Forest Service and Bureau of Land Management employees can search a more complete collection of MTDC's documents, videos, and CDs on their internal computer networks at:

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