

# Chemical Waste

## Examples of Chemical Waste

Nonradioactive chemical solids, liquids, gases, or other waste types contaminated with hazardous chemicals. [Waste Minimization and Pollution Prevention Guidance](#)

- Non-radioactive lead shielding and lead scrap
- Spent waste solutions
- Used oil of all types
- All types of batteries
- Formalin solutions
- Fluorescent light tubes
- Photographic film processing solutions and x-ray film
- Empty containers (such as drums, solvent bottles and ethanol cans)
- Broken thermometers and other items containing mercury
- Cytotoxic agents & prescription drugs (non-controlled substances)
- Non-returnable gas cylinders and lecture bottles (18-inch length maximum)
- Agarose gels contaminated with ethidium bromide, acrylamide or other contaminants

## Tag and Identify

### General Information

- Use Chemical Waste Tag (NSN-7530-00-L07-5985) from the Self-Service Store/NIH Stock Supply Catalog
- When completing the Chemical Waste Tag, identify all major constituents and hazardous components by chemical name, (Don't use acronym or brand name)
- Complete information on front and back of tag



## Don't Mix

- Mercury or mercury containing materials with any other waste
- Dioxin or dioxin containing materials with any other waste
- Peroxide forming chemicals with any other waste
- Oxidizers with organic compounds, flammable, combustible, and reducing agents (e.g. zinc, alkaline metals)
- Aqueous wastes with organic solvents
- Inorganic acids with:
  - Organic, flammable and combustible materials
  - Caustics and reactive metals such as sodium, magnesium, and potassium
  - Chemicals which can generate toxic gases upon contact such as sodium cyanide, iron sulfide, azides, and phosphides

### [Additional information on chemical segregation](#)

## Store Safely

- Store in laboratory while awaiting pick-up.
- **DO NOT PUT WASTE CONTAINERS IN HALLWAYS OR OTHER PUBLIC LOCATIONS**
- Ensure that all chemical waste containers are closed securely except at the time waste is added
- Use NIH approved funnels with lids. Close the lid when not adding waste to the container
- Place liquid waste containers in secondary containment pan(s)
- Do not fill containers over the indicated fill line
- Keep exterior surface of containers free of contamination
- **Chemical waste MUST be picked up within 60 days of the accumulation start date**



## Disallowed Actions and Disposal Methods in Laboratories

- Discarding chemical waste via sinks, in MPW boxes, or in general trash
- Discarding radioactive materials, oxidizers, heavy metals, phenols, acids, and bases in flammable solvent safety cans
- Treating chemical waste in any manner, including use of ethidium bromide filters
- Disposing of volatile chemicals through evaporation

## Waste Minimization and Priority Chemicals Reduction

NIH seeks to support Federal initiatives to restrict the purchase and use of specific toxic chemicals by employing sound waste minimization techniques and affirmative procurement strategies. [Information on Priority Chemical Reduction Strategies](#)

### Chemical Waste Collected in Empty Chemical Bottles

## Waste Management Procedures

- Empty chemical bottles may be used to collect small quantities (<2 gal) of chemical waste
- Mark **XXX** through the existing bottle label with a black marker
- A completed Chemical Waste Tag is required for each bottle prior to pick-up by the Chemical Disposal Service



### Multiple Containers of Chemical Waste

- Multiple containers of compatible chemicals may be placed in a single box for disposal
- The contents of each container must be identified
  - If waste is in original container write the word "WASTE" on the bottle and the date
  - If the waste is not in original container complete and attach a chemical waste tag
  - For boxes containing only waste in original containers attach a chemical waste tag to the outside of the box. Complete generator information and certification
- Do not stack chemical containers on top of one another
- Do not seal box



### Larger Volumes (>2 Gallons) of Aqueous Mixtures Containing Organic Compounds

- Combine only compatible chemicals in a container. [Information on chemical compatibility](#)
- Examples of waste that can be placed in these containers include formalin, phenol, chloroform, and aqueous liquids with trace organics. [Information on what goes in these containers](#)
- Complete and attach a Chemical Waste Tag to the container when the first waste is added to the container
- **Place the DATE on the tag at the start of waste accumulation**
- Record on the Chemical Waste Tag each chemical added to the container and the concentration or volume
- Store waste containers in secondary containment pans away from ignition and heat sources



### Flammable Liquids

- Use only the safety cans provided by the Chemical Disposal Service, (301) 496-4710
- Complete and attach a Chemical Waste Tag to the container when the first waste is added to the container
- Record on the Chemical Waste Tag each chemical added to the container and the concentration or volume
- Examples of waste that can be placed in these containers include DNA/HPLC wastes, alcohols, xylenes, acetonitrile and organic solvents
- Contents of safety can should not exceed "fill" line on can
- HPLC users can request containers with special fittings to connect to the HPLC machine, (301) 496-4710
- Do not place radioactive materials, inorganic/organic acids, bases or metallic compounds in these containers
- Store waste containers in secondary containment pans away from ignition and heat sources



### Chemically Contaminated Dry Waste

- **DO NOT PLACE radioactive materials, infectious wastes, liquids, sharps or broken glass with this waste**
- Place materials in a clear plastic bag (medium: NSN-8105-01-195-8730; large: NSN-8105-00-826-6468)
- Close plastic bag with filament tape or bag closure tie
- Place bag in a plain cardboard box or double bag the dry waste
- Complete and attach a Chemical Waste Tag
- Examples of this type of waste: contaminated gloves, pipette tips, absorbent paper, and disposable labcoats



*Continued on next page*

**Chemical Waste**

**Pick-up: 301-496-4710**

**Assistance: 301-496-7990**

# Chemical Waste

## Chemically Contaminated Agarose Gels

- Polyacrylamide or any gel contaminated with ethidium bromide, or other stains must be collected as chemical waste
- Do not dispose of gels in MPW boxes
- Gels can be collected in a lined box or 5 gallon pail with liner
- To order a 5 gallon pail container call the Chemical Disposal Service, (301) 496-4710
- Collection containers must not contain any free liquids
- Complete and attach a Chemical Waste Tag to the container. Identify gel types and contaminants



## Explosive/Reactive Chemicals

- **STORE SAFELY** in accordance with manufacturer's instructions
- For explosive/reactive chemicals that appear unstable/compromised call Division of Environmental Protection (DEP), (301) 496-7990 immediately for guidance
- Examples of explosive/reactive chemicals include isopropyl ether, ethyl ether, picric acid, hydrides of sodium, lithium and alkaline metals

[Additional Information on explosive and reactive chemicals](#)

## Disposal of Narcotics and Controlled Substances

- Human use, call Clinical Center Pharmacy, (301) 496-1914
- Nonhuman use, call Veterinary Resources Pharmacy, (301) 435-2780

## Laboratory Moves - Transferring Chemicals

- Call DEP for guidance as soon as you become aware of your move, (301) 496-7990
- Laboratories are responsible for procuring this service from approved vendors

[Laboratory Chemical Move Procedure](#)

## Empty Chemical Bottles

### Empty bottles can be disposed in several ways:

- Empty bottles can be recycled if collected by the Chemical Disposal Service. Leave cap on the empty bottle
- Rinse and collect the rinsate in a chemical waste container. Clean bottle can then be disposed as general solid waste in a Disposable Labware & Broken Glass box
- Empty bottles can also be reused to collect small quantities of chemical waste. (See **Waste Management Procedures**)
- Do not place empty bottles into or around recycling collection bins

## Formalin/Aldehyde Solutions with Tissue, Human and Animal Parts

### Formalin/Aldehyde solutions containing tissue, human and animal parts can be disposed in two ways:

- Separate the tissue from the formalin or formaldehyde solution; dispose of the liquid through chemical disposal service; dispose of the tissue in **MPW box**. (See **MPW Section**) or;
- Solidify the formalin/formaldehyde solution containing tissues by adding Aldex crystalline (powder-based) formula. Aldex is available commercially, call DEP for more information, (301) 496-7990
- Dispose of the solidified material in **MPW box**. (See **MPW Section**)

## Batteries

- UPS (uninterruptible power source) batteries must be removed from the UPS casing prior to pick-up. Call DSEIS, (301) 496-4131
- All batteries must be collected for recycling by the Chemical Disposal Service, including non-UPS batteries internal to equipment
- Examples are alkaline, all rechargeable batteries, lithium, lead-acid and all other types

## Light Tubes, Lamps, and Devices/ Equipment Containing Mercury

- Examples are fluorescent light tubes, compact fluorescent light tubes, mercury and sodium vapor lamps, Ultraviolet and HID (high-intensity discharge) lamps, thermometers, and thermostats
- These devices contain mercury and must be managed as chemical waste
- ORF facility maintenance is primarily responsible for the replacement and management of spent tubes. Call (301) 435-8000

[NIH's Mercury Abatement Program](#)