

Chemical Waste

Non-radioactive chemical (solids, liquids, gases) and other waste with hazardous chemicals. [Waste Minimization and Pollution Prevention Guidance](#)

Examples of Chemical Waste

- Non-radioactive lead shielding and lead scrap
- Chemical reagents; disinfectants, all types
- Oils, all types
- Batteries, all types
- Sodium vapor and HID lamps
- Fluorescent light tubes and bulbs
- Photographic film processing solutions and X-ray film
- Mercury-containing items (thermometers, batteries, UV lamps, sphygmomanometers, etc.)
- Cytotoxic or Cytostatic agents & prescription drugs and antibiotics (non-controlled substances)
- Non-returnable gas cylinders and lecture bottles
- Gels contaminated with ethidium bromide, acrylamide, or other stains
- Pharmaceuticals containing items (e.g., animal feed and water bottles)

Tag and Identify

General Information - Identification and labeling

- Use Chemical Waste Tag (NSN-7530-00-L07-5985) from the Self-Service Store/NIH Stock Supply Catalog
- Identify all major constituents and hazardous components by chemical name
- Don't use acronym or brand name
- Complete information on front of tag as soon as the first drop of waste is added to the container
- Label Erlenmeyer flasks, beakers' and aspirator waste containers with the word "Waste," chemical contents, and date
- Tag and label HPLC interim waste collection containers



[Additional information on chemical waste tag](#)

Do not 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
- Oxidizing agents with organic compounds, flammable, and combustible materials
- Oxidizing agents with reducing agents (e.g., zinc, alkaline metals)

Strong Acids with:

- Organic, flammable, and combustible materials
- Basic (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 in the laboratory where the waste is generated while awaiting pickup
 - **DO NOT PUT WASTE CONTAINERS IN THE HALLWAY OR OTHER PUBLIC LOCATIONS.**
 - **DO NOT TRANSPORT WASTE ACROSS HALLWAY TO ANOTHER LOCATION FOR STORAGE**
- 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) away from ignition and heat sources
- 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**



Waste Container Storage

Prohibited waste Management Practices in Laboratories

Forbidden waste disposal methods

- Discarding chemical waste via sinks (Except where authorized by the [NIH Drain Discharge Guidance](#)), in Medical Pathological Waste (MPW) boxes, or trash bins and dumpsters
- Discarding radioactive materials, oxidizers, heavy metals, phenols, acids, bases, chemicals deemed toxic by inhalation hazards, explosive and reactive chemicals in flammable solvent safety cans
- Treating chemical waste in the laboratory. Example: **Evaporating volatile chemicals in laboratory spaces or chemical hoods; Acid/Base neutralization; Waste dilution**

Waste minimization

- NIH seeks to support Federal incentives to restrict the purchase and use of specific toxic chemicals by employing sound waste minimization techniques and affirmative procurement strategies. [Information on Toxic Chemicals Reduction Initiative](#)
- Before purchasing new chemicals, check out NIH's free surplus chemical inventory at the NIH [FreeStuff website](#). Contact DEP (301-496-7990) for information on NIH's solvent recycling program

Waste Minimization and Toxic Chemicals Reduction

Chemical Waste Collected in Empty Chemical Bottles

Multiple Containers of Chemical Waste

Larger Volume of Aqueous Mixtures Containing Organic Compounds

Flammable Liquids

Chemically Contaminated Dry Waste

Waste Management Procedures

Waste collection in empty containers

- Empty chemical bottles may be used to collect small quantities of chemical waste
- Cross out the original label and use a chemical waste tag
- A completed chemical waste tag is required for each bottle before pick-up by the Chemical Waste Services



- Multiple containers of compatible chemicals may be placed in a single box for disposal
- The chemical contents of each container must be identified
 - For chemical waste that is in its original container, write the word “WASTE” on the bottle and the date
 - For chemical waste that is not in its original container, complete and attach a chemical waste tag
 - Compatible materials in their original containers can be placed into an empty box with a chemical waste tag attached to the box. Complete generator information and chemical characteristics
- Do not stack chemical containers on top of each other
- Do not seal the box



Large volume of aqueous waste collection

- Chemical waste containers (3 or 5 gal) can be requested from Chemical Waste Services, (301) 496-4710
- Combine only compatible chemicals in a container. [Information on chemical compatibility](#)
- Examples of waste 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 its concentration and volume
- Store waste containers in secondary containment pans away from ignition and heat sources



Large volume of flammable waste collection

- Use only the safety cans provided by the Chemical Waste Services, (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 and volume
- Examples of waste that can be placed in these containers include DNA/HPLC wastes, alcohols, xylenes, acetonitrile, and organic solvents
- Contents within the safety can should not exceed the “fill” line demarcated on the can
- HPLC users can request containers with special fittings to connect to the HPLC machine, (301) 496-4710
- Do not place radioactive material, inorganic/organic acids, bases, metallic compounds, or mixtures with high water content in these containers
- Store waste containers in secondary containment pans away from ignition and heat sources



Contaminated Dry waste collection

- **DO NOT PLACE radioactive materials, infectious wastes, liquids, biohazard bags, sharps, or broken glass with this waste**
- Place materials in a clear plastic bag (NSN-8105-01-195-8730)
- 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: chemically contaminated gloves (non-pathogenic), pipette tips, absorbent paper, and disposable lab coats



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Chemical Waste

Chemically Contaminated Gels

- All Gels contaminated with ethidium bromide, polyacrylamide, or other stains must be collected as chemical waste
- Do not dispose of gels in MPW boxes
- Gels can be collected in a plastic bag lined box or 5-gallon pail with liner
- To order a 5-gallon pail container, call the Chemical Waste Services, (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
- Container must be closed except when adding waste



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 peroxidized ethers, dry picric acid, organic peroxides, peroxy acids, polynitro compounds, hydrides of sodium, lithium, and alkali metals

Additional information on explosive and reactive chemicals

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

Disposal of Narcotics and Controlled Substances

- 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

Laboratory Moves Transferring Chemicals

Empty Chemical Bottles

- All empty bottles (glass, plastic, and metal) that previously contained chemicals (liquid, solid) or buffer saline solutions can be recycled if collected by the Chemical Disposal Service. Leave the cap on the empty bottle
- Call Chemical Waste Services to request collection totes for the empty bottles
- Empty bottles and totes are to be stored in labs before pick up
- Empty bottles that previously contained infectious or radioactive material are **not** acceptable for recycling
- Empty bottles can also be reused to collect small quantities of chemical waste (see [Waste Collection in Empty Bottles](#))
- **For further guidance, refer to [Lab Waste Disposal Matrix](#) (See Table in the beginning of this guide)**
- **Do not place empty chemical bottles into or around commingled recycling bins**



Batteries

- UPS (uninterruptible power source) Batteries must be removed from the UPS casing before 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

Procurement, Use and Disposal of Mercury and Its Compounds

- Purchase and use of mercury and its compounds are prohibited in accordance with [NIH Policy Manual Issuance 3033](#)
- Exceptions to the prohibition on procurement and use may be granted for limited scientific and medical benefits of mercury or mercury compounds for which there are no acceptable alternatives
- To procure or use mercury product(s), complete [NIH Form 2936](#).
- For incidents involving mercury spills/thermometer breakages, contact the Fire Department. Follow-up notification should be made to DEP (301) 496-7990; DEPDecom@mail.nih.gov.

NIH's Mercury Remediation Program

Formalin/Aldehyde Solutions with Tissue, Human and Animal Parts

- Separate the tissue from the formalin or formaldehyde solution; dispose of the liquid through chemical disposal services; dispose of the tissue in MPW box