



VISUAL ARTS CHEMICAL DISPOSAL GUIDELINES

REGULATED CHEMICAL WASTE

The [US Environmental Protection Agency \(EPA\)](#) and [GA Environmental Protection Division \(EPD\)](#) regulate and monitor the disposal of certain chemicals through the [Resource Conservation and Recovery Act of 1976](#) and the [Georgia Hazardous Waste Management Act](#). As such, Emory is subject to random and unannounced inspections by these agencies. Repercussions of violations include public written notification and could include monetary fines. Additionally, some chemicals may not be specifically regulated, but proper disposal is appropriate due to Clean Water Act concerns or simply a best practices approach. The following guidelines assist in maintaining regulatory compliance.

Chemicals potentially subject to these regulations consist of waste products as well as unused chemicals that no longer have any useful or economic value. More specifically, this includes any chemical that is off spec, expired, contaminated through use, no longer needed, unstable or whose identity is unknown. Since employees are not expected to characterize chemicals in their work area to determine if it is a regulated chemical, all chemicals to be disposed of should be done so through the Environmental Compliance Program (ECP) of the Environmental Health and Safety Office (EHSO).

Disposal of chemicals in the sanitary sewer or by mixing with regular trash is not acceptable. Evaporation of volatile wastes is also unacceptable. Once a chemical or chemical waste is determined to be no longer useful, it is then characterized by the ECP to determine whether it is a regulated hazardous waste. However, to ensure wastes are not improperly disposed of, defining characteristics and specific lists of regulated chemicals will be explained here. A chemical's MSDS sheet is a good source for finding these characteristics. Criteria for making hazardous waste determinations include:

CHARACTERISTICS OF A HAZARDOUS WASTE

Flammability-Flash point <140°F (60°C) (e.g. alcohols, paints, solvents); capable of starting a fire spontaneously, or through friction or contact with water (pyrophoric) (e.g. trimethylaluminum, magnesium powder); ignitable compressed gas (e.g. acetylene); oxidizer (e.g. oxygen, silver nitrate)

Corrosivity-Liquid with pH <2 or >12.5 (e.g. acids or bases); corrodes steel at 6.35 mm/yr (e.g. hydroxides)

Reactivity-Undergoes a violent change without detonation (e.g. picric acid); reacts violently, forms potentially explosive mixtures or generates toxic gas when contacted with water (e.g. sodium metal); contains reactive sulfide or cyanide; readily capable of detonation (e.g. azides)

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Toxic characteristic-Contains any of the following list, including mixtures

Arsenic	m-Cresol	Hexachlorobutadiene	Selenium
Barium	p-Cresol	Hexachloroethane	Silver
Benzene	2,4-D	Lead	Tetrachloroethylene
Cadmium	1,4-Dichlorobenzene	Lindane	Toxaphene
Carbon tetrachloride	1,2-Dichloroethane	Mercury	Trichloroethylene
Chlordane	1,1-Dichloroethylene	Methoxychlor	2,4,5-Trichlorophenol
Chlorobenzene	2,4-Dinitrotoluene	Methyl ethyl ketone	2,4,6-Trichlorophenol
Chloroform	Endrin	Nitrobenzene	2,4,5-TP (Silvex)
Chromium	Heptachlor (and its epoxide)	Pentachlorophenol	Vinyl chloride
o-Cresol	Hexachlorobenzene	Pyridine	

EPA LISTED REGULATED WASTE

F-Lists (Non-specific sources)-These lists apply only to spent materials and contain mostly solvents and wastes from production based processes. These also apply to spill cleanup debris. A brief summary of those listed chemicals follows.

Carbon tetrachloride	Acetone	Isobutanol
Chlorinated fluorocarbons	Benzene	Methanol
Chlorobenzene	n-Butyl alcohol	Methyl ethyl ketone
ortho-Dichlorobenzene	Carbon disulfide	Methyl isobutyl ketone
Methylene chloride	Cresols and cresylic acid	Nitrobenzene
Tetrachloroethylene	Cyclohexanone	2-Nitropropane
1,1,1-Trichloroethane	2-Ethoxyethanol	Pyridine
1,1,2-Trichloroethane	Ethyl acetate	Toluene
Trichloroethylene	Ethyl benzene	Xylene
Trichlorofluoromethane	Ethyl ether	
1,1,2-Trichloro-1,2,2-trifluoroethane		

K-Lists (Process specific sources)-These will not be listed here because most are related to chemical and veterinary pharmaceutical manufacturing, wastewater treatment, and other production related processes.

P & U-Lists (Acutely hazardous and toxic unused chemicals)-These include off-spec species, container residues and contaminated spill debris thereof. These chemicals are not usually found in Art Departments.

CHEMICAL WASTE DISPOSAL PROGRAM

Handling Guidelines

Segregation of Chemicals - Chemical wastes from each specific process should be stored separately unless approval is received from the [Environmental Compliance Program Office \(ECP\)](#) (404-727-5922). At a minimum, the following wastes should be stored separately: Acids, Bases, Amines, Cyanides, Metals, Oxidizers, Solvents, Sulfides, Water Reactives and Extremely Toxic compounds.

Containers and Packaging-Wastes must be stored in containers made of a compatible material. For example, strong acids may not be stored in plastic bottles, and hydrofluoric acid may not be stored in glass bottles. ECP is usually not able to provide containers for chemical storage, nor are waste containers returned unless specifically instructed to do so. Empty containers in which the product was originally received are best reused as waste containers. ECP can provide consultation should you wish to purchase special waste containers.

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All waste containers must have tightly fitting caps and be kept closed at all times except when waste is actually being added. Funnels left in the bottle mouth are not acceptable. Do not overfill liquid containers. To minimize spillage, allow enough air space for expansion.

Labeling- All waste containers must be labeled as to their contents and approximate concentrations. When reusing empty bottles, the original label must be completely defaced. Unused chemicals in their original containers do not need additional labeling. ECP issued waste labels can be found under the "Waste" tab at www.ehso.emory.edu. These labels are formatted for use with Avery #5164 labels or Maco ML-0600 labels.

Inventory Sheet- An inventory sheet must accompany all surplus and waste chemicals received (See "Chemical Disposal Inventory Form" at www.ehso.emory.edu). Quantities listed should be container size - not the amount in the container. For bagged or boxed wastes such as contaminated debris, approximate volumes of the bag or box should be given. For wastes containing mixtures of chemicals, an approximate or range of concentrations should be listed for each chemical, including water.

Waste Pickups- Photochemical pickups are pre-scheduled for every Wednesday. Contact [Tracey Fountain](#) from Environmental Compliance (727-7091) to schedule other pickups. Chemicals should not be transported in personal vehicles.

Waste Minimization- Waste disposal is a costly and environmentally sensitive issue. Since it is illegal to treat or otherwise reduce hazardous waste after it's been generated, it is Emory policy to minimize as much hazardous waste generation as possible.

Possible methods of waste minimization include substituting non-hazardous chemicals for those with regulatory implications or for those of increased toxicity. See each specific waste stream for possible substitutions. Purchasing Control is another method to reduce waste. Purchase only those amounts of product necessary and donate unused products to another user. Students should always take leftover materials with them after their coursework is complete.

SPECIFIC WASTE GUIDELINES

Following are the most common wastes generated at Visual Arts. Please contact EHSO at 727-5922 if you are unsure how to dispose of something. Emory's chemical Waste Disposal Program is not for public use.

Paints and Paint-Related Materials- Dispose of all paints, stains, glazes, primers, sealers, epoxies, paint thinners, etc. as described under [Chemical Waste Disposal Program](#). Only washes from water based paint may go down the drain. Empty paint containers may go in the regular trash if they are completely empty and dry and did not contain any heavy metals (i.e. cadmium yellow). Oil based paints may not be left open to solidify but latex paints can. See "Aerosols" below, for information on disposal of spray paint cans. To reduce paint waste, try to use only water based or powder coat paints whenever possible. Storing paint properly will increase its useful life. If you have leftover paint, donate it to another user rather than disposing of it. Students must take any unused, unwanted paint they have purchased with them at the conclusion of their coursework.

Solvents- Alcohols, thinners, and turpentine are flammable and must be disposed of as [chemical waste](#) and should never be poured down the drain. These items may be mixed in the same waste container.

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Photochemicals-Photochemicals should not be disposed of down the drain and must be collected as [chemical waste](#). Five gallon pails are located throughout the photography lab for photochemical waste collection. Full pails are picked up weekly on Wednesdays and empty containers are returned by Friday of the same week.

Adhesives-Adhesives, epoxies, cements and glues often contain flammable components and must be disposed of as [chemical waste](#). Hardened adhesives can be disposed of in the regular trash if they do not contain any of the constituents listed under [Regulated Hazardous Waste](#).

Aerosol cans-Aerosol cans present a unique hazard in that the pressurization of the container is oftentimes more dangerous than the compound within. Therefore, all aerosol cans, whether full or empty, must be handled as [chemical waste](#). To reduce aerosol waste, use "open" cans completely before starting a new can. To prevent clogs, spray the can upside down after each use and use the propellant to clean the nozzle.

Contaminated Rags and Spill Cleanup Debris-Rags and other materials used to absorb liquids may be hazardous waste depending on what material was absorbed. If the chemical contaminant meets any of the above definitions or is listed under [Regulated Hazardous Waste](#), the absorbent must be disposed of as [chemical waste](#).

Oily Rags-Rags contaminated with oil should be collected as [chemical waste](#). Rags contaminated with Linseed oil must be collected in a container that can be securely closed because they can self ignite if left to dry out.

Oils-Oil and lubricants, including vegetable oil, must be handled as [chemical waste](#). All containers of waste oil must be labeled "Used Oil". Make special note of older oils found as these may contain polychlorinated biphenyls (PCBs). Do not mix these with other oils.

Linseed Oil-Linseed oil is very flammable and can be collected with other solvents listed above.

Cleaning Products- Cleaning products should be used up completely whenever possible. Many cleaning products can be corrosive or flammable in their undiluted state and must be disposed of as [chemical waste](#). See above for disposal of aerosol cans.

Compressed Gas-Cylinders must be returned to the supplier from which they were obtained. Only refillable cylinders should be purchased. If a cylinder cannot be returned to the supplier, contact the [Environmental Compliance Program Office](#) (727-5922) to determine the appropriate method of disposal.

Unknowns-If unable to identify an unlabeled or unknown compound, it should be disposed of immediately as [chemical waste](#). The item must still be listed on the [Chemical Inventory Form](#).

Empty Containers-Completely empty and dry chemical containers may be disposed of in the regular trash as long as they didn't contain a heavy metal (cadmium yellow). Plastics 1-6 may be rinsed out and be recycled through [Emory Recycles](#).

Mercury- Metallic mercury is most commonly found in thermometers, thermostats, and blood pressure gauges. As the potential for spills and contamination is great, mercury containing articles should not be used in projects. Any such articles should be removed as [chemical waste](#).

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Bulbs and Lamps-Certain types of lamps or bulbs contain mercury or other metals under high pressure and are a regulated waste when spent and must be disposed of as [chemical waste](#). Care must be taken not to break these types of lamps. These include, but are not limited to, fluorescent and ultraviolet (UV) lamps, and projector lamps.

- ✦ Anyone handling spent lamps must be trained in these procedures.
- ✦ Lamps must be packaged into a box that is kept closed at all times except when adding lamps.
- ✦ Label the box with “Used Lamps” and the date the first lamp was removed from service.
- ✦ Do not tape or bind lamps together.
- ✦ If you only occasionally change lamps, you may store them temporarily as long as the containers are labeled, in good condition, and stored in a secured, covered area off the ground.
- ✦ Store lamps only until a box is completely filled or for multiple boxes, no longer than a week.
- ✦ Unintentionally broken lamps must be cleaned up immediately and placed in a thick plastic bag inside a box labeled as “Used Lamps” with the date the lamp was removed from service or broken, whichever is earliest. Gently sweep the glass so as to not create dust when cleaning up broken pieces.
- ✦ Used lamps must be disposed of within 6 months from the date on the box.

Batteries-Batteries should be returned to the supplier for recycling if possible. Otherwise, all batteries except standard dry cell alkaline or zinc air batteries must be disposed of through the Environmental Compliance Program as [chemical waste](#). This includes, but is not limited to, lead acid, lithium ion (Li), lithium hydroxide (LiH), mercury (Hg), nickel cadmium (NiCad) or nickel hydride (NiH, NiMH) batteries.

- ✦ Anyone handling used batteries must be trained in these procedures.
- ✦ Cover terminal ends with non-conductive (i.e., electrical) tape.
- ✦ Package batteries into a box and label with “Used Batteries” and the date the first battery was removed from service. Larger lead acid batteries, similar to the size found in vehicles, do not need to be boxed.
- ✦ Leaking batteries must be packaged in Department of Transportation (DOT) approved plastic pails (contact [ECP](#), 727-5922, immediately for pick up).
- ✦ Batteries being collected in quantities greater than ten must be segregated by type, boxed up (preferably in their original packaging), and with the type of battery written on the box.
- ✦ If you only occasionally replace batteries, you may store them temporarily at your building as long as the containers are labeled, in good condition, and stored in a secured, covered area off the ground.
- ✦ Store batteries only until a box is completely filled or for multiple boxes, no longer than a week.
- ✦ Used batteries must be disposed of within 6 months from the date on the box.

Equipment-Computers, monitors, TVs and other electronics contain heavy metals and must be sent for recycling through Campus Services (727-7463).

Asbestos-Asbestos can potentially be found in older building materials such as floor and ceiling tiles, and countertops, as well as equipment like tong holders or high temperature gloves. Only trained personnel should conduct renovation of or around asbestos.

Please use caution when selecting these types of materials for projects. If you have a particular concern about the possibility of asbestos or wish to dispose of equipment that may have asbestos in it, please contact the Industrial Hygiene/General Safety Program (727-5922).