

University of Medicine and Dentistry of New Jersey
EOHSS FACTSHEET

PREVENTING HAZARDOUS WASTE FINES

In the last few years institutions such as MIT, University of New Hampshire, Yale, Stanford, and Boston University have been fined hundreds of thousands of dollars for hazardous waste violations. Here is what UMDNJ Laboratories can do to prevent hazardous waste violations!

Labeling

- U Each hazardous waste container must have a UMDNJ Hazardous Waste Label as soon as you start putting waste into the container. **EPA fine per container: \$1,000.00**
- U List all ingredients, including water. **EPA fine per container: \$1,000.00**
- U When the container is filled, list the accumulation date (a legal term which means the date that the container becomes full). **EPA fine per container: \$5,000.00**
- U Ensure that the waste is brought to the hazardous waste storage room within 3 DAYS of the accumulation date. **EPA fine per container: \$1,000.00**

Storage

- U The container must be kept closed with an appropriate lid/cap (not a funnel) on at all times, with the exception of when it is being filled. **EPA fine per container: \$1,000.00**
- U Containers must be free of precipitate/drips. **EPA fine per container: \$1,000.00**

Training and Drain Disposal

- U Personnel designated as hazardous waste managers in the Lab Safety Plan must complete annual Hazardous Waste Training. (Hazardous Waste Training has been incorporated into Laboratory Safety Initial and Refresher Training since 1999. EOHSS also conducts "on the spot" training when waste is brought to the waste room). **EPA fine: \$2,000.00**
- U Do not pour chemicals down the drain. (See "What chemicals can go down drain or in the trash" for a list of chemicals that can be drain disposed). **Potential EPA fine \$25,000.00**

Which chemicals can go down the drain or in the trash?

Drain Disposal. You may dispose of the following liquid wastes down a sink drain:

- U Weak acids and buffers with pH between 5.5 - 9.0 *if no other hazardous components are present.*
- U Ethanol/water mixtures of less than 10% alcohol *if no other hazardous components are present.*
- U Ethidium bromide aqueous solution *after* it has been run through an extractor: VWR cat #: 28165-500 starter kit, 28165-502 refill. The extractor is disposed of as hazardous waste.

Trash Disposal. You may dispose of the following solid wastes in the trash.

- U Alkaline batteries.
- U Ethidium bromide-stained agarose gels (*with trace amounts of Ethidium Bromide and no other hazardous components present*).
- U Solid *non-hazardous* wastes which may be disposed of in the trash. Refer to page 5 of this factsheet or your laboratory Hazardous Waste Management Plan, (URL address: <<http://www2.umdnj.edu/eohssweb/hw/>> for a comprehensive list of non-hazardous wastes.

Other things that you need to know. . . .

Empty Container Disposal: Bring empty gas cylinders to the loading dock for storage before reclamation to the vendor. All other chemical containers may be disposed of in the trash if they meet the following requirements:

- U The container is completely empty (no liquid remains in the container) **AND**;
- U Refer to the table on the last page of this Factsheet to check if the EPA lists the chemical as Acute Hazardous.
 - If **yes**, give empty bottle to EOHSS as a hazardous waste.
 - If **no**, rinse bottle out, write "EMPTY" across label and arrange for disposal through Environmental Services.

Hazardous Waste Appointments. Call EOHSS to arrange for your chemical waste disposal.

- U Obtain a supply of labels and Chemical Waste Inventory Disposal Request forms from EOHSS or On-Line at: <http://www2.umdnj.edu/eohssweb/publications/factsheets.htm#Hazardous>. EOHSS will give you an Inventory Control Number when you phone for the appointment date.
- U Use a stable cart with raised sides or other means of secondary containment to transport the waste to the designated waste room.
- U Bring spill clean up materials on the cart while you are transporting chemicals to the waste room.

Hazardous Waste Labels

Date the container is full. Within 3 days the container must be brought to waste room.

Given to you when you phone to schedule an appointment.

HAZARDOUS WASTE	
Accumulation Date: _____	Building: _____
Inventory Control #: _____	Extension: _____
Name: _____	
Chemical Name	%
Hazard Class (circle all that apply): Ignite Corr Toxic Oxid React	

PI Name

Estimate % of each component when the bottle is full.

See page 5 for a list of common laboratory chemicals and their Hazard Class. Consult EOHSS for chemicals not on the list.

I - Ignitable: have a flashpoint of < 140°F or contains >10 % alcohol

C - Corrosive: pH < 2 or pH > 12.5

T - Toxic: See page 5 of this handout. For chemicals not on the list, contact EOHSS.

O - Oxidizer: Check MSDS or see page 5 of this handout

R - Reactive: with air or water, explosive or are a cyanide or sulfide

Expired Ethers - High Disposal Costs charged to Departments

Ethyl ether forms explosive peroxides over time. Stabilized ether contains inhibitors which extend the shelf life. However, peroxides can form after the inhibitor gets used up. This is why ethyl ether containers have an expiration date. Date the container when it is first opened - this is when oxygen is introduced into the container. The following chemicals also form peroxides and should be handled accordingly: isopropyl ether, butadiene, cyclohexene, tetrahydrofuran and dioxane.

The University's Hazardous Waste vendor will not handle expired ethyl ether. DOT regulations forbid transportation of these containers unless they have been stabilized. A vendor who handles highly hazardous materials must be called in to stabilize the containers. The costs for this vendor are paid for by the department who created the waste. The cost for the vendor is can be up to \$3,000 per visit. The charge is split among departments who generated the expired ethers.

On-line Laboratory Safety Resources available from EOHSS

Visit the EOHSS web page: <<http://www2.umdnj.edu/eohssweb/eohss.htm>> for a full range of laboratory health and safety links including: forms, recombinant DNA, biosafety, ergonomics, video resources, MSDSs, as well as the following Plans and On-Line training programs: UMDNJ-RWJMS Laboratory Safety Plan, UMDNJ-RWJMS Hazardous Waste Management Plan, On-Line Bloodborne Pathogen/Biosafety training and On-Line Laboratory Safety training.

Vacating Your Lab? Disposal of Chemicals in Their Original Container

Please let EOHSS know as early as possible if you will be vacating your lab as it may cut down on some of the paperwork you need to do! If there are any chemicals in your lab that are in their original container that you do not want, but are in good condition, ask your fellow researchers if they can use them. You will then need to provide EOHSS with a list of unwanted chemicals. EOHSS will also attempt to find researchers who could use them. If there are numerous chemicals to be disposed of, EOHSS will have the University's hazardous waste vendor pick them up directly from your laboratory. We will provide you with labels specifically for this purpose which do not need to be filled out. Chemicals that are not in their original containers will need to be labeled and disposed of as hazardous waste.

Minimizing Hazardous Waste: Not just Good Practice! It's the Law!

Waste minimization is a national policy and the responsibility of each person who generates hazardous waste. Each time that hazardous waste is picked up from our facilities, UMDNJ certifies that the University has tried, to the extent feasible, to minimize the amount of hazardous waste generated at our institution.

Meeting the objectives of waste minimization at UMDNJ requires the cooperation of everyone who produces hazardous wastes. General principles for waste minimization, in order of priority, are:

Elimination - any modification that results in the prevention of waste being generated. For example, ethanol could be substituted for methanol as a solvent, since dilute ethanol is not considered a hazardous waste.

Substitution - replacement of hazardous substances with less hazardous materials.

Scale Reduction - a reduction of the amount of hazardous materials used in a procedure.

Recycling - the reuse of waste materials either back into the same process or into a different process.

Reclamation - any process that allows materials to be used again after some sort of purification, such as solvent distillation.

Treatment - an additional step added to an experimental or analytical procedure to reduce or eliminate the toxicity of the waste.

Hazard Class of Common Laboratory Chemical Wastes and Partial List of Non-Hazardous Waste

The Hazard Class must be indicated when filling out hazard waste labels. For chemicals not listed below contact EOHSS for assistance in determining the hazard class. Solid non-hazardous wastes may be disposed of in the trash. See <<http://www2.umdj.edu/eohssweb/hw/>> for comprehensive lists.

Chemical	Hazard Class	Chemical	Hazard Class	Non-Hazardous Chemicals
Acetaldehyde	I, T	Formaldehyde	T	Ammonium Chloride
Acetic acid	I, C, T	Formic Acid	C, T	Ammonium Citrate
Acetone	I, T	Hexane	I, T	Ammonium Sulfate
Acetonitrile	I, T	Hydrazine	I, T	Benzoic Acid
Acrylamide	T	Hydrochloric acid	C, R, T	Boric Acid
Acrylonitrile	I, T, C	Hydrofluoric acid	T	Calcium Acetate
Aluminum Trichloride	C, R	Hydrogen peroxide	O	Cytosine
Ammonia (anhydrous)	C, T	Iodine	T, C	EDTA
Ammonium hydroxide	C	**Mercury	T	Ferrous ammonium sulfate
Cacodylic acid	T	Methanol	I, T	Lactic Acid
**Carbon disulfide	I, T	Methyl ethyl ketone	I, T	Lithium Sulfate
Carbon tetrachloride	T	Nitric acid	C, O, T	Magnesium Borate
Chloroform	T	**Osmium tetroxide	T, C	NADP
Chromium trioxide	O, T, C	*Perchloric acid	O, C, T	Nicotinic acid
Coomassie Blue	T	Phenol	T, C	Oleic acid
Cyanogen bromide	T	Potassium hydroxide	C	Potassium Phosphate
Dichloromethane	T	Pyridine	I, T	Sodium Acetate
Dimethyl sulfoxide	T	**Sodium azide	T, R	Sodium dodecyl sulfate
Dimethylformamide	T	Sodium hydroxide	C	Sodium phosphate
*Dioxane	I, T	Sulfuric acid	C, T	Tripton X
Ethanol	I, T	*Tetrahydrofuran	I, T	Trypsin
Ethidium bromide	T	Toluene	I, T	Urea
Ethyl acetate	I, T	Trifluoroacetic acid	C, T	Xanthine
Ethyl ether	I, T	Tryptan Blue Stain	T	Zinc Phosphate

Hazard Class: Ignitable Corrosive Toxic Oxidizer Reactive

* May form explosive peroxides ** EPA Acute Hazardous Waste - empty containers must be disposed of through EOHSS without rinsing. Otherwise, triple rinse, collect rinsate & dispose of rinsate as hazardous waste.