

**LABORATORY STANDARD
OPERATING PROCEDURES**



STANDARD OPERATING PROCEDURE FOR CHEMICAL LABELING

INTRODUCTION:

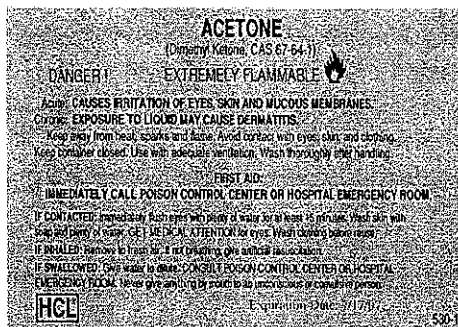
The Mount Sinai Medical Center (MSMC) laboratory personnel must ensure that each container be labeled or tagged with the identity of all **hazardous chemicals** and appropriate hazard warnings. Defaced or illegible labels must be promptly replaced. Whenever a chemical is transferred to an unlabelled container, a new label must be created and securely attached to the container. This Standard Operating Procedure (SOP) has been developed to assist MSMC laboratory personnel ensure that chemical containers are properly labeled.

PROCEDURES:

Each **stock chemical** container arriving at MSMC should already be labeled with the following information (see example below):

- Identity of the hazardous chemical(s) and storage conditions
- Hazard warnings including health hazards, physical hazards, target organs and effects, and recommended personal protective equipment
- The CAS number
- The expiration date

Stock Chemical Label:



The Mount Sinai label, which is used when a chemical is transferred to an unlabeled container, must (see example below):

- Be legible, written in English and prominently displayed
- Identify the **hazardous chemical(s)**, CAS number(s) and storage requirements
- Provide warnings of any **physical and health hazards**
- Be appropriate for the type and size of each container (tags may need to be created for small containers)
- Include **expiration dates** and **receipt/ opened dates**, if applicable



STANDARD OPERATING PROCEDURE
FOR
CHEMICAL LABELING

Mount Sinai Label:

The Mount Sinai Medical Center
Chemical Name: Acetone
Hazard(s): Extremely flammable. Causes irritation of eyes, skin, and mucous membranes. Chronic exposure causes dermatitis.
CAS #: 67-64-1
Storage Conditions: Keep away from heat, sparks and flame.
Expiration Date: 07/17/2007

Note: All containers in the laboratory must have a label or tag that clearly identifies the contents of the container. Abbreviations and chemical formulas may not be used for *hazardous chemical* (see definition below). For very small containers or for flexible containers, tags may be used or the box or rack holding the containers may be labeled. For nonhazardous solutions, abbreviations may be used if posted close to the storage area. A list of common abbreviations for nonhazardous solutions is provided as Exhibit A to this SOP.

Definition

A **hazardous chemical** is one which is a physical hazard or a health hazard.

Health hazard means a chemical for which acute or chronic health effects may occur in exposed employees. This includes chemicals which are:

- carcinogens
- reproductive toxins
- irritants
- corrosives
- sensitizers
- agents which damage the lungs, skin, eyes, or mucous membranes

Physical hazard means a chemical for which there is scientifically valid evidence that it is a:

- combustible liquid
- compressed gas
- explosive
- flammable
- organic peroxide
- oxidizer
- pyrophoric or unstable (reactive)
- water-reactive

The New York City Fire Department Chemical Labeling Requirements

- Labels on certain functional groups, including picrics, perchlorates, peroxides, polymerizers that react violently in polymerization, and potentially unstable compounds, must include expiration dates and shelf life. Expiration dates can either be written on the container or circled (if already on the container).

Peroxide-forming chemicals must be specifically labeled to include date of receipt and date bottle first opened (see SOP for Peroxide-forming Chemical Storage and Testing).

EXHIBIT A

MOUNT SINAI SCHOOL OF MEDICINE

List of Common Abbreviations for Non-hazardous Solutions

CaCl ₂ :	calcium chloride	NaCl:	sodium chloride
DTT:	dithiothreitol	Na ₂ CO ₃	sodium carbonate
EDTA:	ethylenediamine tetraacetic acid	NaPi:	sodium phosphate
EGTA:	ethylene glycol bis(2-aminoethyl ether)-N,N,N',N'-tetraacetic acid	PBS	phosphate buffer solution/saline
H ₂ O:	water	PEG:	polyethylene glycol
KI:	potassium iodide	PMSF:	phenylmethyl-sulfonamide
KCl:	potassium chloride	SDS	sodium dodecyl sulfate
MgCl ₂ :	magnesium chloride	TBE:	89 mM Tris-borate, pH 8.3, 25 mM disodium EDTA
MgSO ₄ :	magnesium sulfate	TES:	10 mM Tris, pH 7.5, 1 mM EDTA, 100 mM sodium chloride
MnCl ₂ :	manganese chloride	Tris:	tris(hydroxymethyl)-aminomethane
MUG:	4-methylumbelliferyl β-D-galactopyranoside		

INTRODUCTION:

Spills of chemicals must be recognized as being potentially hazardous to all persons involved. The range and quantity of hazardous chemicals used at the Mount Sinai Medical Center (MSMC) require preplanning to respond safely to spills. The cleanup of a chemical spill should only be done by knowledgeable and experienced personnel. Spill kits that include absorbents, neutralizing agent and personal protective equipment are available on each floor to clean up minor spills. A **minor chemical spill** is one where there has been no personal injury and the laboratory staff is capable of handling safely without the assistance of safety or emergency personnel. All other chemical spills are considered **major chemical spills**. This Standard Operating Procedure (SOP) has been developed to ensure MSMC personnel know what action to take in the case of a chemical spill.

Report ALL spills requiring use of spill kits to the MSMC Safety Officer at ext. 4SAFE (47233).

PROCEDURES:

Do not attempt to clean up a spill of *any* hazardous chemical larger than 500 ml, or a spill involving chemicals that are highly toxic, by yourself. You should know the hazards associated with any chemicals used in your laboratory by consulting the Material Safety Data Sheet (MSDS) before using them, and you should know how to respond to a chemical spill. MSMC has developed the following protocol for responding to chemical spills:

Minor Chemical Spill

In the event of a minor spill:

- Alert people in the immediate area of the spill
- Don personal protective equipment including, at a minimum, safety goggles, gloves and long-sleeve lab coat
- Avoid breathing vapors from spill
- Confine spill to small area
- Use appropriate spill kit materials to neutralize, absorb and clean up the spilled chemical
- Collect the residue and place in a compatible container. Label the container with a MSMC hazardous waste label completed to identify the contents and dispose as chemical waste by initiating a pickup request through MSMCwaste@hotmail.com
- Notify the MSMC Safety Officer if a spill kit was used to respond to the spill

If you have any questions, contact The MSMC Safety Officer at ext. 4SAFE (47233).

Major Chemical Spill

In the event of a major chemical spill:

- Immediately attend to injured/exposed personnel; evacuate the area, close the door, notify any persons in adjacent areas and call Security ("60") to provide the following information:

Who was involved?

- Your name and phone number
- Name(s) of personnel injured/exposed



**STANDARD OPERATING PROCEDURE
FOR
CHEMICAL SPILL RESPONSE**

What spilled and how much?

Where did spill occur?

- Remain calm. Leave the spill area but stay in a safe area near the spill. Provide the MSMC Safety Officer or other emergency response personnel information on what was spilled, the amount spilled, the MSDS, if available, any injuries or exposures, and how incident occurred.
- If you or other lab personnel have suffered from a chemical exposure or are feeling any symptoms as described on the MSDS, notify your supervisor and go to the MSMC Emergency Department immediately and tell the Emergency Department physicians you have been exposed to a chemical spill. Supervisors should inform the MSMC Safety Officer of any staff requiring treatment in the Emergency Department. All employees should be aware of the location of the MSMC Emergency Department (GP B1) and the shortest route from their laboratory to the Emergency Department. Take the MSDS with you - the RTECS and CAS numbers can assist the physicians in obtaining treatment information.
- If someone is exposed to a spill and is unconscious, move them *if you can do so at no risk to yourself* and call Security ("60") immediately.
- Release reporting may be required – please see "Technical Information" for guidance.

TECHNICAL INFORMATION:

The Mount Sinai Medical Center Incident Report Form

The MSMC Incident Report form must be completed to document any accident or emergency situation that caused, or had the potential to cause, an injury or environmental impact. Incidents to be reported using this form include chemical/oil spills and leaks, fires, unplanned releases of harmful gasses or radioactivity, or other unplanned events that caused or could cause an injury or environmental impact. A copy of the Incident Report Form is provided as Exhibit A to this SOP.

The form is to be completed the same day the incident or event is discovered and submitted to the Environmental Health and Safety Office by one of the following methods:

- Hand carry to Salvatore Tranchina, Senior Director of Environmental Health and Safety, East Building - 1st Floor, L32
- Fax to 1-212-410-6111
- E-mail to sal.tranchina@mssm.edu

Emergency Release Notification

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 103(a) and the Emergency Planning and Community Right-to-Know Act (EPCRA) Section 304 require the reporting of hazardous substance and extremely hazardous substance (EHS) releases above a reportable quantity (RQ) to the environment. RQs for hazardous substances and EHSs can be found in the "List of Lists- Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-To-Know Act (EPCRA) and Section 112(r) of the Clean Air Act" at following website:

<http://www.epa.gov/swercepp/pubs/title3.pdf>



**STANDARD OPERATING PROCEDURE
FOR
CHEMICAL SPILL RESPONSE**

If such a release occurs, the following action must be taken:

The Emergency Coordinator or alternate designated in the Hazardous Waste Contingency Plan (HWCP) must immediately notify the National Response Center (NRC) at 800-424-4402, the State Emergency Response Commission (SERC) at 800-457-7362 and Local Emergency Planning Committee (LEPC) at 718-595-4646 and 311. The notification should include the following:

- The chemical name or identity of any substance involved in the release
- An indication of whether the substance is an EHS
- An estimate of the quantity released into the environment
- The time and duration of the release
- The medium or media into which the release occurred
- Any known or anticipated acute or chronic health risks associated with the emergency and, where appropriate, advice regarding medical attention necessary for exposed individuals
- Proper precautions to take as a result of the release, including evacuation (unless such information is readily available to the community emergency coordinator pursuant to the emergency plan)
- The names and telephone numbers of the person or persons to be contacted for further information.
- The location of the incident should also be reported in the initial notice,

As soon as practicable after a release that requires notice under EPCRA Section 304, the owner or operator of the facility is required to submit a written follow-up notice (or notices, if necessary) to the affected LEPCs and SERCs. This report must contain all information required in the initial notice, plus any updated and additional information with respect to actions taken to respond to and contain the release, known or anticipated acute or chronic health risks associated with the release and, where appropriate, advice regarding medical attention necessary for exposed individuals.

EXHIBIT A

The Mount Sinai Medical Center

One Gustave L. Levy Place, 1190 Fifth Avenue, New York, NY 10029 Telephone: (212) 241-6500

Incident Report Form

Complete this form to document any accident or emergency situation that caused, or had the potential to cause, an injury or environmental impact. Incidents to be reported using this form include chemical/oil spills and leaks, fires, unplanned releases of harmful gasses or radioactivity, or other unplanned events that caused or could cause an injury or environmental impact. Attach additional sheets to this form if needed. **Complete this form the same day the incident or event is discovered and hand carry to: Salvatore Tranchina, Senior Director of Environmental Health and Safety, East Building - 1st Floor, L32; fax to 1-212-410-6111 or email to sal.tranchina@mssm.edu.**

Date/time of incident: _____ Notification date/time: _____

What party was first notified? (e.g. Security [60]): _____

Name of Person Completing Incident Report: _____ Phone: _____

Position (Check One):

- | | |
|---|--------------------------------------|
| <input type="checkbox"/> Faculty | <input type="checkbox"/> Post-doc |
| <input type="checkbox"/> Staff | <input type="checkbox"/> Visitor |
| <input type="checkbox"/> Graduate Student | <input type="checkbox"/> Other _____ |

Department (if applicable) _____ Supervisor (if applicable): _____

Witness(es) _____ Phone where witness(es) can be reached: _____

Description of Incident and Location (attach drawing or map of affected area, as needed) _____

Name(s) of injured/exposed persons: _____

Nature of the injuries: _____

FIRE

Description and location: _____

If so, was fire department dispatched? ____ Yes ____ No

SPILLS/RELEASES

Description of material spilled/released: _____

Quantity Spilled/Released _____ (include units: liters, gallons, etc.)

Exact Location of Spill/Release (if not noted above): _____

Source _____

What time was the flow stopped? _____ Is containment secure? _____

Did it impact the ground/soil? ____ Yes ____ No ____ Don't know

Did any reach a storm channel or storm drain? ____ Yes ____ No ____ Don't know

Did any reach a sanitary sewer? ____ Yes ____ No ____ Don't know

Did any reach the atmosphere? ____ Yes ____ No ____ Don't know

Weather Conditions: _____

Ground Conditions: _____

Miscellaneous Information (note cause if known) _____

Signature: _____ Date: _____

The Mount Sinai Medical Center

One Gustave L. Levy Place, 1190 Fifth Avenue, New York, NY 10029 Telephone: (212) 241-6500

For MSMC EH&S Reporting Use Only:

Response actions taken by Security and/or Environmental Health and Safety:

Was a RQ (Reportable Quantity) spilled/released? Yes No Don't know

Is follow-up required? Yes No

If yes, detail what will be done to follow-up:

List attachments, such as photographs, maps or diagrams: _____

Other notifications made (Check all those that apply, persons spoken to, and note date and time notified. Add any other relevant information.):

<input type="checkbox"/>	EH&S Director	_____
<input type="checkbox"/>	Laboratory Manager	_____
<input type="checkbox"/>	HazMat Team	_____
<input type="checkbox"/>	Regulatory Agency	_____
<input type="checkbox"/>	Other	_____

Contributing/Mitigating Factors (What do you perceive to be the causal factors behind this incident?)

Miscellaneous Notes/Comments:

Responsible party who prepared this close out report:

PRINT NAME

SIGNATURE

Date of close out report completion _____



**STANDARD OPERATING PROCEDURE
FOR
CHEMICAL STORAGE**

INTRODUCTION:

The Mount Sinai Medical Center (MSMC) laboratory staff must ensure that stock chemicals are stored properly in order to prevent spills, uncontrolled reactions and to minimize exposure. Labs are particularly challenged because of the number and variety of chemicals that are handled. All faculty and staff must be aware of the hazards each chemical presents. In order to effectively manage stored chemicals, the following Standard Operating Procedure (SOP) has been developed to minimize exposure, ensure the risks associated with each chemical are assessed, and to measure the proper control of the materials. Additional detailed information is provided in the Mount Sinai School of Medicine Chemical Hygiene Plan.

PROCEDURES:

To ensure that chemicals are safely stored, and to avoid commingling of incompatibles, the MSMC Department of Environmental Health and Safety suggests that each laboratory follow the general storage patterns provided as Exhibit A to this SOP. Additional information is provided in the Chemical Hygiene Plan.

General storage procedures are as follows:

- Avoid chemical storage (even temporarily) on the floor. If a chemical container must be placed on the floor, use a polyethylene bin as secondary containment.
- Avoid storage of chemicals on top shelves.
- Avoid storage of chemicals above eye level.
- Make sure shelf assemblies are firmly secured to walls, are made of compatible material, and are rated to hold weight of expected storage.
- Avoid island shelf assemblies.
- Avoid metal adjustable shelf supports and clips.
- Keep incompatible chemicals segregated. A list of incompatible chemicals is provided as Exhibit B of this SOP. Store acids in a dedicated acid cabinet. Store nitric acid in that same cabinet only if isolated from the other acids. Store both inorganic and some organic acids in the acid cabinet.
- Store flammables in a dedicated flammables cabinet.
- When chemicals have exceeded their expiration date, are in poor condition or are no longer needed, they should be managed as hazardous chemical waste. See Laboratory Waste Management and Disposal SOP.

EXHIBIT A

THE MOUNT SINAI MEDICAL CENTER
STANDARD OPERATING PROCEDURE FOR CHEMICAL STORAGE
SUGGESTED SHELF STORAGE PATTERN

Inorganic Chemicals

- Sulfur, phosphorous, arsenic, phosphorous pentoxide
- Halides, sulfates, sulfites, thiosulfates, phosphates, halogens, acetates
- Amides, nitrates, (not ammonium nitrate), nitrites, azides (store ammonium nitrate away from all other substances--isolate it!)
- Metals and hydrides (store away from any water and store flammable solids in a flammables cabinet)
- Hydroxides, oxides, silicates, carbonates, carbon
- Arsenates, cyanides, cyanates (store away from any water)
- Sulfides, selenides, phosphides, carbides, nitrides
- Borates, chromates, manganates, permanganates
- Chlorates, perchlorates, chlorites, perchloric acid, peroxides, hypochlorites, hydrogen peroxide
- Miscellaneous
- Acids, except nitric (acids are best stored in dedicated cabinets)
- Nitric acid (separate from other acids by distance or use a bin for secondary containment)

Organic Chemicals

- Alcohols, glycols, amines, amides, imines, imides (store flammables in a dedicated cabinet)
- Hydrocarbons, esthers, aldehydes (store flammables in a dedicated cabinet)
- Ethers, ketones, halogenated hydrocarbons, ethylene oxide (store flammables in a dedicated cabinet)
- Epoxy compounds, isocyanates
- Sulfides, polysulfides, etc.
- Phenols, cresols
- Peroxides, azides, hydroperoxides
- Acids, anhydrides (store organic acids in an acid cabinet)
- Miscellaneous
- Peracids – segregate from organic acids and other organic material

- Alcohols, glycols, hydrocarbons, esters, ethers, ketones, etc. (store flammables in a dedicated cabinet)
- Highly toxic chemicals (store in a dedicated cabinet)

EXHIBIT B

**THE MOUNT SINAI MEDICAL CENTER
STANDARD OPERATING PROCEDURE FOR
CHEMICAL STORAGE
INCOMPATIBLE CHEMICALS**

The following table provides guidance on chemicals that must be separated by distance or by use of secondary containment when in storage. For additional information refer to the Mount Sinai School of Medicine Chemical Hygiene Plan.

Chemical	Chemicals Incompatible with
Acetic Acid	Nitric acid, peroxides, permanganates, ethylene glycol, hydroxyl compounds, perchloric acid, or chromic acid
Acetone	Concentrated sulfuric and nitric acid
Acetylene	Bromine, chlorine, fluorine, copper, silver, mercury and their compounds
Alkali Metals	Carbon tetrachloride, carbon dioxide, water, halogens
Alkaline Metals (powdered aluminum or magnesium)	Carbon tetrachloride, or other chlorinated hydrocarbons, halogens, carbon dioxide
Ammonia, Anhydrous	Mercury, hydrogen fluoride, calcium hypochlorite, chlorine, bromine
Ammonium Nitrate	Acids, flammable liquids, metal powders, sulfur, chlorates, any finely divided organic or combustible substance
Aniline	Nitric acid and hydrogen peroxide
Bromine, Chlorine	Ammonia, petroleum gases, hydrogen, sodium, benzene, finely divided metals
Carbon, activated	Calcium hypochlorite and all oxidizing agents
Chlorates	Ammonium salts, acids, metal powders, sulfur, and finely divided organic or combustible substances
Chlorine dioxide	Ammonia, methane, phosphine, hydrogen sulphide
Chromic acid	Glacial acetic acid, camphor, glycerin, naphthalene, turpentine, lower molecular weight alcohols, and many flammable liquids
Copper	Acetylene and hydrogen peroxide
Cyanides	Acids and alkalines
Flammable liquids	Ammonium nitrate, chromic acid, hydrogen peroxide, sodium peroxide, nitric acid and the halogens
Hydrocarbons (propane, benzene, gasoline)	Fluorine, chlorine, bromine, sodium peroxide and chromic acid
Hydrofluoric Acid	Ammonia(aqueous or anhydrous)
Hydrogen Peroxide	Most metals and their salts, alcohols, organic substances, any flammable substances
Hydrogen Sulfide	Oxidizing gases, fuming nitric acid

Chemical	Chemicals Incompatible with
Iodine	Acetylene, ammonia, hydrogen
Mercury	Acetylene, ammonia
Nitric Acid	Acetic acid, hydrogen sulfide, flammable (concentrated) liquids and gases, chromic acid, aniline
Oxygen	Oils, grease, hydrogen, flammable liquids, solids and gases
Oxalic acid	Silver, mercury
Perchloric Acid	Acetic anhydride, bismuth and its alloys, alcohols, paper, wood, and other organic materials
Phosphorus Pentoxide	Water
Potassium Chlorate	Sulfuric and other acids, any organic material
Potassium Permanganate	Sulfuric acid, glycerine, ethylene glycol
Silver	Acetylene, ammonia compounds, oxalic acid, tartaric acid
Sodium Peroxide	Ethyl or methyl alcohol, glacial acetic acid, carbon disulfide, glycerin, ethylene glycol, ethyl acetate
Sulfuric Acid	Potassium chlorate, potassium perchlorate, potassium permanganate

Taken from 'School Science Laboratories -- A Guide' to Some Hazardous Substances' with Technical support from the U.S. Product Safety Commission and the National Institute for Occupational Safety and Health (NIOSH).



**STANDARD OPERATING PROCEDURE
FOR
DRAIN DISPOSAL OF WASTE**

INTRODUCTION:

Disposing of material down the drain is regulated locally by the New York City Department of Environmental Protection (NYCDEP). Certain materials are prohibited from entering the sewage system and others are allowed, but quantities and/or concentration are restricted. The Mount Sinai Medical Center (MSMC) must establish procedures to ensure that nothing that may interfere with the sewage system and/or treatment facility is disposed of down the drain. This Standard Operating Procedure (SOP) provides a summary of the NYCDEP regulations. A poster to be displayed at all laboratory sinks is provided as Exhibit A.

PROCEDURES:

Examples of what **CAN** go down the drain include:

- Water-soluble chemical solutions that are:
 - Non-flammable (flashpoint >140°F)*
 - Non-corrosive (>5 pH <11)
 - Non-toxic
 - Non-explosive
 - Non-reactive
 - Non-malodorous

*A solution with 10% methanol has a flashpoint of 130°F. A solution with 10% ethanol has a flash point of 135°F. These **CANNOT** go down the drain.

- Dilute solutions of inorganic salts **CANNOT** go down the drain if they contain:
 - Arsenic
 - Barium
 - Cadmium
 - Chromium
 - Lead
 - Mercury
 - Selenium
 - Silver (e.g., silver nitrate solution)
- Examples of other materials that **CANNOT** go down the drain include:
 - Halogenated compounds/solvents (e.g., chloroform)
 - Solids
 - Oil
 - Other viscous substances

If you are unsure whether the substance meets the above criteria, collect it and manage as chemical hazardous waste until a determination can be made. Consult the Material Safety Data Sheet (MSDS) for additional information and call **4SAFE** to request assistance in making the determination.

If a non-compliant solution has gone down the drain, call Security immediately (Call 60).



**STANDARD OPERATING PROCEDURE
FOR
DRAIN DISPOSAL OF WASTE**

TECHNICAL INFORMATION:

Rules of the City of New York (RCNY) Title 15, Chapter 19, govern the use of public sewers within New York City. Specifically, RCNY Title 15 §19-03 excludes certain materials and substances from being discharged to the public sewer system, and §19-04 provides for conditional acceptance of certain toxic substances.

The following materials are prohibited from disposal in the public sewer system:

1. Solid, including snow and ice, or viscous substances capable of causing the obstruction of flow.
2. Steam or wastewater above 150°F.
3. Oil sludges, waste oil, motor oil, diesel and other fuels, dielectric fluid, brake fluid, transmission fluid, hydraulic fluid or other similar substances.
4. Flammable or explosive liquids, solids or gases including but not limited to gasoline, benzene, and naphtha. "Flammable" means any waste stream with a flashpoint of less than 140°F.
5. Non-polar materials in concentrations greater than 50 mg/L. Non-polar substances, as defined in RCNY Title 15 §19, are the portion of oil and grease that is not eliminated from a solution containing N-hexane, or any other extraction solvent the EPA shall prescribe, by silica gel adsorption.
6. Coal tar, its derivatives and waste.
7. Paints and paint related waste.
8. Wastewater having a pH lower than 5.0, a pH higher than 11.0 or any other corrosive property likely to cause damage to structures or equipment of the sewerage system or a hazard to personnel.
9. Toxic substances, as defined by the Clean Water Act, except for the following:

Toxic Substance	Permissible Maximum Concentration for Any Given Time (mg/L)	Daily Average Maximum Concentration (mg/L)
Cadmium	2	0.69
Chromium (hexavalent)	5	-
Copper	5	-
Cyanide (amenable)	0.2	-
Lead	2	-
Mercury	0.05	-
Nickel	3	-
Zinc	5	-

10. Noxious or malodorous gases.
11. Radioactive materials, unless all restrictions, prohibitions, and requirements of Article 175 of the New York City Health Code are fully complied with.

Reporting Requirements

If a non-compliant solution has gone down the drain, MSMC personnel involved must contact Security immediately (Call 60). Security will contact the Environmental Health and Safety Officer on call, who will determine if the discharge is in violation of these provisions. If in violation, the Officer shall immediately notify the NYCDEP by telephone at (718) 699-9811 and provide the following information:

- Name of person reporting the discharge
- The exact time and location of the discharge
- The nature of the discharge, including quantity
- What discharge contained
- Any other information requested

Additional notification and reporting, including written reports may be required.

EXHIBIT A



DRAIN DISPOSAL OF WASTE

Examples of what **CAN** go down the drain include:

- Water-soluble chemical solutions that are:
 - Non-flammable (flashpoint >140°F)*
 - Non-corrosive (>5 pH <11)
 - Non-toxic
 - Non-explosive
 - Non-reactive
 - Non-malodorous

NOTE: A solution with 10% methanol has a flashpoint of 130°F. A solution with 10% ethanol has a flash point of 135°F. These **CANNOT go down the drain.*

- Infectious/potentially infectious liquids after treatment with a 50% bleach solution for 8 hours:
 - Blood
 - Cell culture traps
 - Stocks of etiologic agents
 - Supernatants from recombinants

- Dilute solutions of inorganic salts **CANNOT** go down the drain if they contain:

- Arsenic
- Barium
- Cadmium
- Chromium
- Lead
- Mercury
- Selenium
- Silver (e.g., silver nitrate solution)

- Examples of other materials that **CANNOT** go down the drain include:

- Halogenated compounds/solvents (e.g., chloroform)
- Solids
- Oil
- Other viscous substances

If you are unsure whether the substance meets the above criteria, collect it and manage as chemical hazardous waste until a determination can be made. Consult the Material Safety Data Sheet (MSDS) for additional information and call the Chemical Safety Officer at 4-SAFE to request assistance in making the determination.

If a non-compliant solution has gone down the drain, call Security immediately (Call 60). Provide a contact name and number for Environmental Health and Safety to contact. Be prepared to provide information on what chemical was discharged and the approximate quantity and concentration.

POST THIS INFORMATION BY LABORATORY SINK



**STANDARD OPERATING PROCEDURE
FOR
ETHIDIUM BROMIDE WASTE DISPOSAL**

INTRODUCTION:

Ethidium bromide is commonly used in research laboratories at Mount Sinai School of Medicine (MSSM) as a dye to stain agarose or acrylamide gels used for the identification of DNA. While waste ethidium bromide is not a hazardous waste under the Resource Conservation and Recovery Act (RCRA), it is toxic and mutagenic. Therefore, most waste generated from the use of ethidium bromide must be managed in the same manner as RCRA hazardous waste. This Standard Operating Procedure (SOP) provides procedures to properly manage ethidium bromide waste generated in MSSM research laboratories.

PROCEDURES:

Ethidium bromide is a potent mutagen (may cause genetic damage) and is toxic after an acute exposure. Ethidium bromide can be absorbed through the skin, so it is important to avoid any direct contact with the chemical.

Waste Management Procedures

If a spill of untreated ethidium bromide enters a sink or floor drain, contact Security (60). For all other spills, follow the procedures in the Mount Sinai Medical Center (MSMC) SOP for Chemical Spill Response. Do not attempt to clean up even a minor spill if proper personal protective equipment is not available or you are not familiar with the hazards associated with ethidium bromide.

Waste acrylamide and agarose gels

- Waste acrylamide and agarose gels containing ethidium bromide must be collected in a compatible closed container that is labeled "Ethidium Bromide Waste."
- Empty containers may be requested by sending an e-mail to MSMCwaste@hotmail.com.
- Other contaminated debris, such as pipette tips, gloves or paper towels, should be collected in the same container.
- When the container is full, the laboratory must send an e-mail to MSMCwaste@hotmail.com to request a waste pickup.

Waste ethidium bromide stock solutions

- Waste ethidium bromide stock solutions must also be collected in compatible chemical containers that can be securely capped.
- The containers must be labeled "Ethidium Bromide Waste" and, when full or ready for disposal, the laboratory must send an e-mail to MSMCwaste@hotmail.com to request a waste pickup.

Waste aqueous solutions containing ethidium bromide

- Waste aqueous solutions containing ethidium bromide in low concentrations (<1 ug/ml), such as buffer solutions, can be treated and disposed of to the drain if the solution does not contain heavy metals, organic solvents, cyanides or sulfides, and is in accordance with the MSSM Drain Disposal SOP.

**STANDARD OPERATING PROCEDURE
FOR
ETHIDIUM BROMIDE WASTE DISPOSAL**

- Any solution containing heavy metals, organic solvents, cyanides, sulfides or other substances prohibited from drain disposal must be disposed of as hazardous chemical waste in accordance with procedures noted above.
- See MSMC Drain Disposal SOP for information regarding substances prohibited from drain disposal.

WASTE TREATMENT PROCEDURES:

There are a number of commercially available kits that can be utilized for treating spent ethidium bromide buffer solutions. MSSM has chosen to utilize Amresco, Inc. Destaining Bags (<http://www.amresco-inc.com/>) because they are simple to use (see Exhibit A). If a research laboratory would like to utilize another method to treat ethidium bromide solution, the laboratory must first obtain written approval from the Mount Sinai Medical Center Environmental Health and Safety Office.

- Destaining bags will be supplied by the Environmental Health and Safety Office. Requests for bags can be submitted via e-mail to MSMCwaste@hotmail.com.
- Waste ethidium bromide solution (<1 ug/ml) must be treated by placing destaining bag(s) in the solution overnight.
- Each bag will extract up to 5 milligrams (mg) of ethidium bromide from solution during overnight treatment.
- After treating the waste solution in accordance with Amresco, Inc. specifications, utilize an ultraviolet light to determine if ethidium bromide is still present in the effluent.
- If ethidium bromide is still present, the solution must be retreated.
- Spent filters must be disposed of with the waste ethidium bromide gels and other debris.
- If no ethidium bromide is observed in the effluent, the effluent may be flushed down the drain with water.

TECHNICAL INFORMATION:

Decontamination Procedures – Lunn, G. and Sansone, E.B., *Destruction and Hazardous Chemicals in the Laboratory*, John Wiley & Sons, New York, 1990, pp. 119-120.

If a spill of ethidium bromide, either solid or liquid, has occurred, the area must be decontaminated after the product has been removed using the following procedures:

- Wear full protective equipment (lab coat, gloves and goggles).
- Prepare a decontamination solution:
 - 4.2 g of sodium nitrate (CAS # 7362-00-0)
 - 20 ml of hypophosphorus acid (50%) (CAS # 6303-21-5)
 - 300 ml water

**STANDARD OPERATING PROCEDURE
FOR
ETHIDIUM BROMIDE WASTE DISPOSAL**

- Wash area with a paper towel soaked in the decontamination solution.
- Rinse the area five times with paper towels soaked in tap water. Use a fresh towel each time.
- Check area using a UV light to ensure that all ethidium bromide has been removed. Repeat procedure if needed.
- Dispose of towels and decontamination solution as Chemical Hazardous Waste.

For more information on the requirements of drain disposal, refer to the Drain Disposal SOP and/or the Rules of the City of New York (RCNY) Title 15, Chapter 19.

EXHIBIT A

**AMRESKO DESTAINING BAGS
TECHNICAL BULLETIN**

AMRESCO Destaining Bags (E732)



Remove Ethidium Bromide and other dyes from solutions safely, easily.

Ethidium Bromide is an extremely useful, easy-to-use dye for visualizing nucleic acids in solution and in agarose electrophoresis. Although the recent introduction of ethidium bromide solutions into the marketplace has eliminated many of the hazards of using the powdered dye for these applications, researchers are still faced with the difficult and unpleasant task of disposing of this toxic stain. The result is that many researchers neglect to remove ethidium bromide from their staining and electrophoresis buffers before disposing of them down the drain, which contaminates municipal wastewater with this toxic, mutagenic, carcinogenic substance.

AMRESCO now offers a way for you to remove Ethidium Bromide, Coomassie Blue, and other biological dyes and stains from solution for easy, safe disposal. AMRESCO Destaining Bags effectively extract milligram quantities* of ethidium bromide from solution without exposing research personnel to corrosive agents or contaminated substrates. The special adsorbent mixture retains dye molecules in a convenient bag for removal and incineration.

AMRESCO Destaining Bags are made with materials that can be safely disposed in incinerated trash.

- A 0.05 $\mu\text{g/ml}$ solution of ethidium bromide has an A_{255} of approximately 0.01 at a 1X concentration.
 - A 1 $\mu\text{g/ml}$ solution of ethidium bromide has an A_{255} of approximately 0.1 at a 1X concentration.
 - Changing bags during destaining will increase the rate of destaining and yield faster results.
 - Destaining rates are independent of salt concentration.
- * Each bag will extract up to 5 mg of ethidium bromide from solution during an overnight treatment.

ORDERING INFORMATION:

CODE	SIZE
E732	25 bags

Related Products:

Ethidium Bromide Dropper Bottle, Code E406
Ethidium Bromide 10 mg/ml Solution, Code X328
Ethidium Bromide High Purity Powder, Code 0492
Coomassie Brilliant Blue G-250, Code 0615
Coomassie Brilliant Blue R-250, Code 0472

Performance Evaluation on reverse



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY RELOCATION/CLOSE-OUT**

INTRODUCTION:

This Standard Operating Procedure (SOP) has been created to facilitate an often-difficult process for Mount Sinai Medical Center (MSMC) personnel. By observing the deadlines in this SOP, delays and inconvenience will be inconvenienced, and, more importantly, the safety of laboratory personnel will be ensured and regulatory and institutional requirements will be met.

The schedule in this SOP assumes that areas into which you will be moving have adequate ventilation and power, appropriately located for your equipment. If you have any questions, contact Engineering at (x46201) to review these or any other questions regarding infrastructure, immediately.

Please note that the MSMC Compliance Office ensures that all lab renovations follow Environmental Health & Safety as well as institutional standards. The contact numbers below are provided so that you can obtain the most current procedures as these may change in order to meet new regulatory and institutional requirements.

LABORATORY RELOCATION PROCEDURES

6-8 Weeks Prior to Move

Determine Funding Source

There are varieties of expenses related with relocations. You will need to include a funding source on many of the following orders.

Equipment

Check your lease agreements and warranties for any restrictions or special procedures. Be mindful that leased equipment and equipment under warranty can require special handling. If you use a leased copy machine, contact Purchasing (212-731-3957) for instructions on how to manage this equipment.

Building Services

Contact Building Services at x46125 to discuss your move. Once the magnitude of the move has been assessed, a determination can be made whether the department can handle the move or an outside moving company will need to be hired. Building Services can provide boxes for the move. Please note that Building Services is not bonded, so make a point of discussing any valuable or delicate items with him to determine if there are any items that an outside company should handle.

Outside Moving Company

Generally, a manager from the company will want to assess the items to be moved in order to submit a quote. Contact Purchasing at (212-731-3834) to obtain a listing of vendors and verify if bids are required. If hazardous chemicals must be moved, call the Safety Office (x47233) to arrange to coordinate this with the approved outside contractor. A representative from the company will come to your lab to assess the items to be moved in order to submit a quote. Submit a Combination Purchase Requisition, with the quote attached, to Purchasing for processing. The moving company will schedule a date for your move prior to the receipt of a Purchase Order.

Schedule Loading Dock

Contact Materials Management (x44311) to schedule loading dock time if an outside moving company will be using one or more docks to execute your move. Please note that there are different truck-height restrictions for the different docks. Get the appropriate information from Materials Management and convey it to the moving company.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY RELOCATION/CLOSE-OUT**

Telecommunications

Complete an original (green) Telecommunications Work Order. Call (x47711) if you have any questions. Please note that Telecommunication will relocate your telephones.

DO NOT pack or even unplug a telephone from the wall.

Academic Computing

Designate a knowledgeable person to coordinate the move details with Academic Computing. If you have any questions contact Academic Computing (x47091). Please note that Academic Computing **DOES NOT** physically move computers. You will need to have the contracted outside moving company do this.

Keys

If you need only a handful of new keys, complete the Security Key Order Form which can be obtained from the Security office. Include the names of the employees who will receive keys and either fax the form to (876-2384) or mail it to Security at Box 1249. If you require a large number of new keys or need to establish a series of masters or sub masters, contact the Locksmith (x45661) to design an appropriate keying plan.

Signage

If you require new signage, complete a Request for Engineering Services (C6B6) Form on line at <http://intranct1.mountsinai.org/engineering/workreqs.htm> or send a hard copy to Engineering Work Control at Box 1056. Contact Engineering after submitting form to confirm request and scheduling. They will coordinate completion of this request through an approved Mount Sinai vendor.

Engineering Unbolting/Re-bolting of Equipment

If you have any items that need to be dismantled (wall mounted cabinets, etc.) submit a C6B6 Form and contact Engineering after submitting form to confirm request and scheduling. Unbolting will be handled the day before the move; re-bolting will generally be handled the day after the move. If using an outside moving company this will usually be included in their cost.

Packing

Departments are responsible for their own packing. In-house relocation the boxes can be ordered from Building Services by e-mail (____@mssm.edu) or by fax at (534-0579). Indicate the number requested and location and date to be delivered. If using an outside moving company, they should supply and deliver boxes. Boxes should be labeled with their destination in black marker. Extra trash bags and dumpsters can be ordered by calling Building Services at (x46125). **In all cases, packing must be completed before the movers arrive. Failure to do so could substantially delay, or greatly increase the cost of your move.**

Storage Company

Please note the Institution cannot provide any additional storage spaces for departments use. Contact Michael Hamroff at Comprehensive Archives 718-849-7277 for storage of any records which can not be accommodated in your designated spaces. For storage of equipment and other items, contact an outside moving vendor.

Pre-Occupancy Cleaning

Contact Building Services (x46125) to do pre-occupancy cleaning in the spaces you are vacating as well as the spaces you will be newly occupying. You will be referred to the supervisor responsible for your area. Inform the supervisor of your move date, and the areas you will occupy, as well as the areas you will be vacating.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY RELOCATION/CLOSE-OUT**

Lab Equipment Relocation

For relocating lab equipment such as Bio-Safety Cabinets, Laminar Flo Hoods, Compressed Gas Tanks and Cylinders and Water Purification Systems, the following steps need to be taken.

Contact the BioSafety Office (x45169) prior to any decontamination of equipment, lab, etc., of biological wastes. All equipment that is to be disposed of off-site or sent to another facility **MUST** be decontaminated prior to removal.

- 1) **For BioSafety Cabinets (with filters): Contact BioSafety Officer, Phil Hauck at x45169**
Since the hoods on biosafety cabinets require decontamination before moving, your department will need to schedule a date with the approved outside Decontamination Company and with Engineering. Process a Combination Purchase Requisition with the quote attached to purchasing for the decontamination cost. Submit a (C6B6) to Engineering to disconnect the services and reconnect the services in its new location. It is very important for the outside Decontamination Company and Engineering to coordinate dates and times.
- 2) **Laminar Flo Hoods**
A (C6B6) form must be submitted to Engineering to disconnect and reconnect the services in its new location.
- 3) **Water Purification**
A (C6B6) form must be submitted to Engineering if plumbing is required in the new location. In addition, the department's outside service contractor needs to be notified to reinstall the unit if it's being relocated.
- 4) **Compressed Gas Tanks and Cylinders**
Please Note: Compressed gas tanks and cylinders must be moved by the Supply Company. Therefore, your department will need to schedule this with the appropriate Supply Company. All gas cylinders must be placed in stands or be securely chained to the wall. If wall brackets and chains must be installed in the area where you are relocating, your department will need to submit a (C6B6) to have this installed before these tanks can be moved.

***Only ONE C6B6 should be submitted to Engineering with all your requests.**

Chemical Safety

If hazardous chemicals must be moved to a new location, call the Safety Office (x47233) to arrange for the approved outside contractor to provide a quote to conduct this move. If your move involves chemical disposal, submit a request via email at MSMCwaste@hotmail.com or call 4SAFE. Provide the lab room numbers, approximate quantity and type of waste and contact information. The approved outside contractor will be scheduled to remove all unwanted unused chemicals and chemical wastes.

Radiation Safety

If radioactive materials were handled in an area that you are vacating, call the Radiation Office at (x42269) to arrange for disposal of all radioisotopes and related samples/specimens that are no longer needed or to arrange to move radioactive materials to a new location. The Radiation Office will also schedule an inspection of the area immediately after your departure.

Biological Safety

Any/all of the agents found on the Centers for Disease Control and USDA Select Agents list have specific requirements for destruction/disposal of the agent. Contact the BioSafety Office (x 45169) at least 8 weeks prior to lab relocation, so that the appropriate agency controlling the use of these agents can be notified and arrangements made for disposal or relocation of the agents.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY RELOCATION/CLOSE-OUT**

General Environmental Health and Safety Questions

If there are questions regarding disposal of waste at the old lab area or new waste to be generated at the new lab location, email Salvatore Tranchina at sal.tranchina@mssm.edu or call (x89045)

1 WEEK BEFORE THE MOVE

Contact Building Services (x46125) to arrange for pickup of any debris (solid waste, paper, cardboard, wood packing material, etc) generated as a result of preparation for the move into the new lab area. All debris must be placed in a container provided by Building Services and must be positioned in a safe location on the floor.

MOVING DAY

Assign a staff member to oversee the process and to assure a smooth and coordinated process. If your relocation involves multiple rooms, assign one staff member to coordinate the move at the areas being vacated and one staff member to coordinate at the new location. Each person should be knowledgeable as to what is to be moved and where it will be relocated.

No equipment, files, papers or garbage may be left behind in the spaces you are vacating. Contact Building Services to remove all office furniture and equipment that will not be moved to the new location. If the area you are vacating requires cleaning, the department will be charged.

LABORATORY CLOSE-OUT PROCEDURES:

Notify the Grants and Contracts Office (X____) of the anticipated date for the termination of research activities.

Equipment

Check your lease agreements for any restrictions or special procedures for leased equipment. Be mindful that leased equipment and equipment under warranty can require special handling. If you use a leased copy machine, contact Purchasing (212-731-3957) for instructions on how to manage this equipment.

Notify Building Services (x46125) and make arrangements for disposal/discard of unwanted items such as furniture, lab equipment, refrigerators, or freezers. All laboratory equipment that is to be disposed of off-site or sent to another facility must be decontaminated prior to removal. Depending on types of hazards, contact Chemical Safety (x47322), BioSafety (x45169) or Radiation Safety (x42269) to obtain assistance. All biosafety cabinets require decontamination by an approved outside decontamination company and must be coordinated with Engineering to disconnect wiring. Submit a C6B6 Form to Engineering for this request.

Chemical Safety

If your lab closure requires a cleanout of stock chemicals and/or chemical waste, submit a request via email at MSMCwaste@hotmail.com or call 4SAFE. Provide the lab room numbers, approximate quantity and type of waste and contact information. The approved outside contractor will be scheduled to remove all unwanted unused chemicals and chemical wastes.

Radiation Safety

If radioactive materials were handled in an area that you are vacating, call the Radiation Office at (x42269) to arrange for disposal of all radioisotopes and related samples/specimens. The Radiation Office will also schedule an inspection of the area before your departure.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY CLOSE-OUT**

Biological Safety

Any/all of the agents found on the Centers for Disease Control and USDA Select Agents list have specific requirements for destruction/disposal of the agent. Contact the BioSafety Office (x 45169) at least 8 weeks prior to lab relocation, so that the appropriate agency controlling the use of these agents can be notified.

General Environmental Health and Safety Questions

If there are questions regarding disposal of waste, email Salvatore Tranchina at sal.tranchina@mssm.edu or call (x89045)

TECHNICAL INFORMATION:

In order to perform a safe and efficient laboratory close-out, the following procedures must be followed:

1. Notify the Grants Office of the anticipated date for the termination of research.
2. Notify Facilities Management and make arrangements for disposal of unwanted items such as furniture, lab equipment, refrigerators and freezers.
3. Notify the Safety Officer and make arrangements for the disposal of chemicals, biological specimens, "sharps" items, such as unwanted scalpels, needles, pipettes, and unknown/unidentified containers.
4. Notify Radiation Safety and make arrangements for the removal or disposal of all radioisotopes and related samples that are no longer required
5. All laboratory equipment to be disposed of off-site or sent to another facility must be decontaminated prior to removal - depending on the type of hazard, the Chemical Safety Officer, BioSafety Officer or Radiation Safety Officer must be contacted to assist in this effort
6. Any/all agents found on the Center for Disease Control/USDA Select Agents list have specific requirements for the destruction/disposal of the agent.
7. Notification *must be given* to the BioSafety Officer and the regulatory agency controlling the use and disposal of USDA Agents -if the agent is to be sent to another institution, all regulations under 42 CFR Part 73 must be adhered to in order to prevent a violation of law

The EH&S Hazardous Waste Coordinator is the point of contact responsible for scheduling and coordinating hazardous material clean-out and removal activities prior to an evacuation of laboratory personnel and commencement of contractor activity within an area. The EH&S Hazardous Waste Coordinator is responsible for the following:

- Making an appointment to visit and assess the space, once contacted by the facility manager or laboratory manager
- Notifying other disciplines within EH&S (radiation, biohazard, industrial hygiene) to schedule and coordinate lab clean out activities related to each of the disciplines
- Speaking with the Faculty Lab Representative (FLR) to evaluate their progress toward completion of tasks set forth in the lab close-out procedure checklist
- Assessing the scope of clean out in order to determine timeline and physical resources necessary to perform the lab clean out
- Ensuring the accuracy of, signing and maintaining of files for the Department of Transportation (DOT) manifests, Land Disposal Restrictions (LDRs) and Hazardous Waste Profiles

SAFETY OFFICER.....x4SAFE

RADIATION SAFETY.....x42269

BIOSAFETY OFFICER....x41451



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY WASTE
MANAGEMENT AND DISPOSAL**

RADIOACTIVE WASTE

Definitions:

- **Radioactive Waste** includes any form of waste containing radioactive material.
- **Users** are MSMC personnel who have received training and are authorized to handle radioactive materials by the MSMC Office of Radiation Safety.

Procedures:

- At MSMC users are provided with designated containers for temporary storage of Radioactive Waste in their laboratories.
- Once the containers are full, users bring the waste, accompanied with appropriate paperwork, to the centralized Radioactive Waste processing center located at Atran 702.
- Only non-hazardous and biodegradable liquid wastes containing very low level of radioactivity are allowed to be disposed through laboratory sink.

Contact Information:

For information regarding processing and disposal of radioactive wastes call the MSMC Office of Radiation Safety at ext. 42269.

If unable to contact Radiation Safety or for other questions email Sal Tranchina at sal.tranchina@mssm.edu.

SHARPS WASTE*

Definitions:

A **Sharp** is any glass, metal, plastic instrument or item that can cut or has the potential to cut, puncture, scratch or abrade skin.

Biomedical Sharps Waste is a sharp that is potentially infectious. Examples include used needles; unused needles for disposal; used blood vials; scalpel blades, pasteur pipettes, broken and unbroken glass that have been in contact with infectious agents.

* See Exhibit A for examples of what items must be included in Biomedical Sharps Waste.

Procedures:

- Discard Biomedical Sharps Waste into approved biomedical sharps containers (gray or red rigid containers).
- Keep Biomedical Sharps Waste containers closed.
- Do not place trash in Biomedical Sharp Waste containers.
- No Sharp may be disposed of in the regular trash.
- If a Sharp is contaminated with only a hazardous chemical (such as pipette tips contaminated with ethidium bromide or 2-mercaptoethanol) and manage as Hazardous Chemical Waste. Contact MSMCwaste@hotmail.com to request appropriate containers to collect this waste and for pickups.

Contact Information:

For pickups and additional Biomedical Sharps Waste containers, page Biosystems at 41300 x 4639 or 4640.

For other questions, contact the MSMC Biosafety Officer at Philip.hauck@mssm.edu or call ext. 45169.

For pickups and containers for sharps that are contaminated with chemicals, email MSMCwaste@hotmail.com

If unable to reach contacts above or for other questions, email Sal Tranchina at sal.tranchina@mssm.edu.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY WASTE
MANAGEMENT AND DISPOSAL**

OTHER RECYCLABLE GLASS WASTE

Definitions: *Recyclable Glass Waste* includes stock chemical bottles that are not heavily contaminated. Glass waste that is heavily contaminated with chemicals must be managed as Hazardous Chemical Waste. Other broken lab glassware should be placed in the sharps containers for disposal.

Procedures:

- For Recyclable Glass Waste that held a hazardous chemical:
 - Triple rinse the container, collect the rinsate and manage as Hazardous Chemical Waste.
 - Mark out or remove the chemical label but ***do not remove bar code, if present.***
- Place glass containers in the designated glass recycling bin. Contact msmcwaste@hotmail.com for the location of the designated collection bin on your floor.
- Place plastic containers in the regular trash.

Contact Information:

For more information on this program email MSMCwaste@hotmail.com or sal.tranchina@mssm.edu

INFECTIOUS/BIOMEDICAL WASTE (“RED BAG”)*

Definitions:

Infectious/Biomedical Waste includes all human blood and blood products; human pathological waste; waste from animals treated with human pathogens/recombinant DNA; cultures and stocks of agents that are infectious to humans; and used contaminated gloves, booties, gowns, etc.

* See Exhibit A for examples of what items must be included in Biomedical Waste.

Procedures:

- Discard **solid** Infectious/Medical Waste in designated Infectious/Medical “Red Bag” waste receptacle.
- Do not place trash or Hazardous Chemical Waste in these containers.
- **Liquid** Infectious/Medical Waste must be autoclaved or treated overnight with a suitable disinfectant and disposed of to the sanitary sewer.

Contact Information:

For pickups and additional containers, contact MSMC Building Services - ext. 46125.

For other questions, contact the MSMC Biosafety Officer - email at Philip.hauck@mssm.edu or call ext. 45169.

UNIVERSAL WASTE

Definitions:

Universal Waste includes:

- Spent batteries including lead acid, mercury, nickel-cadmium, silver and lithium batteries;
- Spent lamps including fluorescent, mercury vapor, metal halide, high-pressure sodium or neon lamps; and
- Used mercury-containing equipment, including intact mercury thermometers.



**STANDARD OPERATING PROCEDURE
FOR
LABORATORY WASTE
MANAGEMENT AND DISPOSAL**

UNIVERSAL WASTE (cont'd)

Procedures:

- Place used batteries in the designated collection container on your floor. Contact MSMCwaste@hotmail.com for the location.
- Place used lamps and mercury-containing equipment in a closed container labeled with the words, "Universal Waste – Lamps" or "Universal Waste- Mercury-Containing Equipment," respectively. Contact MSMCwaste@hotmail.com for a waste pickup.

Note: Broken lamps and mercury-filled equipment must be managed as Chemical Hazardous Waste.

Contact Information:

For pickups of waste, email MSMCwaste@hotmail.com.

For additional information contact Sal Tranchina at sal.tranchina@mssm.edu.

CONSUMER ELECTRONICS/USED OIL/SCRAP FILM

Definitions:

Consumer Electronics includes discarded computers, monitors, keyboards, printers and other devices containing printed circuit boards.

Used Oil includes all oil removed from equipment, such as vacuum pumps.

Scrap Film includes waste photographic or x-ray film containing silver.

Procedures:

- Place consumer electronics by service elevator after contacting Building Services at ext 46125.
- Collect used oil in a compatible container that can be securely closed. Label with the words "Used Oil" and manage as hazardous chemical waste.
- Collect scrap film in a container marked "Scrap Film for Recycling." When container is full contact MSMCwaste@hotmail.com for a waste pickup.

Contact Information:

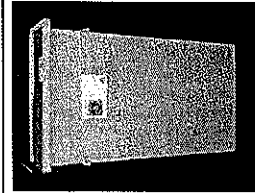
For pickups of waste, *except for consumer electronics*, email MSMCwaste@hotmail.com.

For pick up of consumer electronics, contact Building Services at ext 46125.

For additional information contact Sal Tranchina at sal.tranchina@mssm.edu.

EXHIBIT A

LABORATORY WASTE MANAGEMENT



Sharps Waste

- Needles
- Syringes with/without needles
- Blood vials (vacutainer)
- Test tubes (glass & plastic)
- Lancets
- Razor/utility/scalpel blades
- Broken/unbroken glass contaminated with blood/body fluids
- Plastic ware – flasks, culture plates, microwells
- Pipettes & pipette tips*
- Slides
- Stir Rods
- Blood culture bottles
- Cracked/broken glass and/or rigid plastic
- Swabs

Do NOT put the following in sharps containers:

- Debris (gloves, dressings, drapes, gowns, paper, etc)**
 - Chemicals
 - Chemical contaminated glass/plastic*
 - Aluminum foil
 - Gels*
- *if contaminated with toxins, poisons, carcinogens, teratogens, chemical waste, etc. collect & manage as **hazardous chemical waste**
- ** Can be put in "clear bag" trash if uncontaminated



Infectious/Biomedical ("Red Bag") Waste

- Items saturated with human/animal body fluids (blood and blood components, cerebrospinal fluid, pleural, peritoneal, pericardial, semen & vaginal secretions)
- IV tubing/catheters contaminated with blood
- Suction canisters
- Hemovacs/Pleuvacs
- Human/animal tissue
- Debris contaminated with the following:
 - Microbial agents
 - Genetically modified organisms (GMOs)
 - Human blood borne pathogens (BBPs)
- Specimen bags with bio hazard symbol

**Body (human and/or animal) tissue and/or parts need to be packaged separately and marked for incineration



Note: Do Not dispose of free liquids in Red Bag waste

Autoclave prior to placing in Red Bag:

- Microbial cultures (including GMOs)
- The following items contaminated with microbial/GMO cultures:
 - Sharps
 - Plastic ware (flasks, tubes, petri dishes)
 - Pipette tips
 - Suction canisters/flasks for final disposal

Decontaminate with bleach prior to placing in Red Bag:

Gloves & other PPE, such as N95 respirators contaminated with microbial cultures

For infectious/biohazardous waste pickups, contact **MSMC Building Services** at 1-212-241-6125
 For Sharps pick up, page **Bio Systems** at 41300 - 4639 or 4640
 For hazardous chemical waste pickups, contact MSMCwaste@hotmail.com
 For questions regarding management of biohazardous items, contact the **MSMC BioSafety Officer** at 1-212-241-5169



**STANDARD OPERATING PROCEDURE
FOR
MATERIAL SAFETY DATA SHEETS**

Page 1 of 1

INTRODUCTION:

The Mount Sinai Medical Center (MSMC) laboratory personnel manage many different chemicals. Under the Occupational Safety & Health Administration (OSHA) Hazard Communication Standard, a Material Safety Data Sheet (MSDS) must be readily available for each of those chemicals. The MSDS is a detailed informational document prepared by the manufacturer or importer of a hazardous chemical. It describes the physical and chemical properties of the product. MSDSs contain useful information such as flash point, toxicity, procedures for spills and leaks, and storage guidelines. Information included in a MSDS aids in the selection of safe products, increases understanding the potential health and physical hazards of a chemical and provides important information on how to respond effectively to exposure situations.

PROCEDURES:

An MSDS should be provided by the manufacturer or importer of each hazardous chemical used in the laboratory. The quality of the individual MSDSs vary, but they must be written in English and contain:

- the name of the chemical (same as on the label)
- the chemical and common names of the substance
- a listing of the ingredients
- a statement of the ingredients that are known carcinogens or that present other known hazards
- any specific hazards

Each laboratory must ensure that an MSDS is available for every hazardous chemical in the laboratory and that everyone using or handling hazardous chemicals have ready access to those MSDSs by either:

- providing a hard copy (binder or other filing system); or
- providing access to electronic copies of MSDSs.

MSDSs can be obtained from the chemical manufacturer or distributor. MSMC laboratory personnel can also access **MSDS Solutions** to search for an MSDS on a database of over 3.5 million MSDSs. To access this system go to www.msds.com and enter the following user name and password:

Username: mssm

Password: msds

It is recommended that each laboratory using electronic copies of MSDSs, save them to a shared folder that can be quickly accessed by everyone in the laboratory and/or department in the case of an emergency.



**STANDARD OPERATING PROCEDURE
FOR
PEROXIDE-FORMING CHEMICAL
STORAGE AND TESTING**

INTRODUCTION:

The Mount Sinai Medical Center (MSMC) laboratory personnel manage many different chemicals, including some that are possibly classified as *peroxide-forming chemicals*. Peroxide-forming chemicals are a class of compounds that have the ability to form shock-sensitive explosive peroxide crystals. These compounds tend to absorb and react with oxygen from the air to form unstable peroxides. This Standard Operating Procedure (SOP) has been developed to assist MSMC laboratory personnel properly manage these chemicals.

PROCEDURES:

Many of the organic solvents commonly used at The MSMC have the potential to form these explosive peroxide crystals. There are four classes of peroxide forming chemicals that must be properly labeled; they are:

Class A – Severe Peroxide Hazard (dispose within 3 months after opening)

Spontaneously decompose and become explosive with exposure to air without concentration.

Butadiene (liquid monomer)	Isopropyl ether	Sodium amide (sodamide)
Chloroprene (liquid monomer)	Potassium amide	Tetrafluoroethylene (liquid monomer)
Divinyl acetylene	Potassium metal	Vinylidene chloride

Class B – Concentration Hazard (test for peroxide formation or dispose within 6 months after opening)

Require external energy for spontaneous decomposition. Form explosive peroxides when distilled, evaporated or otherwise concentrated.

Acetal	Diethylene glycol dimethyl ether (diglyme)	4-Methyl-2-pentanol
Acetaldehyde	Diethyl ether	2-Pentanol
Benzyl alcohol	Dioxanes	4-Penten-1-ol
2-Butanol	Ethylene glycol dimethyl ether (glyme)	1-Phenylethanol
Cumene	Furan	2-Phenylethanol
Cyclohexanol	4-Heptanol	2-Propanol
Cyclohexene	2-Hexanol	Tetrahydrofuran
2-Cyclohexen-1-ol	Methylacetylene	Tetrahydronaphthalene
Decahydronaphthalene	3-Methyl-1-butanol	Vinyl ethers
Diacetylene	Methylcyclopentane	Other secondary alcohols
Dicyclopentadiene	Methyl isobutyl ketone	

* Manage as hazardous chemical waste. E-mail MSMCwaste@hotmail.com to request pickup of these chemicals.

Note: If crystals are present or if liquid has been allowed to evaporate, do not touch or move the container.

** These chemicals may be tested for peroxides using kits available from chemical suppliers following the procedures provided in Attachment C. If tested and no peroxides are present, the chemical label may be re-dated and initialed, and the chemical kept for an additional 6 months.



**STANDARD OPERATING PROCEDURE
FOR
PEROXIDE-FORMING CHEMICAL
STORAGE AND TESTING**

Class C – Shock and Heat Sensitive (dispose within 6 months after opening)

Highly reactive and can auto-polymerize as a result of internal peroxide accumulation. The peroxides formed in these reactions are extremely shock and heat sensitive.

Acrylic acid	Chlorotrifluoroethylene	Vinyl acetate
Acrylonitrile	Methyl methacrylate	Vinylacetylene (gas)
Butadiene (gas)	Styrene Vinylpyridine	Vinyladiene chloride
Chloroprene	Tetrafluoroethylene (gas)	Vinyl chloride (gas)

Class D – Potential Peroxide Forming Chemicals (dispose if peroxide crystals are present)

May form peroxides but cannot be clearly categorized in Class A, B, or C.

- Date all peroxide-forming compounds when received and when opened.

Example of Peroxide-Forming Label

<p>Peroxide-Forming Chemical</p> <p>Date Received: _____</p> <p>Date Opened: _____</p>

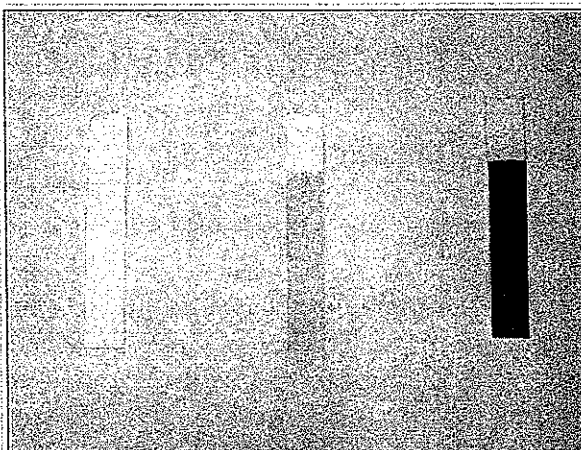
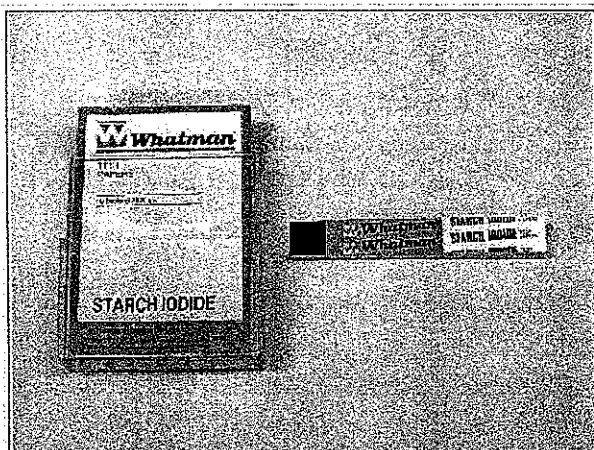
- Inspect all containers of undetermined age prior to opening. If the container appears old, in bad condition or dried chemical residue is visible, **do not attempt to open the container. If crystals are present or if liquid has been allowed to evaporate, do not touch or move the container.**
- Order less than six months supply of these chemicals.
- Store these materials separately from oxidizers and mineral acids.
- When shelf life is exceeded manage as hazardous chemical waste. E-mail msmcwaste@hotmail.com to request pickup of these chemicals.
- Class B chemicals may be tested for peroxides using kits available from chemical suppliers using the procedure provided below. If tested and no peroxides are present, the chemical label may be redated and initialed, and the chemical kept for an additional 6 months.

METHOD FOR TESTING ORGANIC PEROXIDES

The presence of organic peroxide in chemicals can be tested with simple indicator paper - Whatman starch iodide paper. Exhibit A provides information for ordering the test paper. The Whatman starch iodide paper is sensitive to peroxide concentration below 100 ppm. Low concentration of peroxide present in chemicals turns the paper yellow whereas, high concentration of peroxide turns the paper blue. This test is sensitive to the formation of hydroperoxide which is the principal hazard associated with peroxide-forming solvent.

**STANDARD OPERATING PROCEDURE
FOR
PEROXIDE-FORMING CHEMICAL
STORAGE AND TESTING**

1. Immerse the test strip in the chemical for 1 second
2. Breathe slowly on the test strip for 15 to 30 seconds or until the color stabilizes (vapor in breathe provides water for the reaction to proceed)
3. A yellow color indicates a low concentration of peroxide in the sample while blue color indicates a high concentration.
4. If positive results are observed, email MSMCwaste@hotmail.com immediately to request a waste pickup. Include a description of the waste and test results in the email. Avoid handling the container, if possible.



Whatman Starch Iodide Test Paper

Left: No peroxide present - White
 Middle: Low concentration of peroxide - Yellow
 Right: High concentration of peroxide - Blue

Reference:

Review of Safety Guidelines for Peroxidizable Organic Chemicals, Chemical Health and Safety, Sept/Oct: American Society, 1996

EXHIBIT A

1-800-356-0783

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Product Index > Whatman starch iodide paper > Whatman® Test Papers > 53302

Whatman® Test Papers



Whatman®

Test papers in easy-to-use dispensers

Specifications: All dispensers contain 6mm x 5m test papers. **Litmus Blue** and **Litmus Red** test for acid or alkaline reaction. Change occurs around pH 5 - 8. **Congo Red** test paper changes color from blue to red in the range pH 3 - 5. Determines neutralization point in strong acid/weak alkali reactions. Use **Phenolphthalein** to determine neutralization point in

weak acid/strong alkali reactions. This white test paper changes to pink at pH 8.3 and becomes red at pH 10. Use **Lead Acetate** for detecting hydrogen sulfide. This rapid qualitative test paper, when wetted with distilled water, can detect as little as 5ppm in the atmosphere or in a gas stream. Pre-blacken this paper in hydrogen sulfide and you can check for hydrogen peroxide concentrations as low as 4 ppm. Use **Starch Iodide** test paper for detecting chlorine and other oxidizing agents. In acid solution, oxidizing agents react with the iodide in the test paper to liberate iodine. Paper turns blue in the presence of an oxidizing agent.

[Express Order Here](#)

[Resource Centers](#)

Qty	Item #	Product	Sell Pack	Click Avail	For Price
<input type="text" value="0"/>	53302	STARCH IODIDE TEST PAPER	1 PK		1-3 4+ \$18.60 \$17.50

Quantity	Price
1 - 3	\$18.60
4 +	\$17.50

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