

MOUNT SINAI SCHOOL OF MEDICINE

Chemical Storage Practices



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Chemical Storage Practices

This booklet contains information and practical guidance for the handling , storage and disposal of chemicals used in the laboratory .

Several Federal, State and NYC agencies have overlapping regulatory authority with respect to chemical safety and environmental issues. This booklet serves to provide general instruction on basic storage practices that will bring the workplace into compliance with these regulations.

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1. STORAGE PRACTICES

Chemicals will be identified upon arrival to the lab from Receiving & Shipping with respect to Hazard class. This information is available on the label as a D.O.T. (Department of Transportation) listing, or is present on the Material Safety Data Sheets, that accompany the shipment or can be obtained through the vendor.

Chemical containers are stored in the laboratory according to hazard class, in specific locations in order to prevent commingling or locating reactive chemicals next to each other. In certain situations additional measures such as secondary containers to protect the stock container may be required to safely store a particular chemical, i.e. a water-reactive or photo-reactive chemical.

All containers should have the original container label intact and legible at all times; defaced, faded or separating labels should be addressed immediately, either by correcting the label, placing a new label that contains all of the safety information and lot numbers on the container or offering the chemical for waste disposal if it is of no immediate use.

All care must be taken to store chemicals safely i.e. water reactives are not stored under sinks or sprinkler heads, or flammables stored near ignition sources. Incompatible chemicals should be separated from each other by distance or placed in secondary containers in order to isolate them from each other.

Expiration dates that are printed on the labels are to be circled, and if not present, are to be recorded in a clear and legible manner for chemicals that are in hazardous reactive groups or develop hazardous functional groups on long-term storage. This is an FDNY requirement.

Storage of chemicals should be consistent with FDNY storage limits found in the "Chemical Hygiene Plan." Please note that irrespective of whether the chemical is a "pure product" or is "used-waste" the total quantities of both cannot taken together cannot exceed FDNY limits at any time.

2. INVENTORY CONTROL

Chemicals in storage should be examined periodically for changes in the condition of:

- the chemical itself;
- the container holding the chemical;
- the storage area itself.

Obvious signs of degradation such as split caps, accretion of deposits on the inside or outside of bottles or on shelf surfaces in the storage area; formation of two phases or change in physical state or formation of crystalline structures within liquids, are considered by the US EPA as being "**inherently waste-like**", and should be addressed immediately by discarding the chemical. Some changes are subtle, and not readily noticeable. Become familiar with the chemical and its physical and chemical hazards before using or storing it, and examine your stock occasionally.

Chemicals with no labels, abbreviations that are not intelligible, wax crayon, or "sharpie" markings on stock bottles are "red flags" to regulatory agency inspectors and should be addressed immediately. Temporary markings are acceptable only on containers of chemicals that are going to be used during the day's activities. If the contents are known, the container has to be labeled in

a legible manner. If the contents are not known, this material should be considered as an **“unknown”** and arrangements made for disposal as soon as possible.

It is good practice to make up labels with the individual's initials and date, which can be applied to the container annually to indicate that the chemical has been inspected by that individual and will be kept in inventory until the next inspection. Chemicals with no immediate use, or that have developed **“inherently waste-like”** characteristics should be discarded immediately. Application of “dot stickers” or labels should be made to the container and not to the label itself, preventing the obliteration of information on the label. Chemicals with inventory dates that are more than two years old can be considered to be “inherently waste-like” by external inspectors, who can use “prosecutorial discretion” to enforce their determination.

3. DISPOSAL PRACTICES:

A brief outline of disposal practices is presented here, to be applied to all work with chemicals in the Medical School. For those working with chemicals in the laboratory, more information is available in the manuals issued to the laboratories.

All unwanted out-of-date chemicals and containers that could be considered “inherently waste-like” should be disposed of as soon as possible. Containers should be in good condition, and should be sealable with a screw cap. Open containers, or containers with “parafilm”, “Saran-wrap” or tape are not acceptable for storage or disposal. The original label or “Hazardous Waste” label is placed on the container giving the full chemical name, or if the contents are a mixture, all constituent chemicals and the percentages of the total volume should be recorded.

Containers not meeting these conditions cannot be accepted for disposal until the problem is corrected. If the chemical is an **unknown**, mark the container with an **“unknown”** label and notify the Safety Office.

Special Note: For all waste collection containers, a **“Hazardous Waste”** label is filled out and permanently attached to the container with the full chemical name, or names of all component chemicals in the mixture and the percentages of each. The date that the first quantity of waste is collected in the container is recorded on the label. The collection container can remain within the laboratory **only thirty days** beyond that date, after which it has to be offered for disposal whether it is completely full or not.

All waste collection containers are to be sealed with a cap immediately after **each** use; funnels, tubing, pipettes or other delivery devices **should not be left** in the container opening between each use. Containers should not be collected in “common areas”, i.e. one laboratory which everyone uses to collect waste before offering for disposal. All waste collection containers should remain in proximity to devices such as HPLC chromatography units, amino acid sequencers and other processing or analytical equipment that has a chemical waste discharge port.

Waste collection containers are required by US EPA laws to remain under constant control and supervision of the individuals using these containers.

4. CONCLUSION:

If any of the procedures mentioned in the paragraphs above are not clear to you, contact the Biosafety Officer for instructions and additional information at extension 41451. Additional information is presented in: EPA: *“Environmental Management Guide for Small Laboratories”*.

For work involving Bloodborne Pathogens, refer to the HSO intranet: website, and the manuals issued by Infection Control, and the MSSM Biosafety website.

References:

U.S. EPA: "*Environmental Management Guide for Small Laboratories*".

"Laboratory Safety: Principles and Practices" Fleming, D.; *et. al.* ASM Press, Washington, D.C. 1995

3 NEW YORK CODE OF RULES AND REGULATIONS: Chapter 10: "*CHEMICAL LABORATORIES*";
§10-01 STORAGE AND USE OF CHEMICALS, ACIDS AND GASES IN COLLEGE, UNIVERSITY,
HOSPITAL, RESEARCH AND COMMERCIAL LABORATORIES.