



COLUMBIA UNIVERSITY

HEALTH SCIENCES DIVISION

ENVIRONMENTAL HEALTH & SAFETY

Preventing and Handling of Unknown Chemicals In Research Laboratories

POLICY AND PROCEDURES

Purpose: The purpose of this policy is to avoid unnecessary exposures to unknown chemicals, prevent the generation of such materials, minimize the disposal cost of such chemicals and ensure compliance with city, state and federal regulations.

Applicability: This policy covers all research laboratories at Columbia University Medical Center campus that use various chemicals.

Definition: An unknown chemical is a chemical or a mixture of chemicals whose identity cannot be determined due to lack of a proper label or other pertinent information affixed to the container.

How it Happens: Chemicals that are not routinely used may be left on a shelf or in a freezer for a long period of time without proper supervision. With the passage of time label may peel off or deteriorate to the extent that it is no longer legible rendering the chemical unknown. In certain processes labels may peel off when wet. Under such circumstances, if a container is not labeled right away, it may become an unknown. Various stock solutions prepared in unlabeled beakers or test tubes may become unknowns if not properly disposed or stored after each use.

Procedure

- **How to Identify Unknowns:** Unknown chemicals are normally noticed when lab personnel come across some unlabelled chemical container that they have not used, when there are changes in lab personnel or space, during laboratory inspections or preparing for lab renovation. To identify unknown chemicals in a lab one should:
 1. Inquire from the laboratory personnel who have last used a particular chemical or have prepared solutions and did not use it all.
 2. The type of research conducted in the lab can be helpful information for making determination for the chemicals left on the shelf or under a sink.
 3. Eliminating certain chemicals as a possibility will also help narrow down the problem. This is especially important for chemicals such as Mercury, PCB or Dioxin, etc., because they must be handled differently from other hazardous materials.
 4. Part of manufacture's reorder number or CAS number left intact on the container would also be helpful in identification.
- **How to Prevent Unknowns:**
 1. Do not remove manufacturers label from the container.
 2. Label all secondary containers, including beakers and test tubes, even if used temporarily.
 3. Never pour an unknown chemical into an already filled large waste storage container. It will make the entire waste an unknown.
 4. Immediately replace labels that have fallen off, become damaged or illegible.

5. Label containers with chemical names, not abbreviations, chemical structures or formulae.
6. Label archived containers and boxes in a freezer with water resistant ink. (Archived research samples are often stored in boxes containing hundreds of small vials. Label the outside of the box with the chemical constituents paying special attention to regulated materials such as radioactive, solvents, heavy metals and other toxics. If the samples are non-hazardous substances, label them as such).
7. Keep the amount of chemicals stored in the laboratory to a minimum. Get rid of all the chemicals you do not need or have no intention to use in the near future.
8. Notify EH&S in case you intend to move. Follow the Procedures for Vacating a Laboratory before moving (see Attachment XII in the Columbia University Health and Safety Manual).
9. Before leaving Columbia University, go through your laboratory and work area with the new occupant to ensure all unwanted chemicals have been collected for disposal and the one you are leaving behind are properly labeled.
10. When moving into another lab always go through old stock to ensure that no unknowns or expired chemicals are present on shelves, under the sink or in the cold storage room.
11. Keep an updated chemical inventory for all the chemicals used in your laboratory and submit a copy to EH&S. New York City regulations require submitting chemical inventory annually.

DO NOT

1. Abandon unknown chemicals in the work area.
 2. Mix unknown chemicals with any other known chemical for consolidation.
 3. Pour unknown chemicals down the sink.
 4. Bring unknown chemicals to a regular waste pickup unless cleared by EH&S.
- **How to Dispose of Unknowns:** In the event you come across any unidentified chemical, notify EH&S immediately and work with the staff for identification and disposal.
 - **Cost Related to Disposal:** A Hazardous chemical waste handler or a waste disposal facility will not accept unknowns unless clearly identified and labeled. The identification of an unknown requires sampling, packaging, shipping and lab analysis. These processes are time consuming and expensive. Proper identification, labeling and management of chemicals present in your laboratory can avoid this.

Responsibility

- **Management:** It is the responsibility of the Principal Investigator and Lab Safety Manager to make sure all chemicals present in the laboratory are identified, labeled and properly managed.
- **Disposal:** It is the responsibility of the PI to make arrangements with the EH&S to ensure proper disposal of all unknowns. If the PI has left the university or cannot be located, the department will be responsible to designate some one to coordinate with EH&S for disposal.
- **Cost:** All costs related to the identification, special handling, packaging, transportation and disposal will be charged to the PI. If the PI has left the university the department will be responsible for all disposal costs.