



HAZARDOUS CHEMICAL SAFETY

**INSTITUTE FOR EXCELLENCE IN HIGHER EDUCATION
BHOPAL, M.P., INDIA**

POLICY

HAZARDOUS CHEMICAL SAFETY POLICY

1. Introduction

It is the policy of Institute for Excellence in Higher Education (IEHE) to protect the health and safety of students and faculty from hazardous chemical while engaged in the educational activities of the Institute. To this end it is the intent of the Institute to maintain laboratory exposures to hazardous chemicals as low as reasonably achievable. All faculty, students, and staff, who enter any laboratory utilizing hazardous chemicals, as defined in this policy, shall comply with the rules and procedures of this policy and make every effort to minimize exposure to laboratory chemicals and other potential health and safety hazards in the laboratory. This policy is intended to provide basic guidelines for safe practices; therefore, it cannot be assumed that all necessary warnings and precautionary measures are contained in this document or that other additional information or measures may not be required.

2. Scope of Hazardous Chemical Safety Policy

The rules and procedures contained in this policy shall apply to all campus facilities in which there is laboratory use of hazardous chemicals.

3. Definitions

- a. Hazardous chemical** means a chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed persons or a chemical which is considered a health hazard.
- b.** Chemicals which are considered a **"health hazard"** include chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic systems, and agents which damage the lungs, skin, eyes or mucous membranes.
- c. Laboratory use of hazardous chemicals** means handling or use of such chemicals in which:
 - 1.** Multiple chemical procedures and/or chemicals are used;
 - 2.** Chemical manipulations are carried out on a laboratory scale;
- d.** For the purpose of this policy, all laboratories which are within the scope of the rules and regulations of this policy shall be referred to as "chemical laboratories".

4. Chemical Safety Responsibilities

The Chemical Safety Committee is charged with the overall responsibility for chemical safety on the IEHE campus. This includes specific responsibility to perform semester wise inspections of all chemical laboratories and provide consultation and advice regarding chemical safety rules and procedures.

The head of the department which utilizes chemical laboratories shall be responsible for providing the necessary chemical safety equipment and supplies and ensuring department employees and students comply with the rules and procedures contained in this policy.

Faculty and students utilizing chemical laboratories shall comply with the rules and procedures contained in this policy.

5. Chemical Safety Committee

- a. The **Director of the Institute** shall appoint a Chemical Safety Committee consisting of not more than five (5) faculty members and one representative of the Administration. The members shall be representatives of the departments coming within the scope of this policy.
- b. A representative of the DMI/EPCO shall serve as an ex-officio member of the committee.
- c. The committee shall review and evaluate the effectiveness of this policy at least annually and update it if necessary.
- d. The committee shall review and grant approval and disapproval on the basis of chemical safety requests for the use of particularly hazardous substances.

6. Chemical Safety Rules and Procedures

- a. **General** - The facilities needed for chemical laboratories depend upon the type and quantity of hazardous chemicals used and the complexity of the laboratory operations. The work conducted and its scale must be appropriate to the physical facilities available.
- b. **Ventilation** - The general ventilation system should provide a source of air for breathing and for input to local ventilation devices. There should be a direct airflow into the laboratory from non-laboratory areas and out to the exterior of the building.
- c. **Laboratory hoods** - Laboratory hoods shall be provided in chemical laboratories where it is necessary to exhaust air contaminants
- d. **Emergency eye wash** - Each chemical laboratory shall be provided with an eyewash.
- e. **Fire extinguishers** - Each laboratory shall be equipped with a carbon dioxide or dry chemical fire extinguisher.

- f. Storage** - Each chemical laboratory should have adequate, well-ventilated storage space for chemicals with sufficient shelving to properly segregate chemicals. There should be a separate approved flammable liquid storage facility.
- g. Exits** - Two exits should be provided for each chemical laboratory.
- h. First aid** - A first aid kit for treating simple cuts and burns shall be provided in each chemical laboratory.
- i. Waste disposal** - Facilities shall be provided for the proper disposal of waste chemicals, broken glass and other sharp objects.
- j. Electrical equipment**- All electrical equipment should be fitted with a fuse or other overload-protection device that will disconnect the electrical circuit in the event the apparatus fails or is overloaded.
- k. Housekeeping** - The overall facility shall be maintained in an orderly and safe manner as determined by the Chemical Safety Committee.

7. Housekeeping and Maintenance

- a.** Work areas shall be kept clean and free from obstructions. Cleanup should follow the completion of any operation or should be performed at the end of each day. Floors should be cleaned regularly.
- b.** Wastes shall be deposited in appropriate receptacles. Spilled chemicals shall be cleaned up immediately and disposed of properly. Chemical wastes shall be disposed of promptly by using the appropriate procedures. Chemicals that are no longer needed should not accumulate in the laboratory.

First-aid treatment

First-aid treatment for simple cuts and burns may be administered in the laboratory utilizing the furnished first aid kit. All other injuries must be referred to the hospital emergency services, depending on the nature of the injury.

Protective Equipment and Apparel

All persons working in a chemical laboratory shall use protective equipment required for the protection from the substances being handled.

Signs and Labels

Prominent signs and labels shall be used to:

- Indicate emergency telephone numbers and emergency procedures, i.e., accidents and spills;
- Identify contents of containers, including waste receptacles and associated hazards;

- Indicate location of fire extinguishers, exits, and eye washes;
- Prohibit eating and drinking in the laboratory;
- Provide warnings at areas or equipment where special or unusual hazards exist.
- Spills and Accidents.
- Written emergency procedure shall be posted in the laboratory and communicated to all persons working in the laboratory.

Fire and Explosions - Fire is one of the major hazards in the chemistry laboratory. The vapor of nearly all organic solvents is flammable. To avoid igniting flammable vapors, keep all organic solvent covered and away from open flames, heating elements and electrical sparks.

The department head or faculty responsible for laboratory operations will determine who will be responsible for monitoring the facility during periods of absence (semester breaks, vacations, etc).

8. Administrative Requirements

- a. All toxic substances should be procured through the Department of Chemistry. No container shall be accepted without an adequate identifying label and having a Material Safety Data Sheet (MSDS) supplied with the container.
- b. Hazardous chemicals should be segregated in a well-identified area with local exhaust ventilation. Chemicals, which are highly toxic, should be in unbreakable secondary containers. Stored chemicals should be examined periodically for replacement, deterioration, and container integrity.
- c. Storage of hazardous chemicals on laboratory benches and in hoods should be minimized. Exposure to heat or direct sunlight should be avoided. Periodic inventories shall be conducted, with unneeded items being discarded or returned to storage.

9. General Safety Rules

- a. In case chemicals are splashed in eyes, promptly flush eyes with water for a prolonged period (15 minutes) and seek medical attention. If a chemical is ingested, encourage victim to drink large quantities of water while en route to medical assistance.
- b. Do not smell or taste chemicals.
- c. Use only those chemicals for which the quality of the available ventilation system is appropriate.
- d. Do not eat, drink, smoke, or apply cosmetics in areas where laboratory chemicals are present. Do not consume food or beverages with glassware and utensils which are also used for laboratory operations.

- e. Handle and store laboratory glassware with care to avoid damage. Do not use damaged glassware.
- f. Wash areas of exposed skin thoroughly before leaving the laboratory.
- g. Practical jokes or other behavior which might confuse, startle, or distract another laboratory worker is prohibited.
- h. Do not use mouth suction for pipetting or starting a siphon.
- i. Confine long hair and loose clothing. Wear shoes at all times in the laboratory but do not wear sandals, perforated shoes, or sneakers.
- j. Keep the work area clean and uncluttered, with chemicals and equipment being properly labeled and stored. Clean up work area on completion of an operation or at the end of each day.
- k. Inspect gloves before each use, wash them before removal and replace them periodically.
- l. Avoid working alone in a building. Do not work alone in a laboratory if the procedures being conducted are hazardous.
- m. All electrical connections should be grounded. Electrical equipment service cords should be in good condition. Frayed cords or exposed wires should be repaired by qualified personnel. Avoid overloading circuits
- n. Cylinders must be secured with straps or chains to a wall or lab bench, both while in storage and while in use. Cylinders must not be stored near sources of heat.
- o. Never empty a cylinder completely.
- p. Avoid igniting flammable vapors, keep all organic solvent covered and away from open flames, heating elements and electrical sparks.
- q. Cotton clothes rather than synthetics are recommended.

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