

Chemical Safety

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Department



Subject: Chemical Safety

Second Class

Lecture Six

HYGIENE AND CHEMICAL SAFETY

Good personal hygiene will help minimize exposure to hazardous chemicals. When working with chemicals, follow these guidelines:

- A. Wash hands frequently and before leaving the laboratory. Also, wash hands before eating, drinking, smoking or applying makeup.
- B. Wear appropriate personal protective equipment (PPE). Always wear protective gloves when handling any hazardous chemicals.
- C. Remove PPE before leaving the laboratory and before washing hands.
- D. Remove contaminated clothing immediately. Do not use the clothing again until it has been properly decontaminated.
- E. Follow any special precautions for the chemicals in use.
- F. Do not eat, drink, smoke or apply makeup around chemicals.
- G. Tie back long hair when working in a laboratory or around hazardous chemicals.
- H. Do not keep food, beverages, or food and beverage containers anywhere near chemicals or in laboratories where chemicals are in use.
- I. Do not use laboratory equipment, including laboratory refrigerators/freezers, to store or serve food or drinks.
- J. Do not wash food and beverage utensils in a laboratory sink.
- K. Do not sniff or taste chemicals.
- l. Do not touch door knobs, telephones, computer keyboards, etc. with contaminated gloves.

V. FIRE SAFETY

A. GENERAL

1. An explanation of the University fire emergency procedures is to be posted in the laboratory and must be reviewed by all laboratory personnel.
2. Fire extinguishers must be available in the laboratory.
3. Personnel must be trained in the use of portable fire extinguishers.

B. FLAMMABLES AND COMBUSTIBLES

1. Flammable liquids that must be refrigerated should be stored only in laboratory safe or explosion proof refrigerators and/or cold rooms.
2. Volatile liquids are to be stored away from sources of heat or electrical spark and sunlight.
3. Flammable or combustible materials may only be heated using appropriate laboratory appliances.
4. Open flame devices are not to be utilized in areas where flammable or combustible liquids or gases are in use.

VI. EQUIPMENT

- A. Indicator lights on all equipment must be in working order.
- B. Operation manuals for all laboratory equipment must be provided if available.
- C. Protective guards are to be provided for machinery moving parts.
- D. Hoses and tubing must be free of cracks and abrasions.
- E. Electrical cords must be free of breaks, exposed wires, or poor insulation.

F. Electrical equipment should not be operated in areas containing explosive vapors.

G. Refrigerators are to be clearly labeled as either laboratory safe, explosion proof, or non-explosion proof.

H. All electrical outlets and equipment must be grounded. Ground fault interrupters should be installed in all outlets within 6 feet of a water source.

I. Overloading of circuits is prohibited.

J. Electrical panels are to be identified and to be accessible.

VII. WASTE DISPOSAL

A. All waste containers must be properly segregated and clearly marked regarding contents, hazards, and other pertinent information.

B. Waste materials are not allowed to accumulate excessively in the laboratory and in no case longer than 180 days. The date accumulation began should be marked on the container.

D. Needles and broken glassware are to be segregated in appropriately labeled containers away from other waste

E. Chemicals are prohibited from being disposed of through the sanitary sewer system.

F. Liquid and solid organic waste must be segregated.

G. Inorganic liquid waste should be segregated from other waste.

H. Chlorinated solvent waste should be segregated from nonchlorinated solvent waste.

I. Chemicals that have become hazardous or unstable because of age are to be disposed of properly .

Q/ Define the hazardous materials?

A —hazardous material is defined as any material or substance which by its inherent properties or if improperly handled can be damaging to health or the environment.

Q2/ Classify the hazardous materials

Ans: Such materials cover a broad range of types which may be classified as follows:

1. Poisons or toxic agents including drugs, chemicals, and natural or synthetic products that are in any way harmful, ranging from those that cause death to skin irritants and allergens, and also including genotoxic substances causing cancer, mutations, and/or birth defects.
2. Biological materials including all laboratory specimens or materials consisting of, containing, or contaminated with blood, plasma, serum, urine, feces, or other human or animal tissues or fluids, as well as inoculated media, cultures, and other potentially infectious materials such as bacteria, fungi, viruses, parasites, spores, etc., that must be either sterilized by autoclaving before disposal or must be incinerated.
3. Corrosive chemicals, such as sodium hydroxide or sulfuric acid, that burn or otherwise damage the skin and mucous membranes on external contact or through inhalation.
4. Flammable materials including (a) organic solvents, (b) finely divided metals or powders (e.g., magnesium or sodium), and (c) chemicals that either evolve or absorb oxygen during storage, thus constituting a fire risk in contact with organic materials.
5. Explosives and strong oxidizing agents such as peroxides and nitrates.
6. Materials in which dangerous heat buildup occurs on storage, either by oxidation or microbiological action (e.g., organic waste materials).