



## PATNA WOMEN'S COLLEGE

Autonomous

PATNA UNIVERSITY

3<sup>rd</sup> Cycle NAAC Accredited at 'A' Grade with CGPA 3.58/4

*College with Potential for Excellence' (CPE) status accorded by UGC*

### **POLICY ON HANDLING AND DISPOSAL OF CHEMICALS**

Research in chemical sciences should benefit humankind and improve quality of life, while protecting the environment and preserving it for future generations. Researchers should conduct their work with the highest integrity and transparency, avoid conflicts of interest, and practice collegiality in the best way.

The following is a safety checklist that can be used as a handout to students to acquaint them with the safety do's and don'ts in the laboratory.

#### **General Work Procedure**

- No work in the laboratories is to be done without the supervision of a teacher.
- Any spills, accidents, or injuries are to be reported immediately to the teacher.
- Experiments while in progress is never to be left unattended.
- In handling of hot glassware and apparatus in the laboratory, one has to be very careful.
- The open end of a test tube containing substance is not to be pointed towards anyone.
- For filling a pipette, a pipetting device is to be used and not mouth suction.
- When lighting a flame, it is to be ensured that no flammable solvents are in the surrounding area.
- Lit Bunsen burners are not to be left unattended.
- All heating apparatus, gas valves, and water faucets when not in use are to be turned off.
- Coats, bags, and other personal items must be stored in designated areas, not on the bench tops or in the aisle ways.
- Any sensitivity that one may have to particular chemicals if known is to be notified to the teacher.
- Floor has to be kept clear of all objects (e.g., ice, small objects, and spilled liquids).

#### **Housekeeping**

- The work area is to be kept neat and free of any unnecessary objects.
- The laboratory work space is to be thoroughly cleaned at the end of the laboratory session.
- The sink drains are not to be blocked with debris.
- The access to exits or emergency equipment are never to be blocked.
- All equipment are to be inspected for damage (cracks, defects, etc.) prior to use; and damaged equipment are not to be used.
- The chemical waste is never to be poured into the sink drains or wastebaskets. It is to be placed in appropriately labeled waste containers.



- The broken glassware and other sharp objects (e.g., syringe needles) are to be properly disposed of immediately in designated containers.
- The weigh boats, gloves, filter paper, and paper towels in the laboratory are to be properly disposed of.

#### **Apparel in the Laboratory**

- Appropriate eye protection (i.e., chemical splash goggles) and disposable gloves are to be worn in the laboratory, when handling hazardous materials. The gloves are to be removed before exiting the laboratory.
- A full-length, long-sleeved laboratory coat or chemical-resistant apron is to be worn.
- Shoes that adequately cover the whole foot are to be worn; low-heeled shoes with non-slip soles are preferable. Sandals, open-toed shoes, open-backed shoes, or high-heeled shoes are not to be worn in the laboratory.
- Long hair and loose clothing (especially loose long sleeves, neck ties, or scarves) are to be secured.
- Jewellery items (especially dangling jewellery) are to be removed.

#### **Chemical Handling**

- The chemicals are not to be touched directly with hands. Chemical resistant gloves are to be worn before handling chemicals.
- A spatula or scoopula is to be used always to remove a solid reagent from a container.
- A metal spatula is never to be used when working with peroxides. Metals decompose explosively with peroxides.
- The containers are to be held away from the body when transferring a chemical or solution from one container to another.
- A hot water bath is to be used for heating flammable liquids.
- The concentrated acid is to be added to water slowly. Water is never to be added to a concentrated acid.
- Reagents are never to be touched, tasted or smelt. The container is never placed directly under the nose to inhale vapours.
- The laboratory chemical hood is to be used, if available, when there is a possibility of release of toxic chemical vapours, dust, or gases. When using a hood, the sash opening should be kept at a minimum to protect the user and to ensure efficient operation of the hood. Chemicals and equipment should be placed at least six inches within the hood to ensure proper air flow.
- All spills are to be cleaned up properly and chemicals are to be disposed of as instructed by the teacher.



## Safety

- A culture of safety is very important for health as well as environment. All chemical practitioners should exercise safety procedures.
- Proper personal protective equipment and garments should be used when working with chemicals or in an area with hazards.
- Common Safety Symbols are:



Flammable



Oxidizer



Explosive



Low Level Hazard



Corrosive



Severe Chronic Hazard



Poison



Environmental Hazard

## Guidelines to Follow in the Event of a Chemical Accident

- **Chemical in the Eyes:** The eyes are to be flushed immediately with water while holding the eye open with fingers. Contact lens if wearing, is to be removed. Immediate medical attention is to be sought.
- **Acid/Base Spill:** For a spill not directly on human skin, the following actions are to be taken: Neutralize acids with powdered sodium hydrogen carbonate (sodium bicarbonate/baking soda), or bases with vinegar (5% acetic acid solution). Avoid inhaling vapors. Spread diatomaceous earth to absorb the neutralized chemical. Sweep up and dispose of as hazardous waste.
- **For spills directly on human skin,** following to be done: Flush area with copious amounts of cold water from the faucet or drench shower for at least 5 minutes. If spill is on clothing, first remove clothing from the skin and soak the area with water as soon as possible. Arrange treatment by medical personnel.
- **Mercury Spill:** The affected area is to be evacuated. The interior doors and windows; and the heating and air conditioning vents in the incident room are to be closed. The exterior doors and windows are to be opened to move the inside air out.

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