

### GENERAL PRECAUTIONS

#### For Avoiding Accidents in a Chemical Laboratory

- Use full length protective coat / an apron preferably in white.
- Wear safety goggles for preventing eye injuries by splashing of chemicals.
- A pair of gloves must be used when handling poisonous or toxic chemicals.
- A rubber bulb should be used for pipetting solutions.
- Experiments involving toxic reagents or solvents must be conducted in an efficient fume cupboard.
- Before leaving the laboratory, wash and clean every apparatus, wipe the table and keep all the apparatus in its original position.
- Laboratory must be kept clean and tidy at all times.
- Each person working in the laboratory should ensure that he or she knows where the exits, position of fire extinguishers, fire blankets, first aid boxes, drench showers etc. and know how to use them.
- There should be separate bins with lids for broken glass wares and for flammable materials and the waste should be removed regularly from the laboratory.
- Each laboratory must be equipped with first aid box.
- After using a chemical, the containers should be tightly closed and returned to its original place. Corrosive chemicals should be stored in corrosion - resistant chamber.
- Use only minimum quantity of reagents. Using excess of these is hazardous and also expensive.
- Strong acids used for conducting experiments should be diluted before being poured into the sink.
- When the burner is not being used, lower the flame. As soon as the day's work is over close the gas tap.
- Once you have taken a reagent from a bottle, never pour it back even if there is some excess quantity.
- Replace the reagent bottles in its original places at once after use and see that they are stoppered. Never take more than one reagent bottle at a time to avoid cross contamination.
- Never handle chemicals with your finger. Always use fresh, clean spatula.
- Never try to lift the glass bottle holding the neck alone.
- Don't eat, drink or smoke in the laboratory / store rooms.
- Do not throw solid wastes or filter paper or other wastes into the sink.
- Chemicals should never be allowed to accumulate in work benches or in fume cupboards.
- Flammable solvents like benzene, alcohol, ether and carbon disulphide should never be handled without turning off burners, heaters etc. Such solvents should not be kept in open beakers.

### FIRST AID

#### ACCIDENTS CAUSED DUE TO ACIDS

**BODY BURNS :** Wash with plenty of water first and then with Sodium bicarbonate solution. After the wash, apply a paste of Sodium bicarbonate - Petroleum jelly mixture on the burnt part for 10-15 minutes. Again wash with plenty of water and apply Carron oil (An equal quantity of Lime water and Linseed oil)

**SPILLAGE IN THE EYES :** Wash with plenty of water first and then with 2% Sodium bicarbonate solution followed by water again, Wipe out the water from your eyes and then put 2-3 drops of Olive oil.

**SPILLAGE ON CLOTHES :** Use dilute Ammonia solution to neutralise the acid. Then wash with plenty of water.

**ORAL INTAKE :** Gargle with water first and then drink atleast 1 litre of milk or water followed by lime juice.

#### ACCIDENTS CAUSED DUE TO ALKALI

**BODY BURNS :** Wash with plenty of water first and then with Boric acid solution. Make a paste of Boric acid, apply on the burnt part and after 10-15 minutes wash it off.

**SPILLAGE IN THE EYES :** Keep open the eyelids and wash with plenty of water first and then with dilute Boric acid solution (0.5%). Again clean your eyes with water. Wipe out the water and put 2-3 drops of Olive oil.

**SPILLAGE ON CLOTHES :** Neutralise the alkali with dilute Acetic acid solution (3%). Then wash with plenty of water.

**ORAL INTAKE :** Gargle with water first and then drink atleast 1 litre of milk or water. Eat oranges.

#### BURNS CAUSED BY BROMINE

Wash the burnt part with either Alcohol or Petrol and then apply Olive oil.

#### BURNS CAUSED DUE TO FIRE

Apply either Petroleum jelly or Burnol on the burnt part.

### WOUNDS

First remove any foreign particle (like glass pieces etc.) from the wound. Clean well with water and apply Tincture iodine, put a bandage and seek medical attention.

### GENERAL ADVICE

- For severe burns caused due to acid keep the burnt part in Sodium bicarbonate-Petroleum jelly mixture and for those burns caused due to alkali, keep in the Boric acid solution for atleast half an hour.
- While packing compounds of Cobalt, Chromium, Cadmium, Bismuth, Barium, Lead, Tin etc., it is necessary to wear the respective safety equipments/guards (like gloves, goggles, face mask etc.) in case these chemicals are accidentally consumed try to spit it out even by vomitting.
- While packing Formaldehyde or Hydrogen peroxide, if it falls on the body or clothes, wash with plenty of water.
- If Copper Sulphate is consumed accidently, drink a cup of warm water containing a spoon of Sodium Chloride or Zinc Sulphate.
- It is the duty of everyone to ensure that chemicals do not come into contact with the body through their mouth, eyes, ears & nose. Also ensure that the necessary safety equipments are used.
- After providing first aid, seek medical attention.

### FIRE

- Do not use water to extinguish an electric fire as it could give you a shock. Use dry powder fire extinguishers.
- If solvents lighter than water (like Xylene, Benzene, Acetone, I.P.A. Methanol, Petroleum ether, Diethyl ether etc.) catch fire, use wet blanket to cover the fire or use a suitable fire extinguisher. Splashing water on such fires could spread the flame. Be familiar with the usage of various types of fire extinguishers.