University of Mosul
Lecture No.:
College of Veterinary Medicine
Date:
Unit of Scientific Affairs
Website:

Lecture title: Hazardous Chemicals

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Summary: Hazardous Chemicals

Wide range of chemicals are used in research laboratories of the Institute.

• An understanding of the potential hazards and precautions required in handling of chemicals is of outmost importance in preventing exposure to chemicals.

• SDS (Safety Data Sheets) is safety information

• Formerly known as Material Safety Data Sheets (MSDS)

Routes of entry

The main routes of entry of the chemicals into the human body are:

1. Inhalation into lungs.

2. Absorption through skin, mucous membrane/cuts in the skin.

3. Ingestion via mouth into the gastrointestinal

system.

Types of hazardous chemicals

Corrosives

2. Oxidisers

3. Flammables

4. Potentially explosive chemicals

5. Toxic chemicals

1- Corrosives

• Typical examples are sulfuric acid, nitric acid, potassium hydroxide (caustic potash), sodium hydroxide (caustic soda), bromine and phenol.

• Corrosive substances causes destructive burns on the tissue by chemical action at the site of contact and also by inhalation or ingestion.

2- Oxidisers

• Typical examples include hydrogen peroxide, nitric acid, sulphuric acid, chlorates,, nitrates, peroxides, permanganates.

• Oxidisers are chemicals which decompose readily under certain conditions to yield oxygen.

- They can cause a fire to burn violently.
- Oxidisers must not be stored with flammables.

3- Flammables

- Flammable substances are those that readily catch fire and burn in air.
- The vapours released from a flammable liquid are a common fire hazard in a laboratory.
- The degree of hazard associated with a flammable liquid depends on its flash point, flammability limit and ignition temperature.

Potentially explosive chemicals

- Chemicals when subjected to heat or friction, undergoes rapid chemical change, evolving large volumes of gases which cause sudden increase in pressure.
- Heat, light, mechanical shock and certain catalysts can initiate explosive reactions.
- e.g. organic nitrates, nitro compounds

5- Toxic chemicals

- Toxic chemicals produce injurious or lethal effects upon contact with body cells due to their chemical properties.

- The extent of exposure is determined by the dose, duration and frequency of exposure and the route of exposure.
- e.g. sodium-cyanide, sodium azide and dimethyl mercury.