

Toxicology and hazards

Objectives

-Toxicology

1-Definition

2-Factors that influence chemical toxicity

3- Other factors that influence chemical toxicity

4-Types of Toxicology

5-Toxicology as a profession

Toxicology and hazards

Objectives

Hazards

- 1-Hazards are classification
- 2-Hazard Assessment
- 3-Hazard Assessment Certifications

Toxicology and hazards

Toxicology

Definition

1. The branch of science concerned with the nature, effects, and detection(**identifying**) of poisons.

2. The measurement and analysis of potential toxins, intoxicating (**liable to be toxic**) or banned (**prohibited ,excluded**) substances, and prescription medications present in a person's body.

Example: toxicology reports will determine if alcohol was a factor in the crash

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Toxicology

- It is a discipline, overlapping (**extend over to cover other parts**) with biology, chemistry, pharmacology, and medicine, that involves the study of the adverse (**negative**) effects of chemical substances on living organisms and the practice (**use**) of diagnosing (**identifying**) and treating exposures) to toxins (**biologically produced poisons**) and toxicants (**toxic substances introduced to the environment**).

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Toxicology

- The relationship between dose (**measure**) and its effects on the exposed organism is of high significance in toxicology.
- **Factors that influence chemical toxicity include**
- the dosage (and whether it is acute (**bad or difficult situation**) or chronic (**Persisting**)),
- route (**way or course**) of exposure (**no protection**),
- species(largest group of organism),
- age,
- sex,
- and environment.
- **Toxicologists** are experts on poisons and poisoning.

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Toxicology

Other factors that influence chemical toxicity:

- Species
- Age
- Sex
- Health
- Environment
- Individual characteristics

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Toxicology

Types of Toxicology

1/Medical toxicology

Medical toxicology is the discipline that requires physician status (a degree plus specialty education and experience).

2/Clinical(**observation and treatment**) toxicology

Clinical toxicology is the discipline that can be practiced not only by physicians but also other health professionals with a master's degree in clinical toxicology

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Toxicology

Types of Toxicology

3/Computational (relating or using computer) toxicology

Computational toxicology is a discipline that develops mathematical and computer-based models to better understand and predict adverse health effects caused by chemicals, such as environmental pollutants and pharmaceuticals

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Toxicology

Toxicology as a profession

- A toxicologist is a scientist or medical personnel who specializes in the study of symptoms, mechanisms, treatments and detection of venoms and toxins; especially the poisoning of people.

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Hazards

Definition

-a danger or risk

-any agent Which has the potential to cause harm to human ,property or the environment.

Hazards Classification:

1- Biological Hazards.

2- Chemical Hazards.

3- Fire Hazards.

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Hazards

Hazards Classification:

Biological Hazards: Include infections (invasion of an organism causing disease) and cytotoxic (toxic to living cells) wastes.

Chemical Hazards: Hazards involving chemicals or processes which may release their potential through agencies such as fire, explosion, toxic or corrosive (substance that can cause damage or eating away) effects.

Fire Hazards: Any fuel which if ignited (catch fire) may be difficult to extinguish (stop, end).

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Hazards

Consideration should be given to the following basic hazard categories:

- 1- Impact. (falling, flying objects)
- 2- Penetration. (sharp objects piercing foot/hand)
- 3- Compression. (roll-over or pinching objects)
- 4- Chemical exposure. (inhalation, ingestion, skin contact, eye contact or injection)
- 5- Heat.
- 6- Dust.

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Hazards

Hazard Assessment:

It's the process (required by law) of identifying the hazards associated with defined task, prescribing personal protective equipment (PPE) and other relevant protection measures which must be employed to reduce the risk from hazards.

The following is a recommended procedure for conducting a hazard assessment:

- 1- Review injury and accident data.
 - a- OSHA (Occupational Safety and Health Administration).
 - b- Worker's compensation claims.
- 2- Inform Employers and supervisors of the process.
- 3- Conduct a walk-through Survey.

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Hazards

Hazard Assessment Certification:

Each (PPE) assessment must be documented by the issuance of a written Hazard Assessment Certification.

- 1- Identify the workplace evaluated.
- 2- Name the individual who conducted the evaluation.
- 3- Give the date of the hazard assessment.
- 4- Identify the document as a certification of hazard assessment.