INTRODUCTION:

- **History**
- Phillip von Hohenheim (Paracelcius) is known as the“ father of toxicology“
- “All things are poison and nothing is without poison, only the dose permits something not to be poisonous.”

BASIC DEFINITIONS

- **Toxin**
- Toxic substances that are produced naturally (nature origin)
- **Toxicants**
- Any chemical that can injure or kill humans, animals, or plants; (poison)
- **Toxicity**
- Describes the degree to which a substance is poisonous or can cause injury.
- Factors: dose, duration and route of exposure, shape and structure of the chemical itself, and individual human factors.

Toxicology

- The study of how natural or man-made poisons cause adverse effects in living organisms.
- It involves observing and reporting symptoms, mechanisms, detection and treatments of toxic substances.
- It includes environmental agents and chemical compounds, as well as pharmaceutical compounds that are synthesized for medical use. These substances may produce toxic effects leading to , discomfort, disease and even death in living organisms.

IMPORTANCE OF DOSE

- The dose is an important factor in toxicology
- All substances have the potential to be toxic if given to living organisms in the right conditions and dose.
- LD50 : Refers to the dose of a substance that displays toxicity in that it kills 50% of a test population.

PURPOSE OF TOXICOLOGY:

- It provides protection to humans and environment from toxic effects of toxicants.

- This study will ultimately lead toward the development of newer, innovative and more selective drug therapies to treat different diseases such as cancer having reduced toxic potential to human body.

ROUTES OF EXPOSURE

- Skin & mucous membrane
- Lung (Inhalation)
- Ingestion
- Eye (Occular)

SKIN

- Chemicals that can penetrate
- healthy intact skin – aniline,
- hydrogen cyanide,
- organophosphate, etc.

LUNGS (inhalation)

- • Depends on :
- Size & Shape of particles
- Rate of physical work

INGESTION

- Mostly we can control (unlike airborne)
- Depends on :
- • Concentration
- • Time
  a) • Continuous
  b) • Intermittent
- • Sometimes can accumulate and cause harm in later life e.g. Lead