

ان (ع)

علم السموم

نظري
مقرر

TOXICOLOGY

علم السموم

Toxicology

Toxicology is the study of the adverse effects of chemical, physical or biological agents on living organisms

and

the ecosystem, including the prevention and amelioration of such adverse effects.

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TOX. SUBDISCIPLINES

- **Analytical** - analysis of body fluids/substance after acute exposure
 - **Clinical** - counteract, eliminate toxins from body
 - **Descriptive** - toxicity testing of chemical
 - **Forensic** - toxin as cause of death
 - **Occupational** - acute/chronic effects on worker
 - **Industrial** - harmful potential of raw materials, intermediates, finished products, on workers, public
 - **Environmental** - environmental fate; exposure of general public
 - **Regulatory** - public/worker protection; risk, legal implications of marketing chemicals
 - **Biochemical** - biochemical mechanisms of toxic effects
- Many laws based on tox**

- **التسمم الحاد: Acute Intoxication**
- دخول المادة السامة الجسم بمقدار كبير نسبياً ولمرة واحدة
- Acute <24h usually 1 exposure
- Sub-acute 15 days repeated doses
- **التسمم المزمن: Chronic intoxication**
- دخول المادة السامة الجسم بمقادير قليلة، خلال فترة طويلة من الزمن
- Sub-chronic 1-3 month repeated dose
- Chronic >3 month repeated dose

ACUTE vs CHRONIC 1

Acute

- Acute dose/exposure ■
- short-term, limited duration usually high level ■
- Acute response/effects ■
- immediate or nearly so ■

Chronic

- Chronic dose/exposure ■
- over time, usually lower level ■
- Chronic response/effects ■
- latent, delayed, long term ■

Chemistry of toxicants

- It is a major determinant in the solubility and the reactivity of the substance
- Toxicity Testing Method

Factors to be considered in Toxicity testing

- 1- How does the substance get into the body?
- 2-How much of the substance is necessary to produce toxicity ?
- 3-over what period of time does exposure occur ?

أنماط التسمم

criminal intoxication	أ - تسمم جنائي
suicidal intoxication	ب - تسمم انتحاري
accidental intoxication	ج - تسمم عرضي
medicinal	١ - التسمم الدوائي
professional	٢ - التسمم المهني
	- صناعي
	- زراعي
alimentary	٣ - التسمم الغذائي

طرق دخول المادة السامة الجسم

Routes of exposure

- ingestion (gastrointestinal tract)
- inhalation (lungs)
- dermal
- injection (intravenous ,intramuscular, intraperitoneal

Typical effectiveness of route of exposure

iv.>inhale >ip >im>ingest >dermal

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Ingestion

ORAL DOSE ■

mouth to stomach Generally to the ■
small intestine.

Examples ■

employee who eats lunch in the work area and ■
ingests inorganic lead that has contaminated a
sandwich.

Curious child who puts a toxic substance in his ■
or her mouth out of curiosity

ingestion of residue from chemicals added to our ■
food to kill germs or parasites.