



Centurion
UNIVERSITY
*Shaping Lives...
Empowering Communities!*

PRESENTATION ON

PREVENTIVE TOXICOLOGY

FOR THE SUBJECT

CUTM 1648 CONCEPT OF TOXICOLOGY

SCHOOL OF FORENSIC SCIENCES
BHUBANESHWAR CAMPUS

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POISON & TYPES

Substances , liquid , solid or gas , which when administered in small quantities into living body or brought into contact leads to injury or destruction of life by it's action.

- Microbial poison
- Animal Poison
- Plant Poison
- Synthetic Poison

SIGN & SYMPTOMS

Nausea
Rash
Redness
Dry mouth
froth
dilated pupils

Diarrhea
Breath problem
fainting
Death



PREVENTIVE TOXICOLOGY

- It deals with the evaluation & recommendation of suitable measure for protection of environment & Humans.
- To prevent the environment & humans from toxicity first duty is to identify the risk & then we carry with our safety management.
- The possibility of suffering harm from a hazard that can cause injury , disease , economic loss or environment damage.
- RISK = EXPOSURE * HARM
- expressed in probability

➤ HAZARD

- Many things in our everyday life are hazardous if not use properly.
- Hazard may be identified in terms of adverse effect caused or produced by any substances / compound / chemicals intrinsic toxic properties.
- It causes damage to health.
- Characteristics properties of chemicals & their mixtures

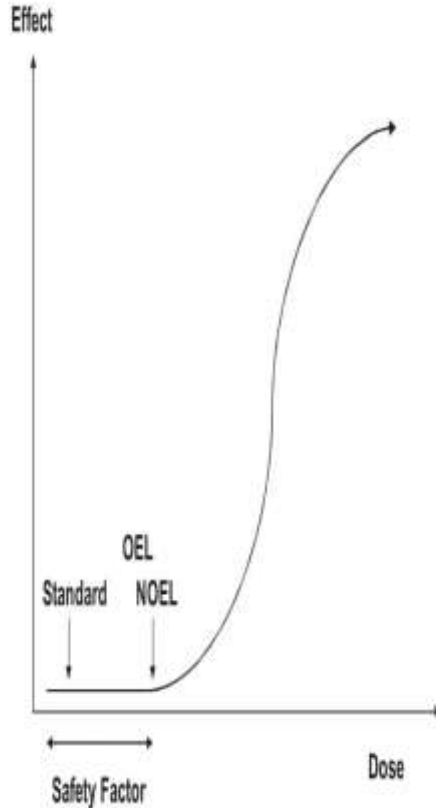
Discovery:- Mathematical models , In vitro experiments , Animal experiments, clinical studies , Epidemiological studies , Ethic rules

✓ **Effects:-** Causing irritation , allergies , lack of oxygen , cancer , damage to the fetus

- ✓ **Prevention:-** Choice the right animals for experiments.
- ✓ Motivation of volunteers for participation in clinical & Epidemiologic studies.
- ✓ Extrapolation of results obtained in experiments (high levels of exposure doses)
- ✓ Establish the dose-effect relationship (Many chemicals have different effects in low & high levels)
- ✓ Reduce or eliminate the use of hazardous chemicals whenever possible



➤ DOSE-RESPONSE EVALUATION



- It quantitatively evaluates the toxicity relationship between dose & incidence of adverse health effects.
- The outcome of dose-response assessment is a value which , when combined with the exposure estimate will allow an estimation of health risk.
- Animal or human exposure is usually defined as the dose e.g in mg of the chemical/kg body weight/day.
- This daily dose may result from oral , inhalation or dermal exposure or as sum.

EXPOSURE

- A large number of people are injured or die each year as a result of exposure to both man-made chemicals & naturally occurring toxins.
- Toxicity of any substance is potential to cause damage to any living organism or it's components , When exposure occurs.
- Both amount (dose) and time (length or frequency) of exposure are important in understanding the toxicity of a substance.
- Exposure is defined as contact between chemical & biological system.
- There are two types of toxicity effects – acute & chronic
- Acute :- short , single exposure or responses or effects that appear immediately or within 24 hours
- Chronic :- long continuous or repeated
- Routes of exposure :- Inhalation , skin or absorption , ingestion , injection
- The estimation of exposure is more complicated when mixtures of chemicals are the source of exposure.
- The dose which reaches the target organ is crucial for the effect of chemical of external exposure.

Prevention of exposures

- ❖ Acute & chronic , individual and mass toxic exposures occur due to lack of awareness among the general public of risk of chemicals. To prevent this IPCS(international programme on chemical safety) supports national programmes for prevention & treatment of poison.
- ❖ A reduction in the number of exposures and poisonings in the home , outdoor and indoor environments & the workplace.
- ❖ Detection and elimination of unusually hazardous commercial products through regulatory measures , repackaging or reformulation.
- ❖ Removal or modification of poisons.
- ❖ Labelling practices
- ❖ Storage & handling guidelines
- ❖ Changing social, psychological & economic factors.
- ❖ Literature , posters & exhibition material
- ❖ Providing information on the internet
- ❖ preparing emergencies in the home



RISK CHARACTERIZATION

- Risk characterization combines and summarizes the exposure and toxicity assessments to produce baseline risk estimates.
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PREVENTION IN THE HOME ENVIRONMENT

Approximately 50% of all accidental poisoning fatalities from the home by preschool children , thus prevention of toxicity is important in home with young children.

- Addressing prevention in the home
- Prescription of drugs should always kept in original containers
- Household chemicals such as lye , polishes & kerosene should be kept in locked storage .
- Certain household operations such as interior painting should be done with adequate ventilation
- Insecticide treatment should be done precisely in accordance with the instruction.
- Burning of wood and coal and the construction of heavily insulated & sealed house should need proper ventilation.



PREVENTION OF TOXIC SUBSTANCES IN THE WORK PLACE

- ❖ Developing a mission
- ❖ Planning prevention & defining responsibility
- ❖ Defining the scope of the programme
- ❖ Raising awareness
- ❖ Labelling
- ❖ Use of personal safety equipment (protective clothing ,gloves & goggles)
- ❖ Medical surveillance
- ❖ Toxic substance and waste disposal

Prevention in the rural environment

The toxicological significance of pollution of the environment may be work related , as in the case of agricultural workers or related to the outside encountered in the daily life.

- ✓ Pesticides and other agricultural chemicals should kept only in the original container , carrying the labels prescribed by EPA under FIFRA.
- ✓ Empty containers & excess chemicals should be disposed of properly in safe hazardous waste disposal sites.
- ✓ Workers should not re enter treated areas until the safe re entry period has elapsed.
- ✓ Certain workers such as applicators , those preparing tank mixes , should wear appropriate protection clothing , gloves , face mask and so on.
- ✓ Refine plant processes so that less waste is produced.



PREVENTION ACTIVITIES

- The poison centre unit in Santiago, Chile has undertaken a number of poison activities including :- setting up a web page with information on prevention and treatment with links to pesticides manufacturers websites
- talks on the radio once or twice in a month
- In INDIA the national poisons information centre in Delhi :-
- Inadequate safety precautions by workers using or manufacturing pesticides.
- Inadequate health checks for employees
- Chemical contamination of food
- Unsafe storage of chemicals in the home particularly kerosene
- Environmental pollution
- Use of leaded petrol
- Use of herbal and ayurvedic medicines

REFERENCES

WWW.SLIDESHARE.COM
YOU TUBE



**THANK
YOU**