



Insecticides and Safety Precautions

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Pesticides are chemical substances of natural or synthetic origin that are used to eradicate pests and insects. Pesticides can enter the body through inhalation, ingestion, or absorption by the skin and eyes. Insecticides are one of the pesticides which manage insects. By their nature, pesticides are potentially toxic to other organisms, including humans, and need to be used safely and disposed of properly. In this context we have to focus on safety measures for insecticidal usages.

General safety precautions while handling insecticides

The exposures to insecticides may occur in following situations:

- When handling the insecticide product during opening of the package, mixing and preparation of the spray.
- When spraying the insecticide.
- When disposing the insecticide solution and containers

Protective clothing and equipment

Absorption of insecticide occurs mainly through the skin, lungs and mouth. Specific Protective clothing and equipment given below must be worn in accordance with the Safety instructions on the product label:

- Broad-rimmed hat (protects head, face and neck from spray droplets).
- Face-shield or goggles (protects face and eyes against spray fall-out).
- Face mask (protects nose and mouth from airborne particles).
- Long-sleeved overalls (worn outside of boots).
- Rubber gloves.
- Boots.

General precautions

- The operator should also wear a protective hat and face shield or goggles.
- Do not eat, drink or smoke while working.
- Wash hands and face with soap and water after spraying and before eating, Smoking or drinking.
- Shower or bath at the end of every day work and wear new clean clothes.
- Wash overalls and other protective clothing at the end of every working day in Soap and water and keep them separate from the rest of the familys clothes.
- If the insecticide touches the skin, wash off immediately with soap and water.

Storage

- Insecticide storehouses must be located away from areas where people or animals are housed and away from water sources, wells, and canals.

- Insecticides must NOT be kept where they would be exposed to sunlight, water, or moisture which could affect their stability.
- Store houses should be secure and well ventilated.
- Containers, bags or boxes should be well stacked to avoid possibility of spillage.
- Stock and issue registers should be kept up to date.
- Access to the insecticides should be limited to authorized personnel only.
- The store room should have a prominently displayed mark of caution used for Poisonous or hazardous substances. It should be kept locked.
- Containers should be arranged to minimize handling and thus avoid mechanical Damage which could give rise to leaks. Containers and cartons should be Stacked safely, with the height of stacks limited to ensure stability.

Transportation

- Insecticides should be transported in well sealed and labeled containers, boxes or bags.
- Insecticides should be transported separately. It should NOT be transported in the same vehicle as items such as agricultural produce, food, clothing, drugs, toys, and cosmetics that could become hazardous if contaminated.
- Pesticide containers should be loaded in such a way that they will not be damaged during transport, their labels will not be rubbed off and they will not shift and fall off the transport vehicle onto rough road surfaces.
- Vehicles transporting pesticides should carry prominently displayed warning notices.
- The pesticide load should be checked at intervals during transportation, and any leaks, spills, or other contamination should be cleaned up immediately using accepted standard procedures.

Disposal of remains of insecticides and empty packaging

- Inside of the spray pump should be washed and any residual insecticide should be flushed from the lance and nozzle.
- Never pour the remaining insecticide into rivers, pools or drinking-water sources.
- All empty packaging should be returned to the supervisor for safe disposal according to national guidelines.
- Never re-use empty insecticide containers.
- The packages shall be broken and buried away from habitation.

Insecticide poisoning and their treatment

1. Organochlorine

Symptoms of poisoning: Anorexia, nausea, hyper excitability, tremors, paresthesia (peculiar sensation) of lips face, greater muscular activity.

Treatment of poisoning/ antidote: Diazepam, epinephrine, *Phenobarbitol*

2. Organophosphorous compounds

Symptoms of poisoning: Muscarinic effects, Nicotinic effects, giddiness, headache, fever, coma and death. *Blood porphyrinuria:* shedding of red tears due to accumulation of porphyrin in lachrymal glands.

Treatment of poisoning:

- ❖ Provide artificial respiration, if needed.
- ❖ Avoid oils, oil laxatives and epinephrine (Adrenalin), stimulants.
- ❖ Avoid morphine, theophylline, aminophyllin, barbiturates of phenothiazines.
- ❖ Give calcium gluconate (19% in 10 ml Ampules) intravenously every four hours.
- ❖ Injection of *atropine* (2-4 mg, for adults, 0.5-1.0 mg for children) is recommended, repeated at 5-10 minute intervals until signs of atropinization occur.

- ❖ In addition to atropine give 2-PAM (2- pyridinealdoxime methiodide) 1g and 0.25 g for infants intravenously at a slow rate over a period of 5 minutes and administer again periodically as indicated. More than one injection may be required.

3.Pyrethroids

Symptoms of poisoning:

Type I (permethrin, allethrin etc): hypersensitivity, hyperactivity, body tremors.

Type II (deltamethrin, fenvalerate etc): involuntary jerking movements in hands, salivation, death.

Treatment of poisoning:

Antidote is Phenobarbital for type 1 and Diazepam for type 2.