

# ORGANOCHLORINE PESTICIDES

- Organochlorine pesticides are used in **agriculture** and mosquito control.
- They are **chlorinated hydrocarbons** and compounds in this group, include DDT, methoxychlor, dieldrin, chlordane, toxaphene, mirex, kepone, lindane

# Endosulfan

- Endosulfan is an organochlorine insecticide and **acaricide**.
- **WHO** has classified it as a moderately toxic pesticide.
- It is used on a variety of vegetables and fruits, on cotton, and on ornamental plants.
- Endosulfan is volatile, persistent, and bioaccumulative.
- It is toxic to **aquatic organisms**.

# Endosulfan

- Endosulfan exposure takes place through inhalation, skin, eyes, and ingestion.
- It causes headache, dizziness, nausea, vomiting, incoordination, tremor, mental confusion, and hyperexcitable state.
- In extreme cases, it leads to seizure, convulsions, respiratory problems, depression, and coma

## *Chronic toxicity*

- A **high rate of mortality** was observed in rats when they were fed an oral dose of 10 mg/kg/day for 15 days.
- **Liver enlargement and other effects** were observed when the dose was reduced to 5 mg/kg/day for the same period .
- This dose level also caused seizures commencing 25–30 min after dose administration that persisted for approximately 60 min
- When rats were given this dose for 2 years, a reduction in growth and survival, changes in kidney structure, and changes in blood chemistry were observed

# Heptachlor

- Heptachlor is a man-made chemical which is white in colour.
- Its other trade names are Heptagram, Basaklor, Velsiol 104, and so on.
- It is highly toxic to aquatic organisms and bird species.
- Humans get exposed to heptachlor via dermal, inhalation, and ingestion.
- Humans exposed to the insecticide may show signs of irritability, salivation, lethargy, dizziness, laboured respiration, muscle tremors, and convulsions

## *Chronic toxicity*

- Exposure of heptachlor irrespective of whether it is acute or chronic causes the same effects.
- The mortality rate in mice increased when 1.5 mg/kg/day of heptachlor/heptachlor epoxide was fed to them for 2 years .
- Liver damage was observed when rats were fed a dose of 0.35 mg/kg/day for 50 weeks.
- Liver function returned to normal after 30 weeks following discontinuation of dose .

# Chlordane

- It is a broad-spectrum insecticide and used to control pests in agricultural crops, such as corn and citrus, on lawns and domestic gardens and as a termiticide.
- Chlordane bioaccumulates and is highly toxic to aquatic life. It may be carcinogenic to humans.

## *Chronic toxicity*

- When animals were fed chlordane, their liver and the central nervous system were found to be damaged.
- When rats were fed a near-lethal dose of 300 mg/kg/day in a 2-year feeding study, haemorrhage was produced in their eyes and nose and changes were observed in their, liver, kidney, heart, lungs, adrenal gland, and spleen tissues.
- When mice were fed 22–63.8 mg/kg/day of chlordane for a long period, they lost weight, their liver weight increased, and they died.