

POLYHALOGEN COMPOUNDS

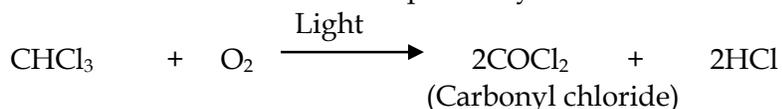
1. CH₂CL₂ (Methylene Chloride) / (Dichloromethane)

Uses: Used as a solvent as a paint remover, propellant in aerosol, as a process solvent in the manufacture of drugs and as a metal cleaning and finishing solvent.

Harmful effects: Harms human central nervous system. Higher level in air causes dizziness, nausea, tingling and numbness in the fingers and toes. Direct contact with skin causes intense burning and can burn cornea of eyes.

2. CHCl₃ (chloroform/trichloromethene)

Uses: Solvents, fats, alkaloids, iodine and other substances, in production of Freon refrigerant R-22. Inhaling chloroform vapours depresses the central nervous system. Was used as an anesthetic but now has been replaced by less toxic anesthetics.



Chloroform is slowly oxidized by the presence of light to an extremely poisonous gas, phosgene which when inhaled may cause damage to liver, kidneys, and some people develop sores when the skin is immersed in closed dark coloured bottles completely filled so that air is kept out.

3. CHI₃ (Iodoform/ Triiodomethane)

It has strong unpleasant smell. It was used as an antiseptic but the antiseptic properties are due to the liberation of I₂ and not due to CHI₃. Due to its objectionable smell, other formulations containing I₂ are used.

4. CCL₄ (carbon tetrachloride/ Tetra chloromethane)

Uses: Used in synthesis of chlorofluorocarbons, manufacture of refrigerants and propellants or aerosol cans, as a solvent, cleaning fluid, fire extinguishers.

Harmful effects: Exposure to CCl₄ may cause liver cancer, dizziness, lightheadedness, nausea and vomiting which can cause permanent damage to nerve cells. When CCl₄ is released into the air, it rises to the atmosphere and depletes the ozone layer which increases human exposure to UV rays, leading to increased skin cancer, eye diseases and disorders and possible disruptions to the immune system.

5. Freon (Chlorofluoro carbon compounds of CH₄ and C₂H₆)

Freon is stable, unreactive, non toxic, non corrosive and easily liquefiable gases. Eg. Freon 12 (CCl₂F₂)

Preparation- $\text{CCl}_4 + 2 \text{AgF} / \text{SbF}_2 \longrightarrow \text{CCl}_2\text{F}_2$ (Swartz reaction)

Uses- Aerosol propellants, refrigeration and air conditioning.

Freons, eventually diffuse unchanged into the stratosphere here it initiates radical chain reaction that can upset O₃ balance.

6. DDT (p,p'-Dichlorodiphenyltrichloromethane) It is the first organic chlorinated insecticide.

Uses- as used against mosquito that spreads malaria and lice that carry typhus. Later, many species of insects developed resistance to DDT, and it was also discovered to have toxicity towards fish. DDT is not metabolized very rapidly by animals; instead it is deposited and stored in fatty tissues.