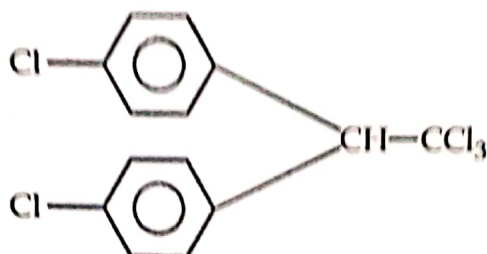


STRUCTURE AND USES

(1) DDT (DICHLORO DIPHENYL TRICHLORO ETHANE)

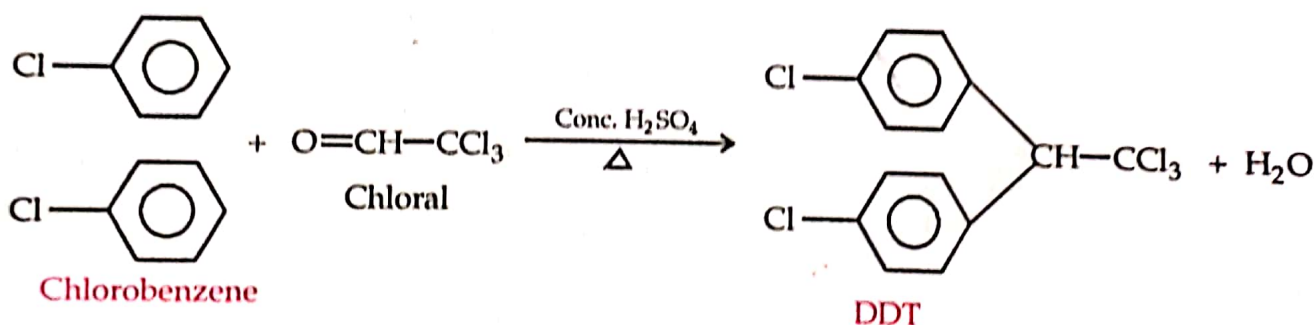
Structure



Its actual name is 2, 2 bis (4-chlorophenyl)-1, 1, 1 trichloroethane. Its molecular formulae is $C_{14}H_9Cl_5$.

Properties : DDT is a colourless, crystalline, tasteless and odourless organochlorine. It is highly hydrophobic and nearly insoluble in water but soluble in most organic solvents, fats & oils. It does not occur naturally.

Method of Preparation : DDT is prepared by heating chlorobenzene with Chloral in presence of conc. H_2SO_4 .



Uses of DDT

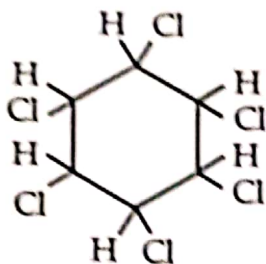
DDT is a powerful insecticide. It is generally used to kill mosquitoes and other insects. It is effective against Anopheles mosquitoes which spread malaria. It is a cheap insecticide.

Side effects

It is non-biodegradable. Its residues gets accumulated in the environment and are toxic to human beings & mammals. It is still widely used due to non-availability of any other cheaper insecticide.

(2) BHC (BENZENE HEXACHLORIDE)

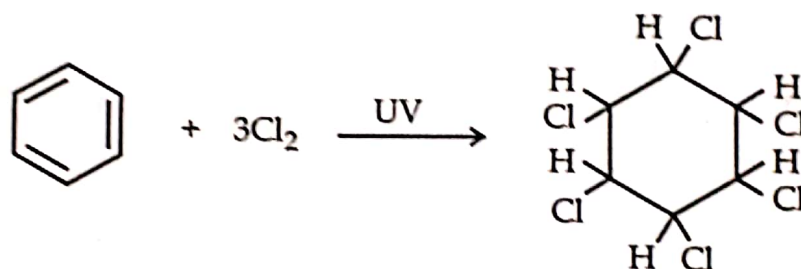
Its IUPAC name is 1, 2, 3, 4, 5, 6 - hexachlorocyclohexane. Its structure is



Its molecular formulae is C_6Cl_6 .

Properties : BHC is a white, crystalline solid having no solubility in water and variable solubility in organic solvents. It is mostly soluble in halogenated solvents like chloroform, less soluble in esters and hydrocarbons and very less soluble in short chain alcohols.

Preparation : It is prepared by chlorination of benzene in presence of ultraviolet light.



It occurs in various stereoisomeric forms but γ -isomer is most effective and also known as Lindane.

Uses

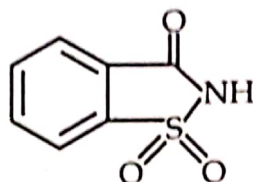
It is used as a pesticide in agriculture. It has been used to treat food crops and to forestry products, as a seed treatment, a soil treatment and to treat livestock and pets. It has also been used as pharmaceutical treatment for lice and scabies and used in the form of shampoos and lotions.

Side effects

It is an animal carcinogen and also considered to be human carcinogen. Because of its used as a fungicide it was found in all food types. It causes increased chances of liver, kidney and thyroid cancers.

3. SACCHARIN

Its structure is

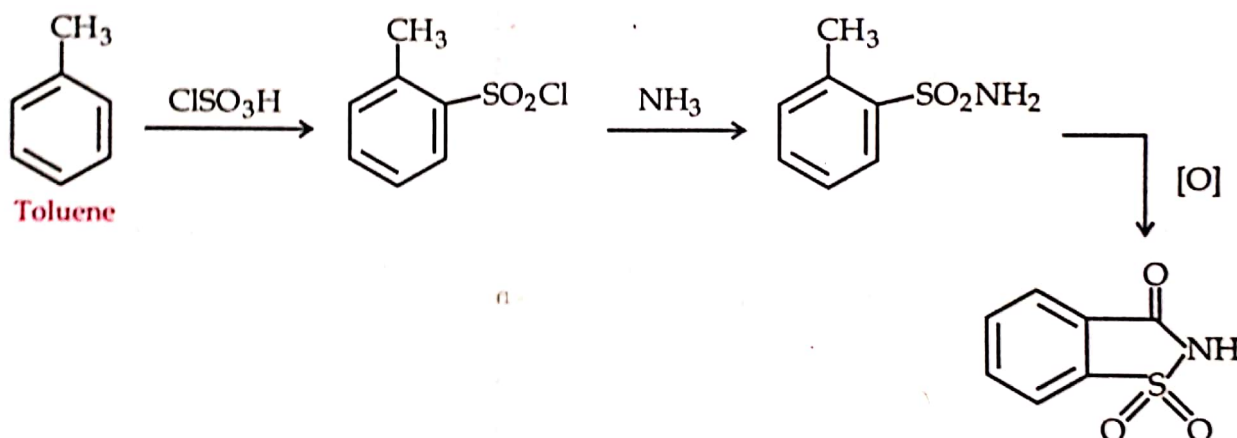


IUPAC name is 2-H, 2-Benzothiazol-1, 1,3-trione. Molecular formulae of saccharin $C_7H_5NO_3S$.

Saccharin is an artificial sweetener about 300-400 times as sweet as sucrose or table sugar. At higher concentration it has bitter or metallic after taste.

Properties : Saccharin is heat stable. It is inert in nature so it does not react chemically with other food ingredients. As such it is water insoluble but its sodium salt is water soluble.

Preparation : It is prepared from toluene.

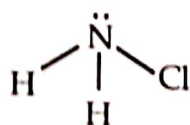


Uses

It is used to sweeten the products such as drinks, medicines, toothpastes etc. It is used in blended form with cyclamate or aspartame in diet carbonated soft drinks. It has no nutritional value it is safe to consume for persons with diabetes. It can help to reduce consumption of sugar.

4. CHLORAMINE

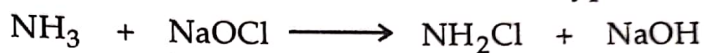
Its molecular formulae is NH_2Cl . It is a derivative of ammonia. Chloramine also refers to a family of organic compounds with formulae R_2NCl and $RNCl_2$. Its structure is



Properties : It is an inorganic compound with formulae NH_2Cl . It is an unstable colourless liquid and its melting point is 66°C . It is generally handled as a dilute aqueous solution. Pure chloramine decomposes violently above -40°C . It is readily soluble in water and ether but less soluble in chloroform and carbon tetrachloride.

Preparation :

It is prepared by the reaction of ammonia with sodium hypochlorite.



Uses

It is used as a disinfectant for water as it is less reactive than chlorine and more stable against light than hypochlorites. It is also used as a swimming pool disinfectant. It is responsible for chlorine smell of swimming pool. But exposure to chloramine lead to asthma and other respiratory problems. It is used to improve odour & flavour of water. It can be used as a bleach and as oxidators. It is also used to resist biofouling water systems.