

**B. Sc. III Year**

# **Pesticides**

**Presented by :**

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# Pesticides

- The chemical substances which are used to destroy insects, weeds and fungi which are responsible for damage of standing crops and stored food grains.
- Ex. DDT, BHC, 2,4-D, 2,4,5-T etc.

## Classification of Pesticides :

- Pesticides are classified as follows :
  - a) Insecticides
  - b) Herbicides
  - c) Rodenticides
  - d) Fungicides

## a) Insecticides

- These are the chemical substances which are used to kill insects are called as insecticides.
- They are again classified into following three classes.
- i) Inorganic insecticides : Lead arsenate, calcium arsenate
- ii) Natural insecticides : Nicotine, pyrethrum
- iii) Synthetic insecticides : DDT, BHC

## b) Herbicides

- These are the chemical substances which are used to kill the weeds are called as herbicides.
- Ex. 2,4-D, 2,4,5-T

## c) Rodenticides

- These are the chemical substances which are used to kill rats are called as rodenticides.
- Ex. Zinc phosphide, phthalium sulphate.

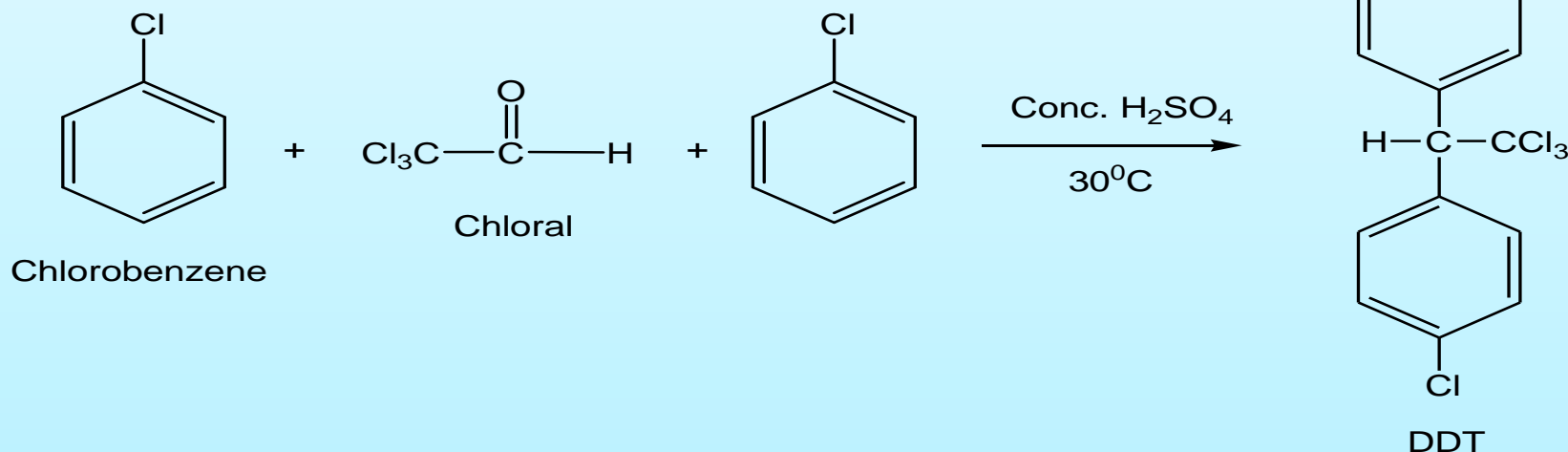
## d) Fungicides

- These are the chemical substances which are used to destroy fungi are called as rodenticides.
- EX. Copper sulphate, copper naphthenate.

# Synthesis and uses

## a) DDT (p,p'-dichloro diphenyl trichloro ethane)

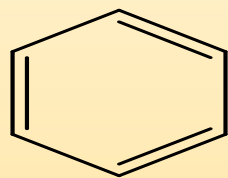
- It is prepared by condensing one mole of chloral with two moles of chlorobenzene in the presence of conc.  $\text{H}_2\text{SO}_4$  at  $30^\circ\text{C}$ .



- Uses :** i) It is used as insecticides to control insects, flies, mosquitoes, leafhoppers and moths.  
ii) It is widely used in agriculture as herbicides, fungicides and rodenticides

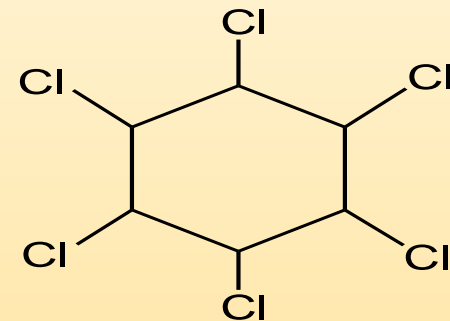
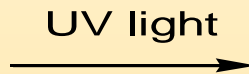
## b) BHC ( Benzene hexachloride/ 1,2,3,4,5,6-hexachloro cyclohexane) :

- It is prepared by chlorination of benzene in the presence of UV light.



Benzene

+

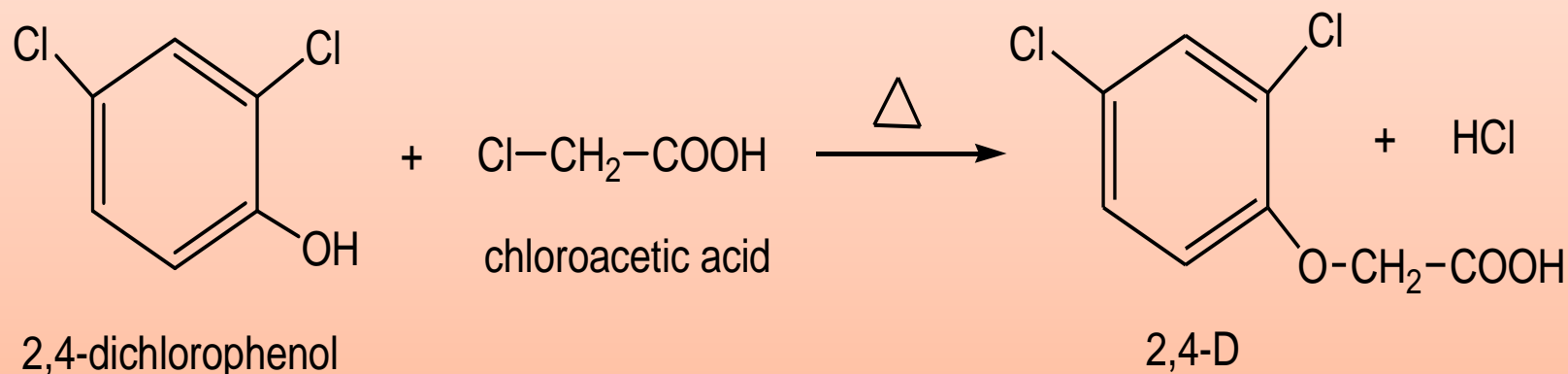


BHC

- Uses :** i) It is used as insecticides.
- ii) It is also used as agricultural pesticides.

## c) 2,4-D (2,4-dichlorophenoxy acetic acid) :

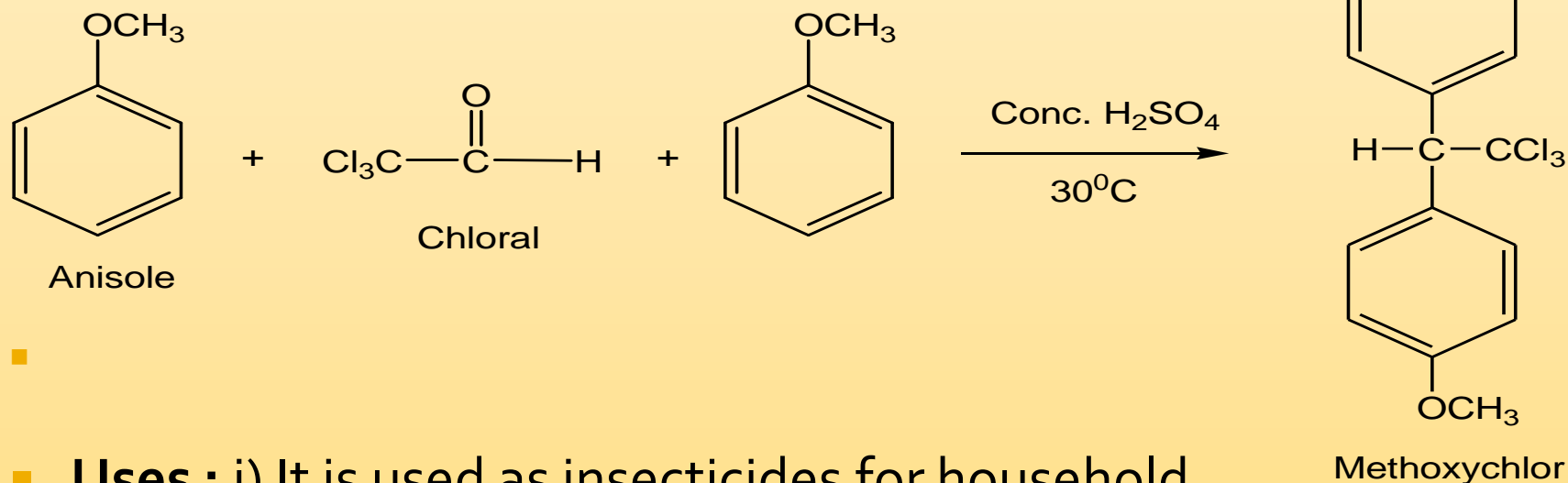
- It is prepared by the condensation of 2,4-dichlorophenol with  $\alpha$ -chloro acetic acid.



- Uses :** i) It is used as herbicides.

## d) Methoxychlor (p,p'-dimethoxy diphenyl trichloro ethane)

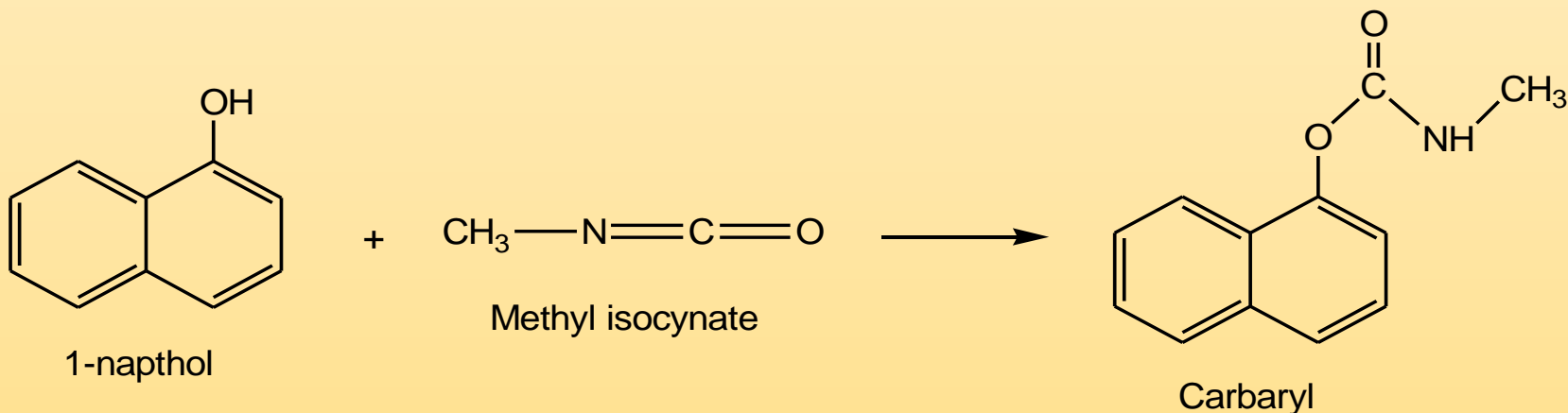
It is prepared by condensing one mole of chloral with two moles of anisole (4-methoxy benzene) in the presence of conc.  $\text{H}_2\text{SO}_4$  at  $30^\circ\text{C}$ .



- **Uses :** i) It is used as insecticides for household insects and vegetable crops.
- ii) It is also used in milk industry.

## e) Carbaryl

- It is prepared by the reaction of 1-naphthol with methyl isocyanate gives carbaryl. Methyl isocyanate is prepared by reaction of methyl amine with phosgene.

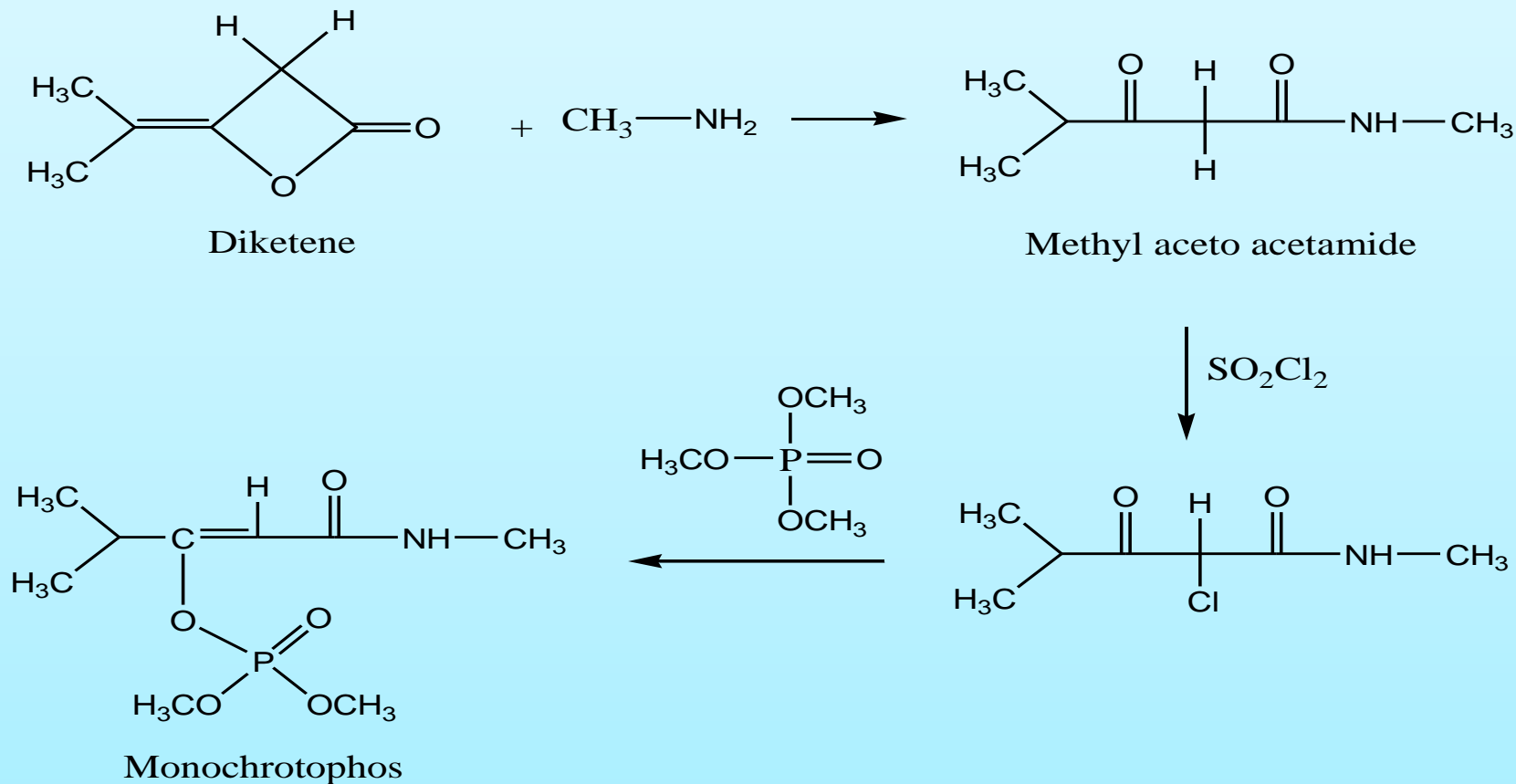


- Uses :** i) It is used as insecticides
- ii) It is used to control earthworm.



## f) Monochrotophous :

- It is prepared by the reaction of diketene with methyl amine to form methyl acetoacetamide. Further it reacts with sulphuryl chloride followed by trimethyl phosphate to give Monochrotophous.



- Uses :** i) It is used as insecticides.
- ii) It controls a pest on variety of crops like cotton, rice & sugarcane.

**Thank You .....**