The hydrogen halide is made in situ because it is dangerous and is not wanted to hang around.

## 4.2.2 – Haloalkanes

Haloalkanes are compound containing hydrogen, carbon and at least one halogen.

A primary haloalkane has the halogen on a carbon with two hydrogens.

A secondary haloalkane has the halogen on a carbon with one hydrogen.

A tertiary haloalkane has the halogen on a carbon with no hydrogens on.

The carbon – halogen bond has a permanent dipole with carbon being slightly +ve and the halogen being -ve. This dipole attracts species with lone pairs.

## Hydrolysis of haloalkanes

The dipole attracts species that have lone pairs. These species donate electrons and are called nucleophiles. This reaction can be done using aqueous sodium hydroxide. This



reaction is slow so is done under reflex.

Br: The rate of the hydrolysis depends on the strength of the hydrogen – carbon bond. loane has the weakest bond so will complete hydrolysis first.

# Organohalogen compounds and the antironment

The ozone layer is a layer in the earth's strates place at a height of about 10km above the earth's surface. We save Chloroflu Controls and the use of them has upset the delicate equilibrium of the formation and break down for the ozone. Due to their chemical structure CFCs are very stable until they reach the stratosphere where they begin to break down. They form chlorine radicals which are thought to catalyse the breakdown of the ozone layer. UV radiation provides a catalyst to break down the carbon halogen bond by homolytic fission which forms radicals.

Initiation:  $CF_2CI_2 \rightarrow CF_2CI \cdot + CI \cdot$ 

Propagation:  $CI \cdot + O_3 \rightarrow CIO \cdot + O_2$ 

 $\Box \bigcirc \cdot + \bigcirc \rightarrow \Box \bigcirc + \bigcirc_2$ 

Overall equation:  $O3 + O \rightarrow 2O_2$ 

### 4.2.4 Analytical techniques

Mass spectrometry is used to identify the molecular mass of an organic compound and gain information about its structure.

#### Molecular ions