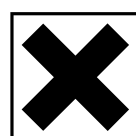
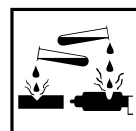
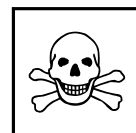



## Some halogen chemistry

### Introduction

This practical will give you experience of the key observations involving inorganic reactions of the halogens and their salts. Make sure you write down clearly what you have done and what you have seen, and work out the chemical equations for each reaction observed.



### Methods

- Put  $1\text{cm}^3$  of chloride solution into two test tubes.  
Add  $1\text{cm}^3$  of silver nitrate solution to each and shake gently. Note what happens. Put one test tube into a dark cupboard, and leave the other out on the open bench. Note the appearance of each at the end of the practical.
- Put  $1\text{cm}^3$  of chloride solution into a test tube.  
Add  $1\text{cm}^3$  of silver nitrate solution, followed by excess dilute nitric acid. Stopper the test tube and shake it vigorously, noting any changes.
- Put  $1\text{cm}^3$  of chloride solution into a test tube.  
Add  $1\text{cm}^3$  of silver nitrate solution, followed by excess concentrated ammonia solution.  Stopper the test tube and shake it, noting any changes.
- Put  $1\text{cm}^3$  of chloride solution into a test tube.  
Add  $1\text{cm}^3$  of lead(II) nitrate solution, and note any changes.
- Put  $1\text{cm}^3$  of chloride solution into a test tube.  
Add  $1\text{cm}^3$  of hydrogen peroxide solution, followed by  $1\text{cm}^3$  of dilute sulphuric acid. Allow the tube to stand, noting any changes.
- Repeat steps 1–5 with bromide and iodide solutions instead of the chloride solution. Put your results into a suitable table.
- Add  $0.5\text{cm}^3$  of concentrated sulphuric acid to about 0.1g of sodium chloride in a test tube. Warm **very gently**, and note the liberation of hydrogen chloride gas.
- Place a few small crystals of iodine in a test tube, then add about  $2\text{cm}^3$  of distilled water. Warm gently and allow it to cool. Note how much iodine has dissolved. Now add about  $2\text{cm}^3$  of potassium iodide solution. Note how much iodine has dissolved.
- Place about  $3\text{cm}^3$  of chlorine water in a test tube. Note the colour of the solution. Now add 2M sodium hydroxide, drop by drop, noting any colour change. Now add a few drops of 1M sulphuric acid, noting any colour change when the acid is in excess.
- Put  $2\text{cm}^3$  of chlorine water in a test tube, and add sodium sulphite solution until the colour disappears. Test for the presence of sulphate ions in the solution (and in the original sulphite solution) using barium chloride solution. Note: a white precipitate of barium sulphate is formed when barium chloride solution is added to a solution of sulphate ions.
- Repeat steps 9 and 10 for bromine water and  $\text{I}_2/\text{KI}$  solution.