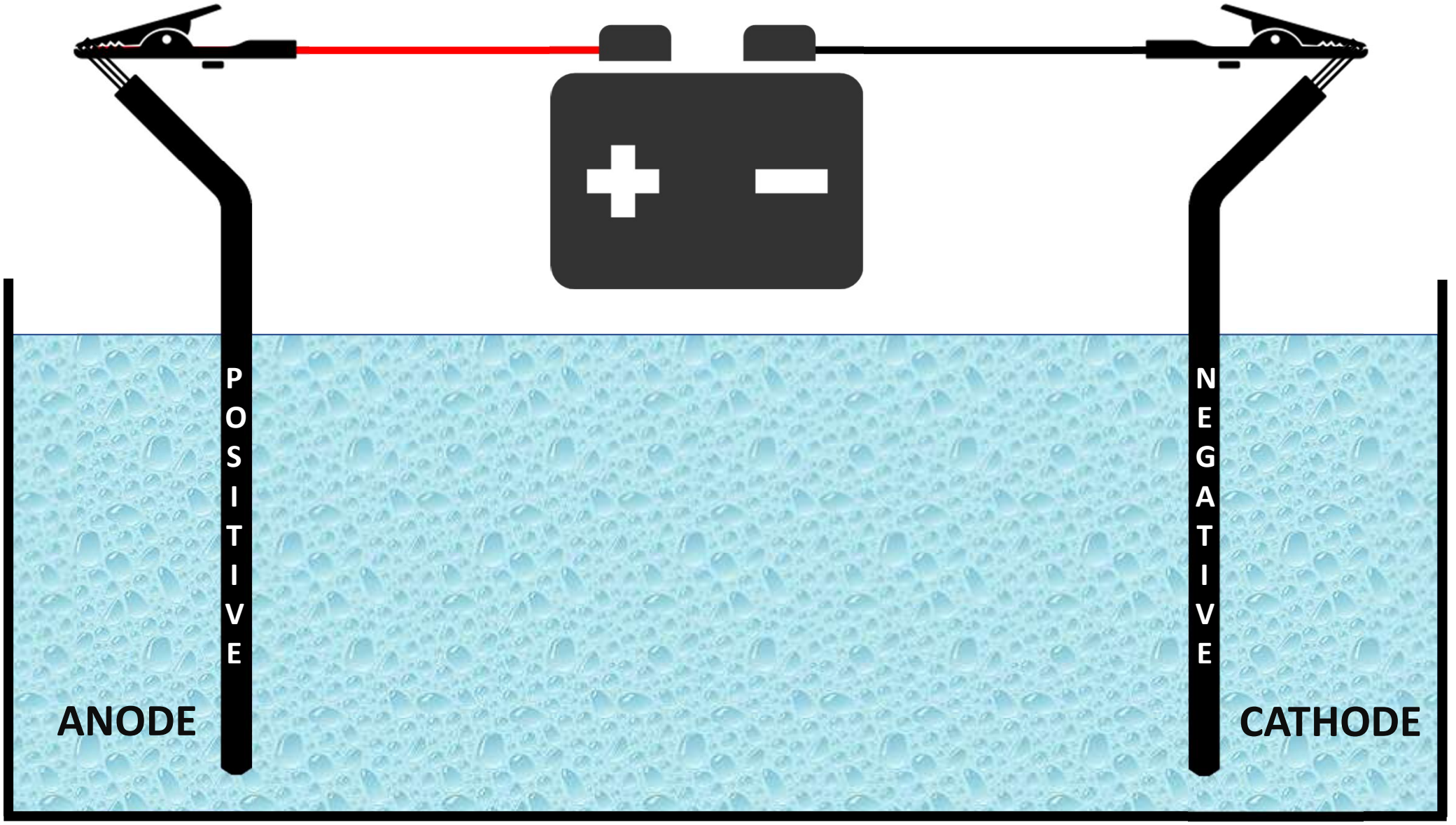
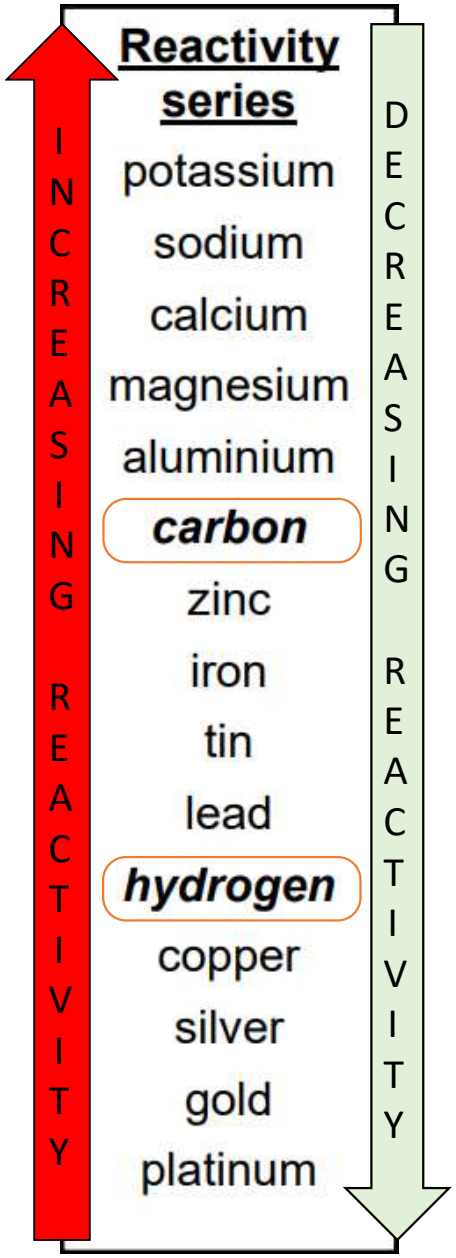

POSITIVE
NEGATIVE
ANODE
CATHODE



At the negative electrode

Metal ions and hydrogen ions are positively charged. Whether you get the metal or hydrogen during electrolysis depends on the position of the metal in the **reactivity series**:

•the metal will be produced if it is less reactive than hydrogen

•hydrogen will be produced if the metal is more reactive than hydrogen

Ionic substance	Element at -	Element at +
Copper chloride, $CuCl_2$	Copper, Cu	Chlorine, Cl_2
Copper sulfate, $CuSO_4$	Copper, Cu	Oxygen, O_2
Sodium chloride, NaCl	Hydrogen, H_2	Chlorine, Cl_2
Hydrochloric acid, HCl	Hydrogen, H_2	Chlorine, Cl_2
Sulfuric acid, H_2SO_4	Hydrogen, H_2	Oxygen, O_2

At the positive electrode

If the negative ion from the ionic compound is simple (eg Cl^- or Br^-), then that element is produced **.

If the negative ion is a complex ion (eg NO_3^-, SO_4^{2-}, CO_3^{2-}), then oxygen is produced from the hydroxide ion present instead.

Negative ion in solution	Element given off at positive electrode
Chloride, Cl^-	Chlorine, Cl_2
Bromide, Br^-	Bromine, Br_2
Iodide, I^-	Iodine, I_2
Sulfate, SO_4^{2-}	Oxygen, O_2
Nitrate, NO_3^-	Oxygen, O_2

** **Very dilute solutions of halide compounds**

If a **halide** solution is very dilute (eg NaCl), then oxygen will be given off instead of the halogen. This is because the halide ions are outnumbered by the hydroxide ions from the water.