**METALS**

**Reactivity of Metals – Experiment**

**Aim:** to demonstrate to students the wide range of reactivities of metals

**Procedure**

**Part A Demo**

Your teacher will demonstrate the reaction between sodium and water ( using a sliver in a pneumatic trough)

If a flame is produced, what colour is it?

pH paper dipped in the water after the reaction shows what?

Can you write an equation for the reaction?

Repeat for potassium.

**Part B**

Add small samples of the following metals to 2M HCl, magnesium, zinc, iron, tin, copper.

Rank the metals according to the rate of reaction shown.

Add sodium and potassium to your rankings.

Test the gas evolved from the magnesium sample and identify it.

Write an equation for the reaction.

Using a Periodic Table, comment on how you might predict the relative reactivity of metals.

Can you explain why these reactivities exist?

**Part C**

Try this rhyme!

Kan nine croooks a zombie for his cousin’s silver and gold?

Potassium sodium calcium aluminium zinc iron mercury copper silver gold

**Part D**

Reactivity order is always consistent.

Add a piece of copper to zinc sulfate solution.

Add a piece of zinc to copper sulfate solution.

Only one of the two reactions actually proceeds and this leads to an old adage-

‘the more reactive metal can replace the less reactive metal in solution’ therefore the zinc in copper sulfate will react as zinc is more reactive.

Reactions between copper and iron sulfate, magnesium and iron sulfate etc can be predicted in this way from the reactivity table established

**Part E**

The notion of a sacrificial anode uses this principle. Wrap a piece of zinc tightly around a nail and drop it into acid. The iron will not react until the zinc is all gone. Aluminium slabs on bridges are used to protect the bridge from rusting as aluminium is more reactive than iron.