

Static Electricity

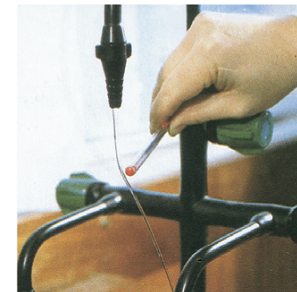
If you rub a balloon on your jumper and put it near your hair, what happens?



If you rub a plastic comb on your jumper and put it near some small pieces of paper, what happens?



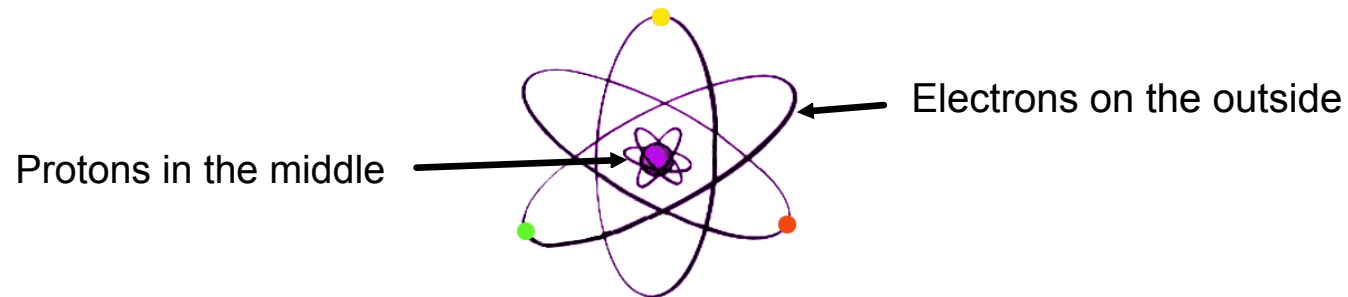
If you rub a pen on your jumper and place it near running water from a tap, what happens?



How it Works

Static Electricity - builds up in one place and stays there for a while.

Current Electricity - moves quickly from place to place.



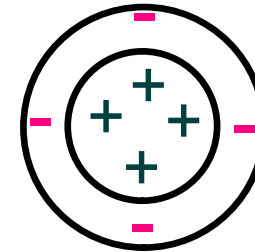
An atom of an element has **plus** particles called **protons** and **minus** particles called **electrons**.

Electricity is when electrons move from place to place.

Charged Atoms

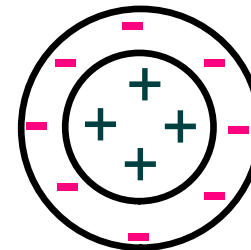
An atom that builds up electrons will have more minus charges than plus charges.

1. The following atom is **Neutral** because it has the same number of electrons as protons.



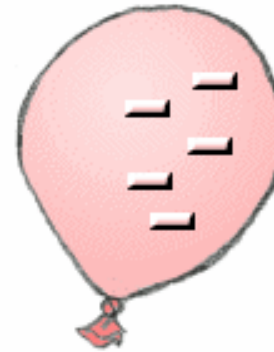
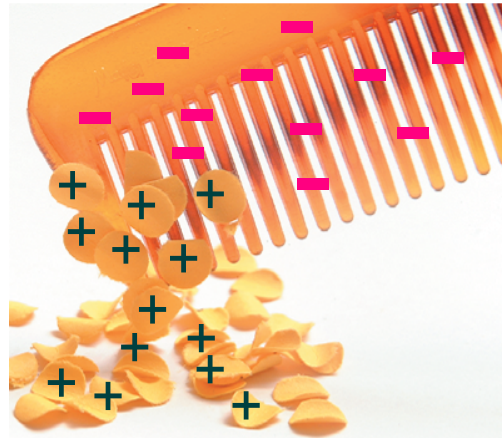
Neutral Charge
Protons = Electrons

2. When you rub a comb on your jumper, **electrons** jump from your jumper and build up on the comb. The comb is now **negatively** charged.



Negatively Charged
More Electrons

3. The comb has more **electrons** and so it is **negatively** charged. When you put the comb near paper, the minus charge attracts the positive charges in the paper.



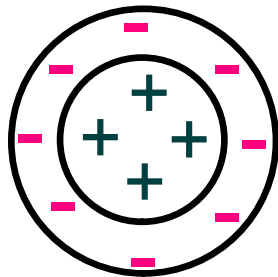
Opposites Attract!
Negative attracts plus so they jump together.

The Force between 2 charged objects

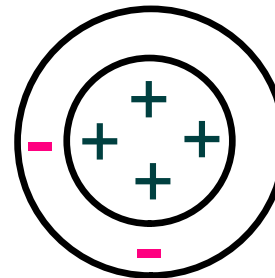
Polythene is a plastic. When rubbed in wool it builds up a **negative** charge.

Perspex is another plastic. When rubbed it becomes **positively** charged.

If we hang a polythene rod near a perspex rod, what do you think will happen?



Negatively Charged
More Electrons



Positively Charged
More Protons

**Opposites
Attract!**

Useful effects of Static Electricity

It is used to remove **soot** from chimneys.

In **photocopiers** the toner is attracted to a charged rotating drum.

In spray **painting** the paint is charged so it sticks to the painted surface.

Bad effects of Static Electricity

Sometimes you can pick up a shock from a **car** or shopping trolley.

Brushing hair can make your **hair** become charged and it will stand up.

Plastics and tv **screens** that have been rubbed with a cloth often attract dust.

Dangerous effects of Static Electricity

Fumes from **petrol** can be ignited with static spark.

Staff on oil **tankers** must wear anti-static clothes to stop sparks.

Lightning can be very dangerous.

Earthing

Insulators are substances which do not normally allow charge to flow through them.



Conductors are substances which allow charge to flow through them.

Earthing means connecting an object to the earth by means of a conductor, so that the object shares its charge with the Earth.