

Electricity

Chapter 7

Static charge is produced by electron transfer

What is electricity?

- What have we learned about electricity already?

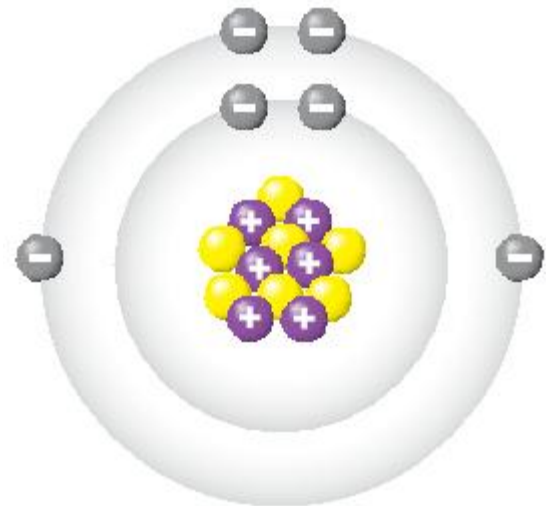
Static Charge

- Static means “not moving” so static charge is a charge that can be held in one place.
- It is a build up or loss of electrons.
- Electrons can move because they are on the outside of atoms.
- Protons do not move!



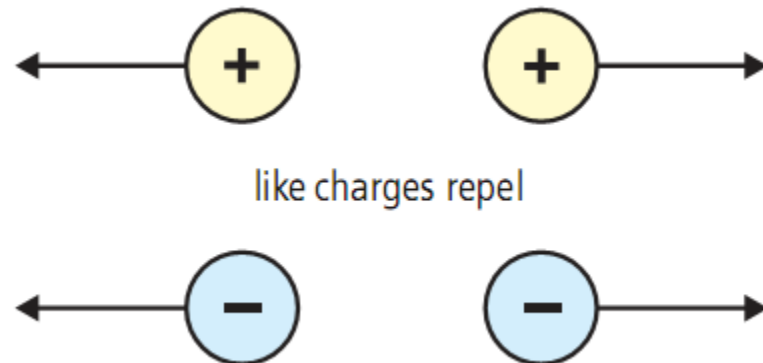
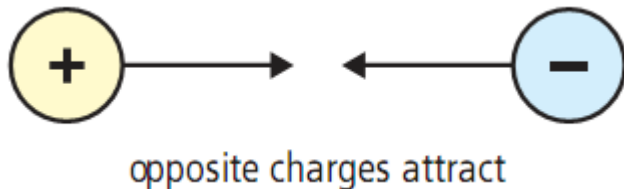
Positive and negative Charge

- If an object has a negative charge it has more electrons in it than protons.
- If an object has a positive charge it has less electrons in it than protons.



Laws of Charged objects

- Opposite charges attract... Positive attracts negative and negative attracts positive.
- Like charges repel... Positive repels positive, negative repels negative
- Charged objects attract neutral objects.



Insulators vs. Conductors

- Only some substances can allow charges to flow in them

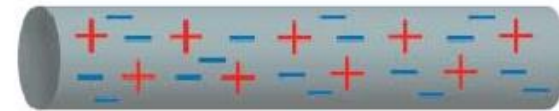


Fig 7.4B Charges on conductor

— Conductors

- Only some substance can “hold” a charge – do not allow charges to flow in them



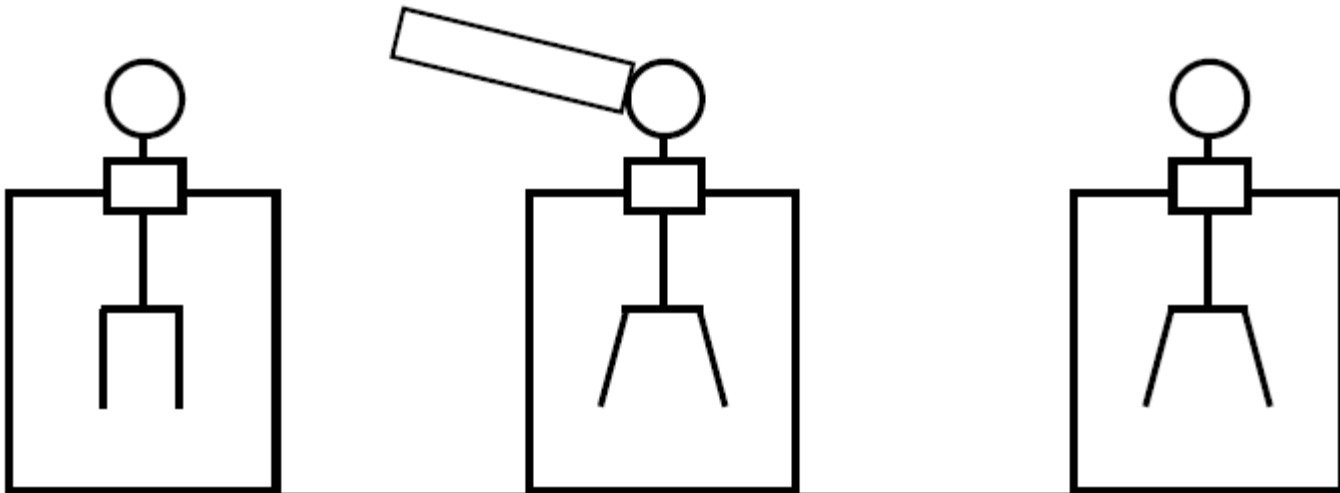
Fig 7.4A Charges on insulator

— Insulators

Charging by conduction

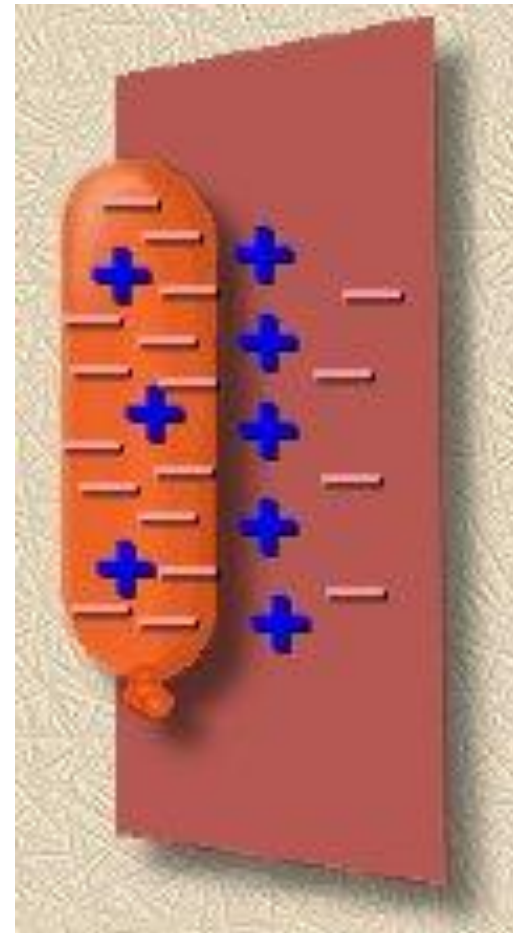
- Charging a neutral object by touching it to a charged object is:

Charging by conduction



Charging by Induction

- A charge can be induced in a neutral object temporarily by bringing it close to a charged object
- The charge repositions electrons in the object



Measuring Charge

- If one electron is lost or gained a neutral object would become 'charged'
 - but it takes the loss or gain of more electrons than that to notice
- The unit of electric charge is the coulomb
- The addition of 6.25×10^{18} electrons will produce 1 C of charge
 - Lightning bolt has typically 5 to 25 C of charge

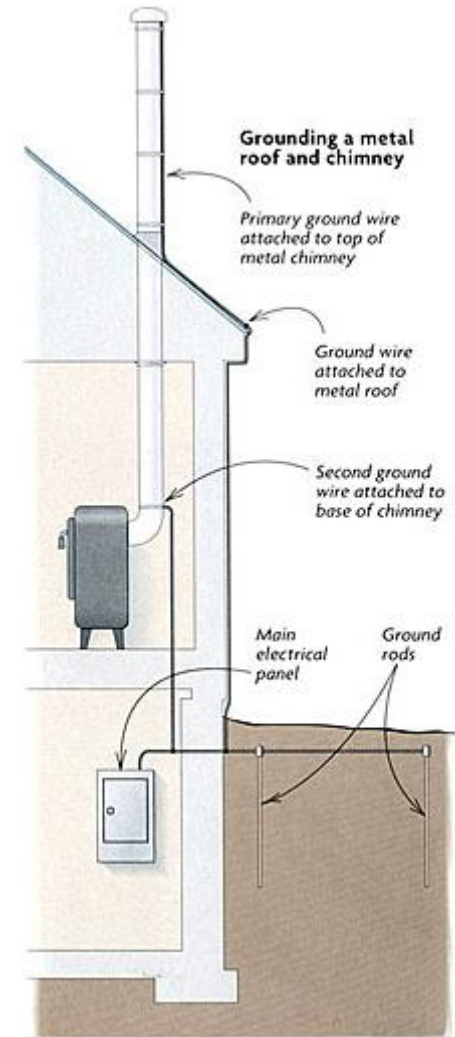
Static Discharge

- When charge is built up on an object it can share that charge when it comes in contact with another. Or even if it gets 'close enough'!



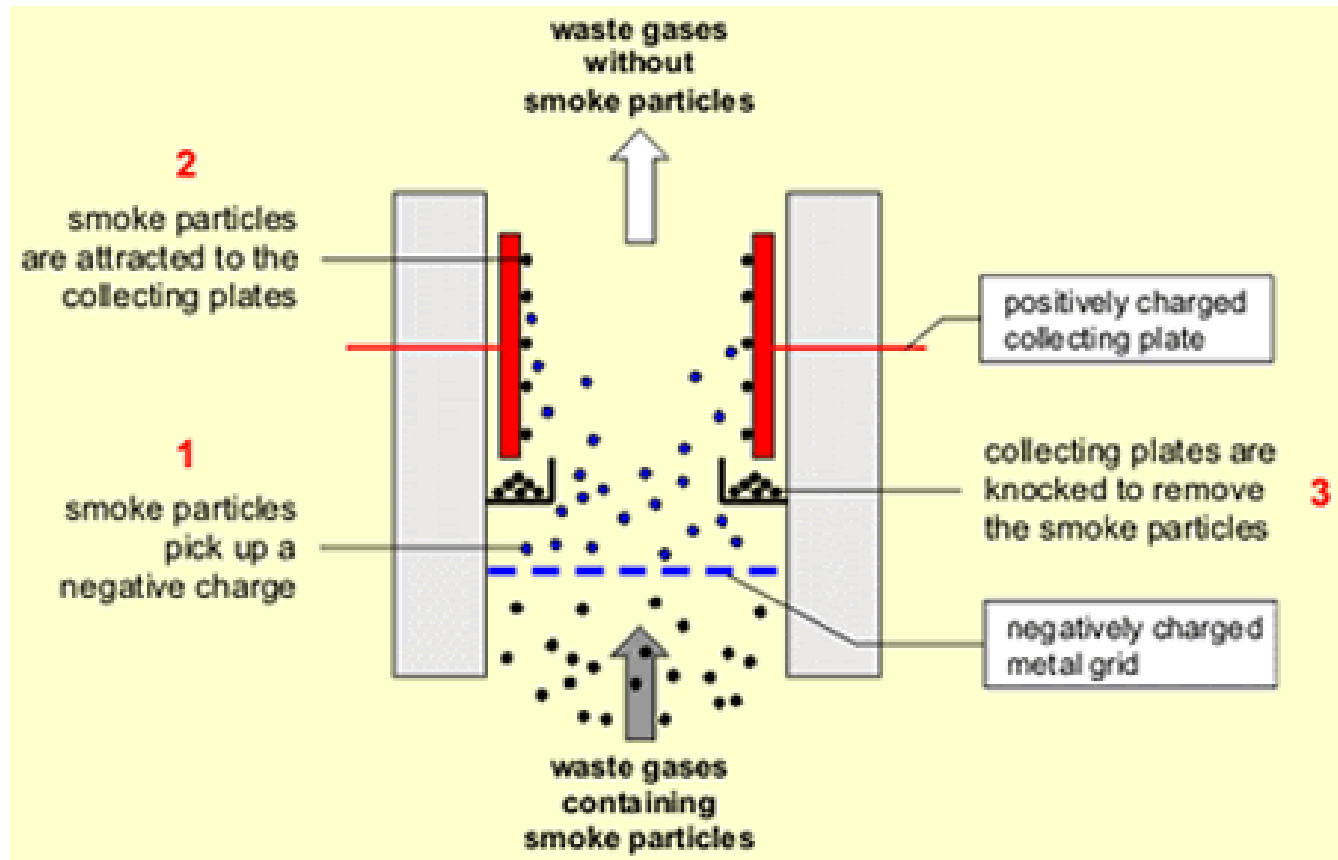
Static Discharge

- Static charge can be quite dangerous for people and equipment.
- Grounding provides a way for charge to flow into the Earth's surface...



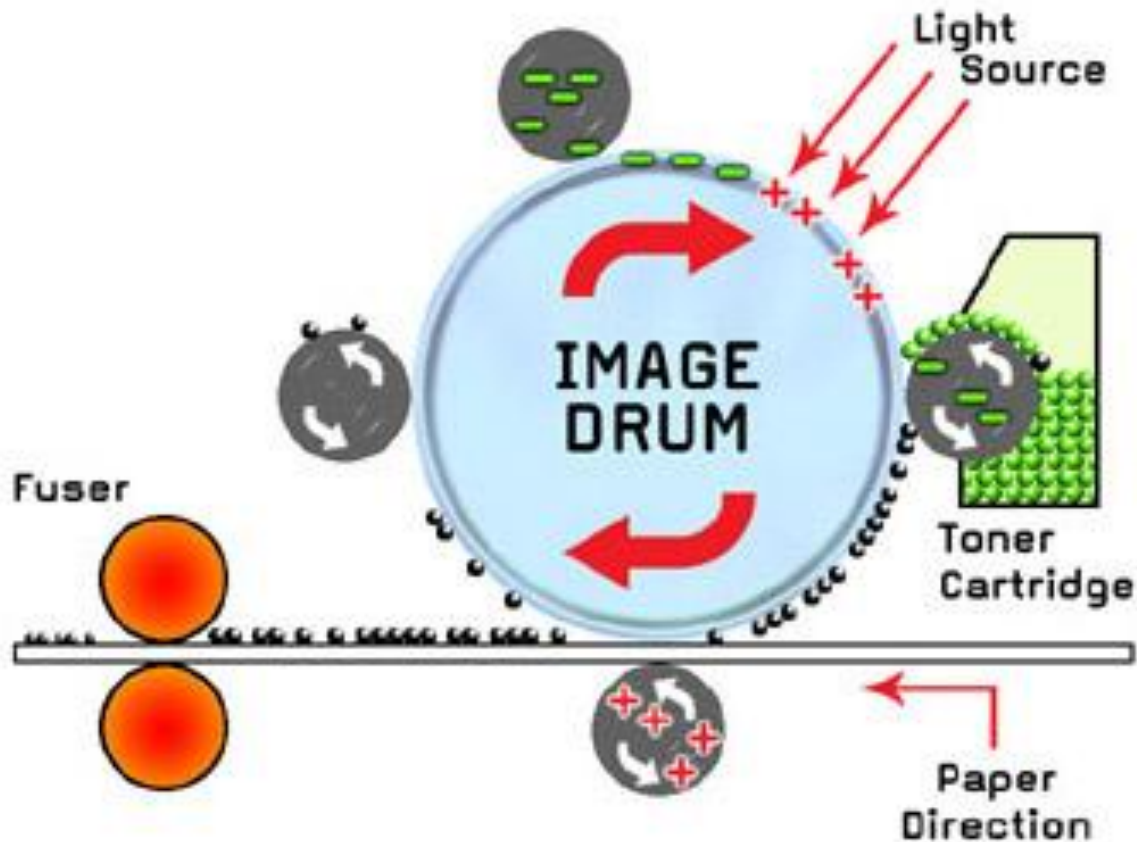
Uses of Static electricity

- Pollution control



Uses of Static electricity

● Photocopiers



Uses of Static Electricity

- What else is static electricity good for?

WORK

- Complete questions p 246 #3, 5, 7, 9, 11, 13, 14, 16, 18, 24