

GCSE Biology – Diffusion - Transcript

Diffusion is a process that allows us to smell burned toast across a room, but it also happens in lots of other places, including our bodies.

It occurs when particles spread from an area of higher concentration to an area of lower concentration.

So how does it work, and can we change the rate of it?

Particles in both liquids and gases move about randomly all the time. There are more particles in an area of high concentration, so over time more of these will move to an area of lower concentration. This overall, or net movement, is called diffusion.

It's a passive process, no energy is needed to make it happen. And diffusion is happening in your body right now. Many of the substances needed by your cells diffuse in and out of the cell through small gaps in the membrane.

Take respiration, oxygen diffuses into the cell and waste products like carbon dioxide diffuses out of the cell. Different factors can affect the rate of diffusion. Concentration gradient, temperature and the surface area of the membrane.

The concentration gradient means the difference between the concentrations of particles in one area and the concentration of particles in another. The greater the

difference in concentration, the larger the concentration gradient and therefore the quicker the rate of diffusion. The smaller the concentration gradient, the slower the rate of diffusion.

If we increase the temperature, the particles will have more kinetic energy. This means they'll move faster and the rate of diffusion will increase.

The greater the surface area of the cell membrane, the greater the rate of diffusion will be. This is because more particles can move across the membrane at the same time.

Osmosis is a special kind of diffusion. It's the movement of water molecules across a partially permeable membrane. Again, they move from an area of higher concentration to an area of lower concentration.

This is how water moves into plant root hairs. It also happens in humans too. Water from the large intestines diffuses into the blood by osmosis. So we have diffusion to thank, not only for the water in our blood, but for the smell of burnt toast too!