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How Does Diffusion Work?

When you poured a puddle of water next to the candy and it got wet, you noticed that the candy started to dissolve. Then the colors started moving through the puddle of water, but yet you weren't stirring it! How did the colors move and change?

Did you know that **molecules** are always moving, even if you can't see them? In the candy experiment, you observed **diffusion**. Diffusion is the 'movement of molecules from areas of high **concentration** to low concentration'.

Right at the edge of the candy is a high concentration of sugar and coloring, and it naturally wants to go to a lower concentration area-- so the molecules gradually move towards the plain water. Over time, the puddle of sugar and colors move further and further into the puddle of plain water. If we had heated up the water, the whole process would have happened even faster.

Guess what- diffusion works in **solids** too! Even in solids, molecules are constantly moving around. If you heat up the solid, the molecules will move around even more.

This is important to know, because diffusion is used in making **semiconductors**! When we '**implant**' extra electrons into the silicon, and then heat it up, those extra electrons **diffuse**, or move, further into the **silicon**, which is just what we want. This implant and diffusion process is used to make the **transistors**, which are the tiny switches that are the brains of the computer chips.