What Are Gases?

Tday, we're going to talk about something that's all around us but invisible: gases! What are they? Why are they so important? And what can they do? Let's dive in!

Let's start with the basics. Gases are one of the three main ways that things can exist. The others are solids and liquids. Solids keep their shape, like a rock or a book. Liquids flow and take the shape of their container, like water in a glass. But gases? They're a bit more wild. Gases spread out to fill whatever space they're in. That's why when you blow up a balloon, the air inside expands to fill it.

Gases can also change into liquids. This happens through cooling. Something scientists call condensation. Have you ever noticed water droplets on the outside of a cold glass? That's water vapor—a gas in the air—cooling down and turning into liquid water. It happens up in the air, too. When water vapour - a gas- drift upwards it cools and eventually gas turns into droplets and, hey presto, cloud.

So why do hot gases rise!? Because when gas gets hot, its particles spread out and become lighter. That's why hot air balloons float. The air inside the balloon is heated, making it rise above the cooler, heavier air around it.

This idea of hot gases rising is also what creates the type of wind called a sea breeze. Warm air near the ground rises, and cooler air moves in to take its place. That movement of air is what we feel as wind. It also works on a global scale. Air near the tropics is hot, but air near the poles is cold. So warm air flows up to the poles and cold air flows down towards the tropics. But, of course, the earth is spinning, so that messes up a nice flow and turns it into swirling patterns such as low pressures.

So, what gases are in the air we breathe? The air around us is mostly nitrogen, about 78%. Then there's oxygen, which makes up 21% and that is the gas we need to breathe to keep ourselves alive. The last 1% is made up of other gases like carbon dioxide, argon, and even tiny amounts of helium and methane. Each of these gases plays an important role.

As we said, oxygen is essential for animals and humans to survive, but plants need to take in carbon dioxide to make food through photosynthesis. So without these gases, life on Earth wouldn't exist as we know it.

Speaking of gases, let's talk about bubbles. Bubbles are pockets of gas trapped inside a thin layer of liquid. When you blow soap bubbles, the gas inside is the air from your lungs. If you've ever seen bubbles in boiling water, those are made of

water vapour, a gas created when water gets hot enough to evaporate.

But gases aren't always fun and helpful. Sometimes, they can cause problems, too. For example, air pollution happens when harmful gases, like carbon monoxide or sulphfur dioxide, are released into the air. These gases can make it hard for people to breathe and can even harm plants and animals. Carbon dioxide can also soak up heat from the Earth and make the atmosphere warmer. That's global warming. Did you know that for every one degree celsius rise in air temperature, the air can hold seven percent more water? It's important, because that means it will rain heavier and more often, and that can lead to floods and disasters. So now you know how important even small amounts of gas are to our lives. That's why it's so important to reduce pollution by using cleaner energy and protecting our environment.

Let's recap what we've learned today. Gases are one of the three states of matter. They spread out to fill any space and can change into liquids through condensation. Hot gases rise, which is how hot air balloons work and how wind is created. The air we breathe is mostly nitrogen and oxygen, but even small quantities of water vapour and carbon dioxide have an extremely important part to play - and those are the gases we can affect by burning fossil fuels or wood.

Gases might be invisible, but they're everywhere,

and they’re essential to life on Earth. So next time you take a deep breath or watch a bubble float away, think about the amazing science of gases - and how easy it is for them to change our climate.