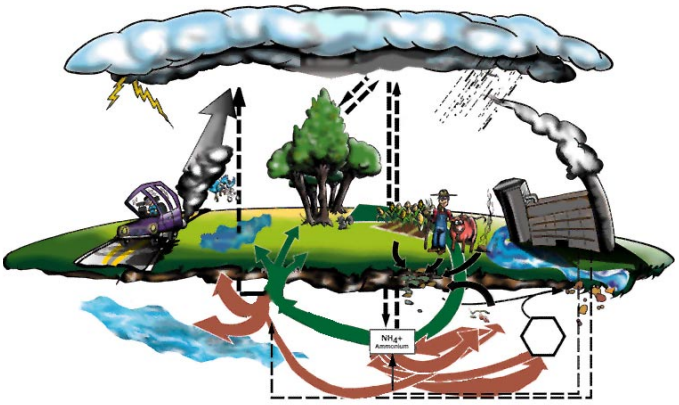
# Nitrogen Reading




*The Nitrogen Cycle*

**Nitrogen** gas, $N_2$, is by far the most abundant gas in Earth's **atmosphere**. It makes up 78.1% of Earth's air by volume. Both nitrogen's properties and its amount in Earth's atmosphere play important roles in maintaining life on Earth.

Nitrogen is considered to be an **inert** gas. This means it does not easily react with other substances to form new substances. Most of the nitrogen in the atmosphere simply stays in the atmosphere. One of the reasons for this stability is an important property of nitrogen. The element nitrogen has three bonding slots. When two nitrogen atoms attach to each other, the three **bonds** are strong and difficult to break.

Despite this difficulty, nitrogen is an essential element for life. It is used to build the rungs of the ladder of DNA and RNA and is used in many substances that life either requires or creates. Certain **bacteria** can take nitrogen from the atmosphere and use it to make important substances. This process is called 'fixing'. These substances are passed to plants and then animals that use the substances for themselves. Without these nitrogen- fixing bacteria, life as we know it would not be possible. The movement of nitrogen from the atmosphere through bacteria to plants and then animals is called the **Nitrogen Cycle**. It is one of the most important cycles for life on Earth.

There is far more nitrogen in Earth's atmosphere than could ever be used by plants and animals. Yet it is still important that there is so much nitrogen in the atmosphere. The reason is that while individual gas **molecules** are small and do not weigh much, all the gases combined have a great **mass** and a great weight. Because of this mass and weight, there is a specific air **pressure**. As various gas molecules move around, they bump into other gas molecules. This air pressure is highest at sea level, where the weight of the gases presses down the most. As one moves up from sea level, the pressure becomes less. Eventually, the pressure becomes so low that people cannot breathe. This is why mountain climbers on Mt. Everest need to bring tanks of oxygen with them. There is oxygen up there, but the air pressure is so low that a person cannot get enough oxygen through regular breathing. This is also why airplanes that fly very high need to carry oxygen with them.

*Due to the decrease in air pressure, we need oxygen masks when we fly at high altitudes.*

Without the significant amount of nitrogen in the atmosphere, air pressure at sea level would not be enough for people to breathe. Since there is so much of it, it is fortunate that nitrogen is not very **reactive**. If a reactive gas such as oxygen replaced the nitrogen in the atmosphere, Earth would be much less likely to support life. In this way, both nitrogen's properties and the amount of it help maintain life on Earth.