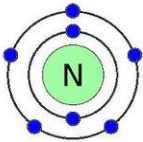


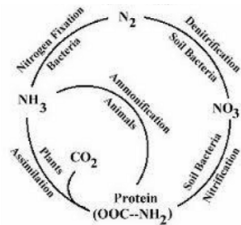
# The Nitrogen Cycle

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## Nitrogen Fixation



The majority of [Earth's atmosphere](#) (approximately 78%) is [nitrogen](#). The nitrogen cycle is the process by which [nitrogen](#) is converted between its various chemical forms. Nitrogen in the air becomes a part of biological matter mostly through the actions of bacteria and algae in a process known as nitrogen fixation.



Importance

of Nitrogen

- [Nitrogen Fixation](#)
- [Mineralization](#)
- [Nitrification](#)
- [Denitrification](#)

## Why Nitrogen is important for all life?

Nitrogen is a component in all [amino acids](#), is incorporated into [proteins](#), and is present in the bases that make up [nucleic acids](#), such as [DNA](#) and [RNA](#). In [plants](#), much of the nitrogen is used in [chlorophyll](#) molecules, which are essential for [photosynthesis](#) and further growth.

The [nitrogen cycle](#) is one of the most difficult of the cycles because there are so many important forms of nitrogen. In atmosphere it is about 78% and it is composed of two nitrogen atoms bound to each other. It is [non-reactive gas](#) and to break up and combine with carbon or oxygen.

## How the Nitrogen gas can be taken?

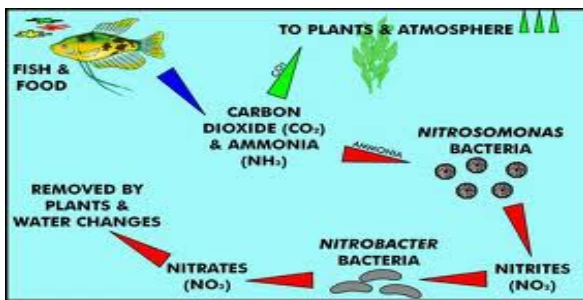
1. Lightning provides enough energy to "burn" the nitrogen and fix it in the form of nitrate.

2. Nitrogen fixing bacteria use special enzymes instead of the extreme amount of energy found in lightning to fix nitrogen.

### Three forms of nitrogen-fixing bacteria:

1. Free-living in the soil
2. Symbiotic, mutualistic associations with the roots of bean plants and other legumes (rhizobial bacteria)
3. Blue-green algae commonly in water.

### How Nitrogen gets converted?



### Five main processes cycle nitrogen Cycle:

1. Nitrogen fixation
2. Nitrogen uptake
3. Nitrogen mineralization
4. Nitrification
5. Denitrification

- After nitrogen is incorporated into organic matter, it is often converted back into inorganic nitrogen by mineralization. Most plants convert nitrate to amino acids.
- Animals acquire amino acids when they eat plants or other animals.
- Ammonification: When plants or animals die or release waste the nitrogen is returned to the soil in the output of the [decomposers](#), is ammonia.
- Ammonia is toxic, but the nitrite bacteria in the soil and in the water which take up ammonia and convert it to nitrite, which is nitrogen with two oxygens.
- Nitrite is also bit toxic, but nitrate bacteria take nitrite and convert it to nitrate, which can be taken up by plants to continue the cycle.

# The role of Human Beings:

Humans have significantly contributed to the transfer of nitrogen trace gases from [Earth](#) to the [atmosphere](#), and from the land to aquatic systems. Human alterations to the global nitrogen cycle are most intense in developed countries and in Asia, where vehicle emissions and [industrial agriculture](#) are highest.

Want to know more about human influence on nitrogen fixation? [click here](#) to schedule live homework help from a certified tutor!

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## Reference Links:

- [http://en.wikipedia.org/wiki/Nitrogen\\_cycle](http://en.wikipedia.org/wiki/Nitrogen_cycle)
- [http://www.visionlearning.com/library/module\\_viewer.php?mid=98](http://www.visionlearning.com/library/module_viewer.php?mid=98)
- <http://www.elmhurst.edu/~chm/onlcourse/chm110/outlines/nitrogencycle.html>
- [https://www.etap.org/demo/biology\\_files/lesson6/instruction4tutor.html](https://www.etap.org/demo/biology_files/lesson6/instruction4tutor.html)
- <http://www.youtube.com/watch?v=R8-E6cDCr5U&feature=related>
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