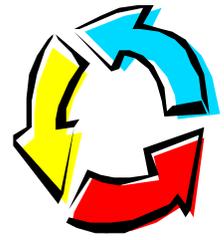

IOWA FACT SHEET



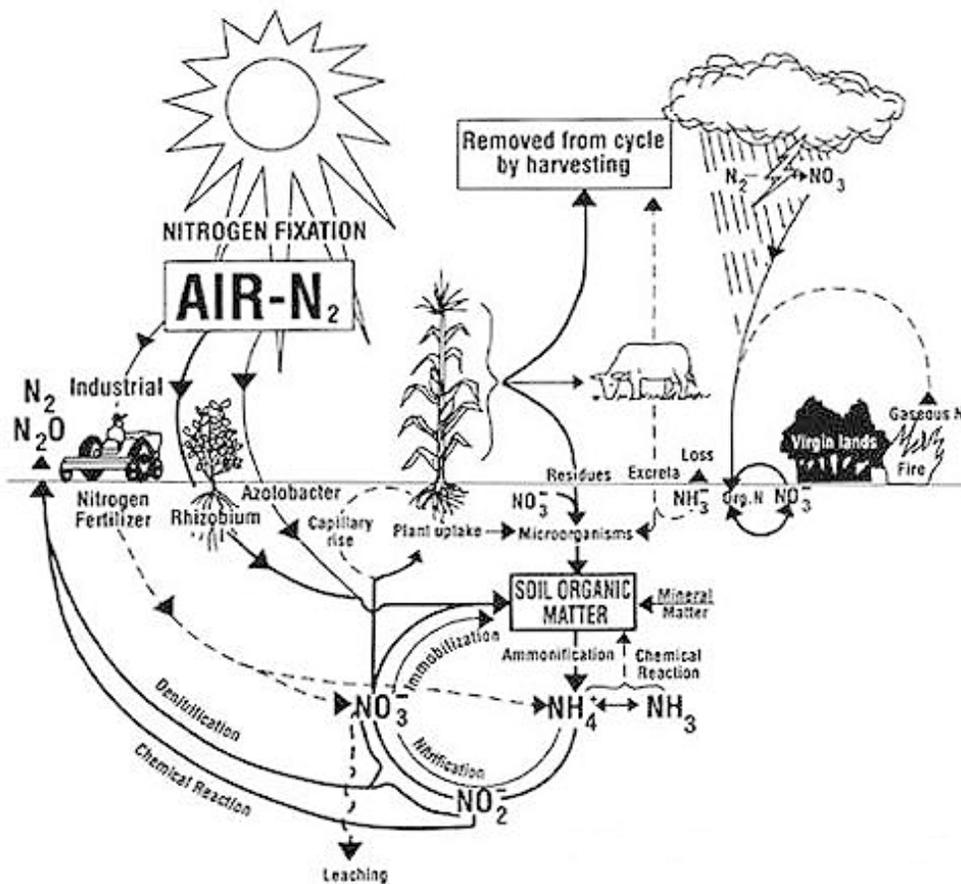
Nitrogen Cycle

Q. What is Nitrogen?

A. Nitrogen is essential to life on earth. Nitrogen gas makes up 78 percent of the air we breathe. Nitrogen, in various forms, passes from the air, to the soil, to all living things, and then back into the air.

Q. What is the Nitrogen Cycle?

A. The nitrogen cycle is the continuous series of natural processes by which nitrogen passes from the air to the soil, to plants, and ultimately to sustain all animal life, and then returns back to the air or soil through decay or denitrification (the loss of nitrogen).



Nitrogen is a basic element of all living cells. Through nitrogen fixation, nitrogen gas is converted into inorganic nitrogen compounds to be used by plants, animals, and people. This conversion is accomplished through the nitrogen cycle, in which nitrogen as a gas is carried to the earth's surface in precipitation. Nitrogen is then used by plants and incorporated in their tissues as plant protein. The nitrogen then passes through the food chain to animals and people.

Human intrusion in the nitrogen cycle can result in more or less nitrogen being cycled as part of the natural system. For example, the cultivation of croplands, harvesting of crops, and cutting of forests have caused a decline of the natural occurring nitrogen in the soil. Soil nitrogen can be replenished with manufactured nitrogen fertilizer, animal manure and legumes. Nitrogen from over-fertilization of plant life, industrial discharges, and human and animal waste discharges can add too much nitrogen to the natural system and may have an impact on soil, water, and air quality.

Q. What are the forms of Nitrogen?

A. Nitrogen is present in the environment in many forms. The predominant form is nitrogen gas. Nitrate and ammonia are the two forms used by plants. Organic nitrogen is mineralized by microorganisms to create these two forms that are found in our soils and water.

Q. Why should I be concerned about Nitrogen since it's part of a natural occurring process?

A. Lifestyles and behaviors are the most important factors to quality of life (diet, exercise, etc). The environment is another key factor affecting quality of life. We need to make decisions and develop policies that balance economics, resource utilization, and quality of life.

We are exposed to nitrogen in the food we eat, the water we drink, and the air we breathe. Drinking water sources are susceptible to watershed run-off. Groundwater contamination from over-fertilization of plant life, human and animal waste discharges can occur. Excessive amounts of nitrogen as nitrate in drinking water may cause health problems. In infants under 6 months of age, nitrogen as nitrate may transform into nitrite and cause Blue Baby Syndrome (BBS). Requirements of the Safe Drinking Water Act set a maximum contaminant level for nitrate nitrogen in community drinking water supplies at 10 parts per million. Research on other health effects is ongoing.

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