



CREEK CONNECTIONS

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Nitrates (NO₃) Fact Sheet

Definition: An important nutrient for plants and animals used in the building of proteins, DNA, and RNA. It is found naturally in waterways but, excessive amounts causes problems.

Background:

- Nitrogen is a very common element found in many forms throughout the environment...(occurs in waters as nitrate (NO₃), nitrite (NO₂), and ammonia (NH₃))
- Bacteria and blue-green algae convert atmospheric N₂ to form ammonia & nitrate, that plants can absorb through their roots.

This process is called **nitrogen fixation**.

- Aquatic animals obtain nitrogen by either consuming aquatic plants or consuming those animals that consume the plants.
- Nitrates can be returned to the soil from animal urine, feces, carcass decay and plant decay.

Environmental Consequences:

- Oversupply of nitrates and ammonia leads to **eutrophication**. High levels of nitrates or phosphates stimulate algae and aquatic plant growth. Aerobic bacteria populations then increase because of the large amounts of organic matter now available in the water. The resulting elevated bacteria populations deplete much of the dissolved oxygen found in the water.
- Excessive algal growth creates a soupy green stream, which is visually displeasing.
- Excessive aquatic weed (macrophytes) growth can make boating and swimming difficult.
- Humans add large quantities of nitrate/ammonia into waterways through sewage (treatment plants and septic tanks), fertilizers (for farms and lawns), nutrient rich runoff from cattle feedlots, dairies, and barnyards and nutrient rich soils washed in from a deforested area.



- Nitrates can produce a serious condition in fish called "brown blood disease."
- Nitrates also react directly with hemoglobin in human blood and other warm-blooded animals to produce

methemoglobin. This destroys the ability of red blood cells to transport oxygen. This condition is especially serious in babies under three months of age.

Water Quality:

- Unpolluted waters have a Nitrate level of below 1 mg/L.