Nitrate Effects

Where do Nitrates come from?

Most sources of excess nitrates come from human activity. The source of excess nitrates can usually be traced to agricultural activities, human wastes, or industrial pollution.

Nitrogen fertilizers have been applied to yards, fields, golf courses to promote the growth of plants. Rainwater can wash nitrates in the fertilizer into streams and rivers or the nitrates can seep into ground water. This can also occur with ***animal waste and manure***.

Untreated human sewage can contribute to nitrate levels in surface and ground water. Leaking or ***poorly functioning septic systems*** are a source of such nitrates. City sewage treatment plants treat sewage to make it non-hazardous, but treatment plants still release nitrates into waterways. In addition, ***industrial plants and agricultural processing*** operations are potential sources of nitrate pollution.

The major routes of entry of nitrogen into bodies of water are municipal and industrial wastewater, septic tanks, feed lot discharges, and animal wastes.

How do nitrates affect the health of aquatic animals?

Increased nitrate levels in water lead directly to increases in aquatic plant and algae growth.

Eutrophication – "The process by which a body of water acquires a high concentration of nutrients, especially phosphates and nitrates. These typically promote excessive growth of algae. As the algae die and decompose, high levels of organic matter and the bacteria that feed on the decomposing matter deplete the water of available oxygen, causing the death of other organisms, such as fish.

This will create stressful conditions for fish. If they are stressed for a significant part of the day, they will not behave normally or reproduce. If the conditions persist for a long period of time, the stressed fish species may choose to leave that area or die off.

High densities of algae can create a condition where sunlight cannot reach very far into the water. Since plants and algae require some sunlight, plants and algae not receiving sunlight will die off. These dead plant materials will settle to the bottom of the water and bacteria that feed on decaying organic material will greatly increase in numbers. ***These bacteria will consume oxygen and, therefore, the level of dissolved oxygen in this water will fall to levels that are too low for many aquatic insects and fish to survive***. Also, this can cause extreme changes in habitat. Fish that need gravel or sand for spawning may find nothing but mats of vegetation and muck so will be unable to produce offspring.