How Phosphorous Affects Your Lake

by Gus Janca

All lakes undergo a natural aging process. Barring the effects of human activity, this aging process can take hundreds or even thousands of years. Nutrients, which include phosphorus, nitrogen and other elements, are necessary for the growth of plant and animal life in a healthy lake. Concentrations are low in the waters of young lakes. As a lake edges, nutrient levels increase as they are washed into the water from natural soil erosion and decaying- vegetation. This is a natural progression, but it can be hastened by man-made changes to the environment.

In many instances, human activities have tremendously increased the nutrient levels in lakes. These activities include:. outpourings of sewage and industrial wastes, as well as runoff from farm fertilizers and barnyards. Excavation for construction and extraction of aggregates (sand and gravel) can cause erosion of nutrient-laden soil, putting more nutrients into the water.

A compelling example is the history of pollution in Lake Erie, which climaxed in the early 1960's. Nutrients added to a body of water have the same effect on its plant life as fertilizer has on a garden, except here the increased growth is highly undesirable. Algae can grow at prolific rates in waters rich in nutrients. Algae refers to several genera of microscopic plants which tend to grow in large groups. Algae is often called "pond scum" or "blooms". Prolific growth of algae causes problems in a number of ways- algae can smell bad and give water an unpleasant taste, the water can become murky, and large masses of algae shade the water body from the sun, preventing light from penetrating deeper water. The worst effect is when algae masses die off in the fall. They sink to the bottom and decompose- This chemical reaction takes dissolved oxygen out of the water, upsetting the natural balance of aquatic life. When fish cannot get enough oxygen, they smother to death. As well, studies have shown that the quality of lake water directly affects the value of cottage property.

Phosphorus, often in the form of phosphates, has always been present, dissolved in lake and river water. It is a widely distributed chemical element, occurring naturally in rocks and soils, and it is one of life's essential components. In lake water, when phosphorus levels increase, so does the growth of algae. Chemical analysis to measure the concentration of this one nutrient, is a cost-effective way to determine overall nutrient levels, and thus the health of your lake.

The natural concentrations of phosphorus, and of other nutrients, vary from lake to lake, since the environment and history of each lake is unique. Therefore, meaningful information is gained through monitoring of long term changes in phosphorus levels in a particular lake, rather than comparing one lake with another. This requires the collection of data over a number of years. This information can help determine if nutrient loading from human activities is becoming a problem. Remedial action for these man-made problems may then be undertaken.

For environmental reasons, as well as for good financial sense, anyone owning shore-line property should develop "water-wise" attitudes and habits, We should be using phosphate free soaps, and we must ensure proper maintenance of our septic systems. We should avoid clearing land near shorelines. We should also avoid fertilizing any shoreline property (phosphates are a major component of fertilizers!), or cutting grass right down to the water. Each of us has a part to play in maintaining water quality.