Nutrients—Too Much of a Good Thing

adapted from *Maryland Save Our Streams Adopt-A-Stream Activities Packet*

Like other plants, algae need sunlight, water, and carbon dioxide. They get their nutrients from soil in the water. Soil gets into bodies of water naturally when wind or moving water erodes it, but people do things that add even more nutrients to the water. These include farming and construction practices that cause more erosion, fertilizers that get washed into rivers and streams, animal waste and human sewage that get into waterways, and chemical nutrients in automobile, factory, and power plant exhaust.

All these nutrients cause too much algae to grow. When too much algae grows all at once, it's called an algae bloom. When the algae dies, bacteria decompose it and use the oxygen that fish and other animals need. Bacteria also give off more carbon dioxide, making it harder for fish to discharge the carbon dioxide in their bloodstreams and take in oxygen. Decomposition releases substances that are harmful to aquatic life. Too much algae also blocks sunlight that underwater plants need, so they die.

Kits that test for certain nutrients are available. To see for yourself how too many nutrients affect the water you'll need:

- Five clear quart jars.
- Aluminum foil.
- House plant food.
- One gallon of water from a stream, pond, aquarium, or estuary.

After washing and rinsing the jars, fill one with tap water as your control. Label it and set it aside. No algae should grow in this one. Fill the other four jars almost to the top with the water sample. Label one "No nutrients added" and set it aside. Label the next jar "One serving nutrients" and add enough plant food to make a regular solution according to package directions. Label the next jar "Three servings nutrients" and add three times as much plant food. Label the last jar "Six servings nutrients" and add six times the normal amount of plant food.

Cover the jars lightly with foil and put them in a cool and well-lit spot not in direct sunlight. Every few days, stir the water and check for algae growing on the glass. It might appear as a thin green film or splotch. Hold a white piece of paper behind the jars to highlight the algae. It may take a few weeks to see results. Once you do, record the dates and results of your observations.

The plant food represents the nutrients that are added to waterways. Which sample had the most algae growth? Why? What do people do that add nutrients to our waterways?