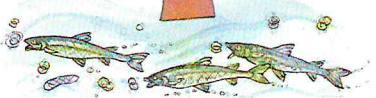




Herring gull eggs: 124 ppm



Lake trout: 4.83 ppm



Smelt: 1.04 ppm



Phytoplankton: 0.025 ppm

Source: U.S. Environmental Protection Agency.

### The Food Web and Toxic Waste

When poisons enter a waterway, they may also enter the food web. Some toxic chemicals are stored in living things. When a larger animal eats smaller animals, the poison becomes concentrated in the larger animal. In this diagram, notice how chemicals called PCBs build up within a food chain. PCBs are measured in parts per million, or ppm.

## 4.2 The Geographic Setting

Five lakes—Superior, Michigan, Huron, Erie, and Ontario—make up the Great Lakes. Only one of the lakes, Lake Michigan, is entirely within U.S. territory; the other four are shared by Canada and the United States. In fact, the U.S.-Canada boundary runs through the four lakes. Together, the Great Lakes form the largest group of freshwater lakes on Earth.

More than one tenth of the U.S. population and one fourth of the Canadian population live in the Great Lakes region, and they use the lakes in many ways. People in both countries depend on the lakes for drinking water. They also rely on lake water for use in factories, irrigation on farms, and generation of electric power. In addition, the lakes provide opportunities for shipping, fishing, and recreation, such as boating and swimming.

**One of North America's Largest Watersheds** Think of standing on a hill and pouring water from a large container onto the ground, and then watching the water flow downhill. While running downhill, some of the water would soak into the ground and, if there were a hole along the way, water would fill it to form a tiny lake. You would have created your own tiny **watershed**.

A watershed is a geographic area that includes all of the land and waterways that drain into a body of water. Watersheds come in many shapes and sizes, including hills and valleys and cities and towns. Smaller watersheds can drain into larger watersheds. The Great Lakes region is one of the largest watersheds in North America.

The Great Lakes are so large that they look and act like oceans. In fact, people have called them “the fourth seacoast” of the United States. Unlike the oceans, though, the lakes are filled with fresh water that has little or no salt. Thus they are also called “the sweetwater seas.”

**A Vast and Varied Ecosystem** The Great Lakes region is a vast ecosystem. One way to understand how the living things in the Great Lakes ecosystem are related to one another is to look at who eats what. These relationships make up what scientists call a **food web**. Food webs include both plants and animals that feed on each other.

Every ecosystem has its own food web, which is made up of many **food chains**. A food chain is a series of plants and animals, each of which depends on the next for food. In the Great Lakes ecosystem, for example, one food chain might begin with plants that grow in lakes and rivers. The next link in the chain might be insects that feed on those plants. These insects are eaten by tiny fish, which are then eaten by larger fish. Eagles sitting at the top of the food chain, in turn, may eat the larger fish. Another food chain might begin with tiny organisms known as algae and end with a river otter.

The food web is an important part of any ecosystem. If one part of a food web is harmed, it affects all of the living things in the ecosystem. For instance, if a fish is poisoned by **pollution**, any animal that eats that fish will be poisoned as well. Or, if a type of plant or fish is lost from an ecosystem, all animals that feed on that plant or fish will lose part of their food supply. In this way, all living things in a food web depend on one another for their survival.

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