

## Fall Algae Blooms

Algae is normally thought of to be found in the spring, when water heats up or in the summer; on dry, sunny days. Algae blooms in the fall are not uncommon either and there is a scientific answer for this. Algae is caused by nutrients and the more nutrients present; the more algae can grow. Algae is constantly blooming and when nutrients are available, it does not matter what season we are in. Algae control conducted in summer months does not prevent nutrients from growing algae during the rest of the year. Algae treatments control algae that is present during the treatment. A final fall bloom isn't all that unusual - it just means that the lakes are, literally, all mixed up, often referred to as fall turnover.

During the summer our lakes stratify, meaning that a warm upper layer of water forms and settles on top of the denser, colder water below. Throughout this period, only that upper warm layer of water, or *epilimnion*, gets mixed up, bringing anything floating at the bottom of the layer to the surface and sending things at the top down. But nutrients that fall into the lower, colder layer of water, the *hypolimnion*, are trapped and begin to build up over time. When the weather (and the lake) begins to cool, the lake enters a phase called "turnover."

During turnover, the *epilimnion* cools off, grows denser and pushes into the *hypolimnion*, shrinking that cold, bottom layer and bringing whatever is in it back into the mixing cycle. Eventually this upper layer cools to the temperature of the bottom layer and the entire lake mixes, bringing an upwelling of nutrients stored since late spring. And these nutrients act like a fertilizer, promoting the growth of anything green. Algae bloom as a result of this turn over will naturally dissipate out on its own.

Illustration of seasonal lake mixing and stratification. Image: National Geographic

## Lake Turnover

