June 5, 2014

Blue-green Algae (also called Cyanobacteria) and Algae Toxins

(Questions and Answers)

Q 1: What is the concern with algae blooms?

A 1: Certain types of algae in the blue-green (or cyanobacteria) group can produce toxins that can affect animals and humans. Different types of algae can produce different types of toxins. These toxins have the potential to affect the liver, nervous system, or exposed skin. In order to be affected, people, pets or wildlife have to be exposed to the toxin by drinking or playing in water where a toxic bloom is present.

Q 2: How do I know if it is toxic?

A 2: Not all algae blooms are toxic, but the only way to know is to have it tested. Washington Department of Ecology funds a statewide algae toxin testing program, with sampling coordinated through the local health departments. Residents should report algae blooms to Thurston County Public Health Department. Health department staff will make arrangements to get a water sample, identify the type of algae present, and send the sample for algae toxin testing if warranted. Lab results are available online at www.nwtoxicalgae.org

Q 3: Who do I call if I want to report algae along my shoreline?

A 3: Call Thurston County Public Health Department at (360) 867-2626.

Q 4: How will I know if the lake water is safe for drinking?

A 4: Thurston County Public Health Department advises against the use of untreated lake water as a drinking source. This policy went into effect in 1987 for Summit Lake. At a minimum, lake water should always be filtered and disinfected if used as a potable water supply.

In recent years, toxic algae blooms have become a public health concern in lakes world-wide. When Thurston County Public Health Department staff becomes aware that an algae bloom is occurring, they arrange to get a water sample and send it to be tested. We issue a public health advisory if toxin is found at levels above state health advisory limits. Lake residents and users are notified through posting of warning signs at parks, boat launches, and other visible locations, sending direct email notices to people on that lake’s contact list, posting on the department website, and issuing a press release to the media.
Q 5: Is it safe to swim in it and use the water to shower, do laundry, etc?

A 5: If an algae toxin is present above the state health advisory limit, it should not be used for any domestic household use or water-contact recreation activities. Swimmers should always avoid water where a lot of algae are present or water clarity is poor.

Q 6: Does boiling or adding chlorine make the water safe to drink?

A 6: No, boiling only makes the problem worse. Boiling kills the algae which releases the toxins contained inside, once in solution the toxins become more concentrated as the water evaporates. Chlorine alone cannot make the water safe to drink. Filtration prior to chlorination is necessary so the algae cells do not break open and release their toxin. And even when adequately filtered, chlorine is only effective against certain types of toxic algae (Microcystin, Cylindrospermopsin and Saxitoxin) and only when the water temperature, pH and specific chlorine dose and contact time are just right.

Q 7: What are the symptoms of algae poisoning?

A 7: There are several known algae toxins that can affect people or animals in different ways. Generally, they are either liver toxins, neurotoxins, or skin irritants. The two most frequently documented toxins occurring in Washington and Thurston County lakes are microcystin and anatoxin a.

Microcystin is a liver toxin. Symptoms of microcystin poisoning may take 30 minutes to 24 hours to appear, depending upon the size of the animal or person affected and the amount of toxic bloom consumed. Symptoms may include jaundice, shock, abdominal pain/distention, weakness, nausea/vomiting, severe thirst, rapid/weak pulse and, in rare cases, death.

Anatoxin a is a neurotoxin. Neurotoxins are rapid-acting poisons effective in small amounts. Symptoms and animal death may occur within a few minutes to a few hours, depending on the size of the animal or person and amount of toxic bloom consumed. Symptoms may include weakness, staggering, loss of muscle coordination, muscle cramps, difficulty in swallowing, labored respiration, complete muscle paralysis, convulsions, cardiac failure, and death in animals. Humans may exhibit tingling around the mouth and fingertips, as well as slurred speech.

Other types of toxins can cause skin irritation and gastroenteritis. Some people may develop an allergic reaction such as skin rash, hives, itchy eyes, and throat after exposure to these toxins.

For more information go to www.doh.wa.gov/CommunityandEnvironment/Contaminants/BlueGreenAlgae/

Q 8: Will my pets get sick if they go in the lake?

A 8: Possibly, if they drink lake water or lick their fur after getting out of the water. Pets are at much greater risk for algae toxin poisoning due to their smaller body weight. If your pet shows any of these symptoms, seek veterinary advice immediately. Be sure to tell your veterinarian that your animal may have come into contact with cyanobacteria toxins.

If you see a bloom, do not let your pet in the water. Do not let them lick their fur, rinse them with clean water, rinse your hands and any exposed skin.
Q 9: Is there a long-term concern with exposure to toxins at concentrations below the advisory level?

A 9: Long term exposure to microcystin has been shown to promote liver tumors in animals.

Q 10: What type of water treatment could I install that effectively removes algae toxins?

A 10: At this time, there is not a lot of information on the effectiveness of single household or point-of-use treatment systems in removing algae toxins. If it becomes necessary to issue a health advisory, residents would be advised to use an alternative, approved, source for their household water. Research to date has focused on toxin removal at large municipal water treatment plants. What has been found is that different types of toxins require different types of treatment, some being very complicated multi-step processes. Studies have shown that activated carbon followed by membrane filtration is effective at removing algae cells. For toxins in solution in the water, testing has shown successful removal with treatment systems that use chlorine, ozone, potassium permanganate or hydrogen peroxide, depending on the toxin. There is research underway to determine if there are residential point-of-use water treatment methods that would effective at removing algae toxins. The results may be available by late 2014.

Q 11: If I want to get my water tested, where could I send a sample?

A 11: Water Management Laboratories in Tacoma has the capability of testing for algae toxins. Recent price quotes from the lab were $175 for individual toxin testing and $395 for all of the most common algae toxins. This lab has local sample drop off locations in Olympia. Contact phone number is (253) 531-3121

Q 12: Could my shallow well be contaminated from algae toxin in the lake?

A 12: Yes, the only way to know for sure is to have your water tested. In many instances, the earth acts as a natural biologically active filter which has been shown to be effective against toxin removal. If the pathway from the lake to your water intake does not pass through earth layers capable of supporting life (usually at the surface) then toxins may travel into your aquifer. This is entirely dependent on the conditions of your well in relation to the lake.

Q 13: Why is the lake having algae blooms that are toxic? Could it be from failing septic systems or laundry water discharge?

A 13: Algae growth is dependent on many factors, such as sunlight, temperature, and nutrients, much like the plants in a garden. Any type of runoff, discharge, or spill that allows nutrients to get into the water will contribute to the growth of algae. Things like failing septic systems, laundry water discharges, vehicle wash water runoff, and fertilizer application too close to the lake can all contribute to algae growth. But algae do not always produce toxins, and scientists have not yet determined what triggers a specific type of algae to produce toxins in one place or time and not in another.