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This fact sheet is a product of the Minnesota Interagency Work Group on Blue-Green Algae.

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What you should know about blue-green algae

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Algae are common in surface waters throughout Minnesota. They are microscopic plants that are a natural part of any aquatic environment. When temperature and water conditions are right, algae “blooms” can turn the water green and smelly and may contribute to fish kills. Most algae are harmless; however under certain conditions, a type of algae, called “blue-green” algae, can produce toxins. People or animals who contact toxic blue-green algae can become sick. In some cases, animals have died from it.

What is it?

Algae occur in virtually all waters in Minnesota, but their concentration can vary considerably through the year and with location.

There are numerous forms of algae, but one form -- blue-green algae (also referred to as cyanobacteria) can produce toxins that affect humans or animals. This type of algae is found throughout Minnesota, but thrives in warm, shallow, nutrient-rich lakes, commonly found in central and southern Minnesota.



How and where does it occur and how can I recognize it?

While blue-green algae can be present throughout the year, they usually don't cause problems until there's an extensive “bloom.” In nutrient-rich lakes, they can become so abundant that they completely dominate other free-floating algae. The water will often become very cloudy, with a green, yellow or blue-green cast or hue.

Lakes may develop a “swampy” odor as the algae accumulate in large floating mats and begin to decompose. In extreme cases, there may be surface scums of dead and decomposing algae. While many algae can turn the water green, a lake with a blue-green bloom may look like “pea soup,” or even like there's green paint floating on the surface.

Since blue-green algae often float near the surface of the water, they are strongly influenced by the wind. Wind-driven blooms accumulate on a down-wind shoreline where the algae often form mats and decompose. These blooms may become toxic; however we are unable to predict which blooms are toxic and which are not. Alternately, wind can completely dissipate a toxic bloom over the course of a day. Although toxic blooms most often occur in late summer and early fall, they may occur early in the summer, as was the case in 2007. Extremely warm and dry conditions in May and June 2007 promoted bloom formation in many lakes.

What causes blue-green algae blooms?

There is no single factor that causes an algae bloom. A combination of factors such as excessive nutrients, warm temperatures, and

lots of sunlight all encourage the growth of blue-green algae. A primary cause, excess nutrients (e.g. phosphorus), is largely due to nonpoint source runoff from agricultural lands (e.g., row crops), urban areas (e.g. streets, parking lots, lawns, etc.), and point sources, such as wastewater treatment facilities.

What are the potential hazards?

Cyanobacteria can produce several types of toxins that are among the most powerful natural poisons known. The toxins can make people, their pets, and other animals sick. Often, the first sign that an algae bloom has become toxic is a sick dog that has been swimming in or drinking from an algae-filled pond. Although effects on humans are less frequently reported, children are at higher risk than adults for illness from cyanobacteria because of increased contact with the water, increased likelihood of ingestion, and potentially because of less body mass.

Toxic effects in animals occur when they ingest the contaminated water or algae. Farmers can suffer severe livestock losses from blue-green algae poisoning of their cattle's watering source. The degree to which an animal is affected depends on several factors: the amount of water or algal cells ingested, the animal's body size, amount of food in the animal's stomach, the sensitivity of the species and individual animal, and the type and amount of toxin present in the bloom.

An animal that has ingested toxins from an algae bloom can show a variety of symptoms, ranging from skin irritation or vomiting, to severe disorders involving the circulatory, nervous and digestive systems, and severe skin lesions. In worst cases, the animal may suffer convulsions and die. From 2004 to 2007, there have been eight blue-green algal-related dog deaths reported to MPCA.

People are seldom seriously affected by toxic algae because the unpleasant odor and appearance of water associated with blue-green algae blooms tend to make us avoid it. However, skin rashes, nasal irritation, or other health effects may result from skin contact with algal toxins. Swallowing or ingesting water with a blue-green algae bloom may cause symptoms such as vomiting, diarrhea, or nausea; headache, throat irritation, or muscle pain; and in severe cases, paralysis or respiratory failure.

What should I do if I or a pet come in contact with it?

The Minnesota Department of Health recommends that humans not ingest, swim or wade in water with blue-green algae. If contact does occur, the algae should be washed off thoroughly, paying special attention to the swimsuit area. If your pet comes in contact with a bloom, wash off your pet's coat to prevent them from ingesting the algae while self-

cleaning. If you suspect the animal is sick from the algae, call a veterinarian immediately.



Can I eat the fish?

There have been no confirmed reports of cyanobacteria toxin-related human health effects related to fish consumption. However, there is minimal data on blue-green toxins in lakes, fish or shellfish on which to base judgments about health risks. A few studies have shown that toxins from blue-green algal blooms can accumulate in fish, particularly when the water contains high toxin levels. However, it is uncertain whether fish will accumulate levels of toxins sufficient to pose a risk to people who eat these fish. The World Health Organization offers the following advice: In waters where blue-green algae blooms exist, people should eat fish in moderation, and because the accumulation of toxins may be greatest in fish intestines, they should avoid eating fish guts. Fish caught during an algae bloom may have an earthy, musty flavor, but the condition is harmless as far as is known.

For More Information

For more information about blue-green algae, visit the Web page of the Minnesota Interagency Work Group on Blue-Green Algae at: www.pca.state.mn.us/water/clmp-toxicalgae.html

Or contact any of the following:

Minnesota Pollution Control Agency, 651-296-6300
Minnesota Department of Health, 651-215-5800
Minnesota Department of Natural Resources, 651-296-6157
Minnesota Veterinary Medicine Association, 651-645-7533.