

Is It Cyanobacteria?

(This paper was written by the Kansas Department of Health and Environment and originally published on their website: www.kdheks.gov/algae-illness/private_waters.htm.)

There are a couple of simple tests pond observers can do, at no cost, to determine if a green pond has a large community of cyanobacteria, or if any algal-looking material visible at the water surface is a cyanobacteria surface scum.

THE JAR TEST

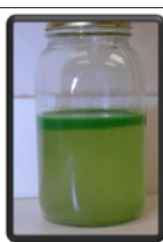
Look out over the pond and see if the water looks very green. To decide whether the “green” is cyanobacteria in the pond or just an overabundance of some of the more beneficial types of planktonic algae, a simple test can be conducted called the “jar test.”

Find a clear glass jar with a screw top lid (maybe pint-to-quart size, like a Mason jar), use gloves to fill it to three-quarters full with lake water (not directly from the surface, but collected just under the surface), and set it in a refrigerator where it can be left without being disturbed overnight.

The next day, carefully (don’t agitate and mix the water) take the jar out and look to see where the algae have accumulated. If the algae are all settled out near the bottom of the jar, then that is a likely indication that the lake does not have a lot of cyanobacteria growing in it. If, instead, the algae have formed a green ring around the top of the water in the jar, or just seem to be collected at the air/water divide, there is a strong possibility that the pond does have cyanobacteria.



Initial sample



Positive for Cyanobacteria



Probably Green algae

NOTE :

No test is 100% perfect, and that includes the jar test for blue-greens. The test relies on the buoyancy adaptation of most planktonic blue-green algae. However, there is a small possibility (~1 to 2%) that the algae in your particular test happen to be non-buoyant species of cyanobacteria, resulting in a false negative test. Likewise, some swimming forms of cyanobacteria (like Euglenoids) may form a surface layer during a jar test, resulting in a false positive. Fortunately, most Euglena blooms will be reddish in color rather than green, allowing for their identification.

Although the jar test provides a quick and inexpensive way to confirm whether you have a cyanobacteria community in your lake, it does not tell you what species are present, nor does it tell you whether they are actually producing toxins. Be aware, however, that just having cyanobacteria present does not mean your pond is automatically hazardous. Many lakes and ponds do have blue-green algae in them. Hazardous conditions occur when the amount cyanobacteria is large, and composed of species capable of generating toxins. For that information, a microscopic examination of the water, combined with a chemical test for toxins, would be required for a more complete picture.

THE STICK TEST

Look out over the pond and see if there are mats or blobs of green material floating on the surface. Are cyanobacteria colonies forming a surface scum, or is it a mat of floating filamentous green algae? A simple test to determine what the material might be is called the “stick test.”

- Find a sturdy stick; long enough to reach the water, without getting algae on your hands
 - Poke the stick into the surface mat, without falling in
 - See what comes back out on the stick
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- ❖ If the stick comes out looking like it has been put into a can of paint, the mat on the pond is likely to be a cyanobacteria scum
 - ❖ If the stick pulls out strands that look like green hair or threads, the mat on the pond is likely filamentous green algae. Although filamentous green algae can be a nuisance when over-abundant, they do not pose a danger to health.



Note: The stick test can fail when a particular type of cyanobacteria is present called Lyngbya wollei. This species of cyanobacteria can form tough filamentous mats that float to the surface, similar to the mats formed by harmless filamentous green algae. However, Lyngbya wollei typically will have a very putrid sewage-like odor, which filamentous green algae do not. Lyngbya wollei mats also will often release a purple pigment in the water around them, which is something filamentous green algae do not do.