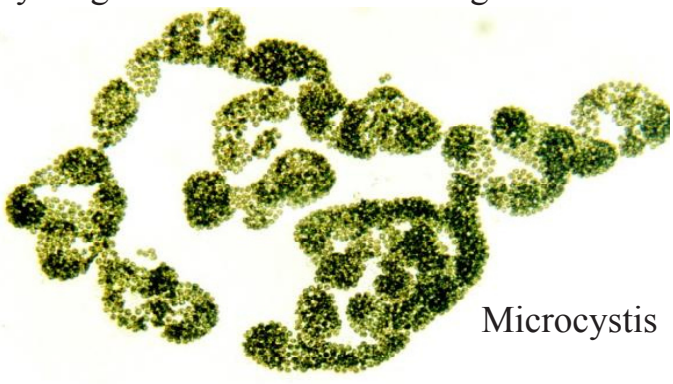
Harmful Algal Blooms and Muck: What's the Difference?

Harmful algal blooms and muck can be mistaken for each other simply because people may associate an algal bloom with either type. However, both represent significantly different species. Unlike green algae such as cladophora, blue-green algae is technically not an algae, but is a bacteria known as cyanobacteria. Blue-green harmful algal blooms (HABs) and green algae blooms can be found in similar locations. However, the two species differ in appearance and in factors that influence their growth and movement in the Great Lakes.

Harmful Algal Bloom: Microcystis	Muck: Cladophora
♦ Blooms tend to stay in water column	♦ Can wash up on shore in mats
♦ Can produce liver, skin, or nervous system toxins	♦ Not known to produce toxins
♦ Blooms not known to harbor E. coli	♦ Mats (on beach and in water) have contained E. coli
♦ Peak growth often occurs late summer	♦ Peak growth often occurs early summer
♦ When blooms die, sink to bottom, often responsible for depleted oxygen on bottom	♦ When blooms die, float to surface, final location depends on wind and water circulation
♦ Colonial (circular cells)	♦ Filamentous (end to end), branched
♦ Grows in response to nutrients, light	♦ Grows in response to nutrients, light
♦ Planktonic (passively moves in water)	♦ Benthic (bottom dwelling)
♦ Microalgae (microscopic cells)	♦ Macroalgae (grow up to 3 ft long)
♦ Zebra mussels promote by selectively filtering other algae, leaving toxic cyanos and rapidly recycling nutrients that stimulate growth	♦ Zebra mussels promote by providing substrate for growth and providing localized nutrient source



Microcystis

Cladophora

Because harmful algal blooms (HABs) pose potential health risks from the toxin that can be produced, the NOAA Center of Excellence for Great Lakes and Human Health is researching factors that influence the growth of *Microcystis,* as well as developing tools to determine whether toxic strains of *Microcystis* are present in surface water blooms.

For more information on Harmful Algal Blooms, please visit our website at http://www.glerl.noaa.gov/res/Centers/HumanHealth/hab/EventResponse/

Harmful Algal Bloom

Put in Bay, Ohio Lake Erie *Microcystis* bloom. August 2004. Photo courtesy of J. Dyble, NOAA-GLERL.

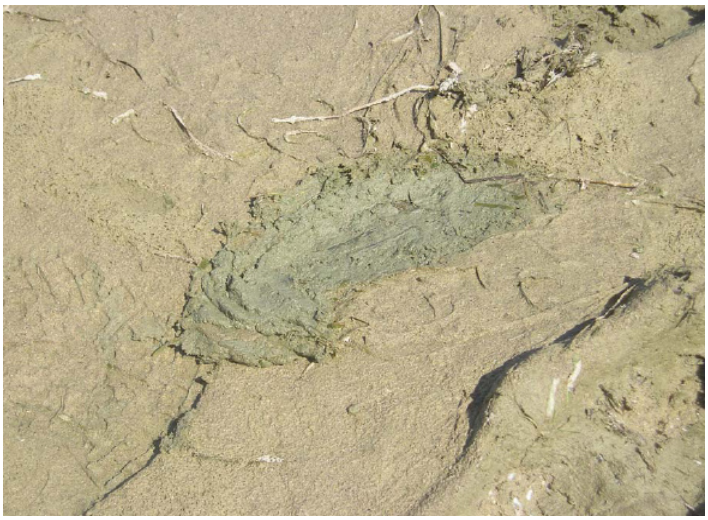
***Microcystis* blooms are suspended in surface water and can give water a green appearance. *Microcystis* blooms have been found in western Lake Erie, Saginaw Bay and inland tributaries of Lake Michigan. They do not typically wash up on shorelines or leave a slimy residue on shores or boats, but have the capability of producing the toxin microcystin, which poses potential health threats. The toxin may be present in the water even after the bloom subsides.**

Lake Michigan *Microcystis* bloom in Muskegon, Michigan. August 2006. Photo courtesy of R. Sturtevant, Great Lakes Sea Grant Network.

Muck

Cladophora "muck" along shore line of Saginaw Bay, Lake Huron. September 2006. Photo courtesy of J. Dyble, NOAA-GLERL.

Cladophora blooms have been found in various areas of the Great Lakes, including western Lake Michigan and the Saginaw Bay area of Lake Huron in Michigan. Cladophora mats wash up on shorelines from the bottom of water bodies in the summer months and can be considered a nuisance to local communities. Cladophora blooms create a "muck" zone on beaches and have the potential of harboring bacteria, but do not produce algal toxins.



Cladophora "muck" along shore line of Saginaw Bay, Lake Huron. September 2006. Photo courtesy of J. Dyble, NOAA-GLERL.

Sea Grant Michigan

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CENTER OF EXCELLENCE FOR GREAT LAKES AND HUMAN HEALTH

The NOAA Center of Excellence for Great Lakes and Human Health focuses on understanding the inter-relationships between the Great Lakes ecosystem, water quality and human health. The Center employs a multidisciplinary approach to understand and forecast coastal-related human health impacts for natural resource and public policy decision-making, and develops tools to reduce human health risks associated with three research priority areas: beach closures, harmful algal blooms, and drinking water quality. For more information on CEGLHH's research, please contact sonia.joseph@noaa.gov.