

Cyanobacteria Toxins & Health Effects

Symptoms: (Onset based on studies of laboratory animals)	Hepatotoxins: <u>Route of exposure:</u> Swallowing water contaminated with cyanobacteria or toxins <u>Signs & symptoms:</u> Elevated ALT, hepatomegaly gastroenteritis (diarrhea, nausea, vomiting, abdominal pain), fever, malaise, headache <u>Symptoms onset:</u> Minutes to hours <u>Differential diagnosis:</u> Acute viral hepatitis and Toxic Hepatitis			Neurotoxins: <u>Route of exposure:</u> Swallowing water contaminated with cyanobacteria or toxins <u>Signs & symptoms:</u> Tremor, twitching, muscles cramps, motor weakness, paresthesia, cardiac or respiratory paralysis <u>Symptoms onset:</u> Minutes to hours <u>Differential diagnosis:</u> Pesticide poisoning and other toxin poisoning		Dermatotoxins: <u>Route of exposure:</u> Skin contact with water contaminated with cyanobacteria or toxins <u>Signs & symptoms:</u> Itchy skin, red skin, hives, skin blistering/rashes <u>Symptoms onset:</u> Minutes to hours <u>Differential diagnosis:</u> Allergic reactions	
	Cyanobacteria Genera	Microcystins	Cylindrospermopsin	Nodularins	Anatoxin-a	Saxitoxins	Aplysiatoxin
<i>Anabaena</i>	Y	Y		Y	Y		
<i>Anabaenopsis</i>	Y						
<i>Aphanizomenon</i>		Y		Y	Y		
<i>Arthrospira</i>	Y						
<i>Chrysochloris</i>		Y		Y	Y		
<i>Cyanobium*</i>	Y						
<i>Cuspidothrix</i>				Y	Y		
<i>Dolichospermum</i>	Y	Y		Y	Y		
<i>Gloeotrichia</i>	Y						
<i>Hapalosiphon*</i>	Y						
<i>Limnothrix</i>	Y						
<i>Lyngbya</i>		Y			Y	Y	Y
<i>Nodularia</i>			Y				
<i>Microcystis</i>	Y			Y			
<i>Nostoc</i>	Y						
<i>Oscillatoria</i>	Y			Y		Y	
<i>Phormidium</i>	Y			Y			
<i>Planktothrix</i>	Y			Y		Y	
<i>Raphidiopsis</i>		Y		Y			
<i>Schizothrix</i>						Y	
<i>Synechocystis</i>	Y						
<i>Woronichinia</i>	Y			Y		Y	

Note for epidemiologists/healthcare practitioners: (Diagnosis in humans based on symptoms & signs, history of HAB exposure, and ruling out other clinical diagnosis. So far no laboratory tests are readily available in the USA to confirm the presence of cyanotoxins in human specimens.

Disclaimer: "The genera on the list are compiled from EPA (2019) & WHO (2018) for educational purposes. This list is subject to annual and/or as needed review."

* These genera neither common in Virginia nor being actively monitored for. They are included in this list for educational purpose only.

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References:

Environmental Protection Agency (EPA). (2019). Health Effects from Cyanotoxins. Retrieved from: <https://www.epa.gov/cyanohabs/health-effects-cyanotoxins>

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Oregon Health Authority. (2019). Oregon Harmful Algae Bloom Surveillance (HABS) Program Recreational Use Public Health Advisory Guidelines Cyanobacterial Blooms in Freshwater Bodies. Retrieved from: <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/RECREATION/HARMFULALGAEBLOOMS/Documents/2019%20Advisory%20Guidelines%20for%20Harmful%20Cyanobacterial%20Blooms%20in%20Recreational%20Waters.pdf>

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Blue-Green Algae/Cyanobacteria Harmful Algal Bloom (HABs) Physician Reference. Retrieved from: <https://www.hamiltoncountyhealth.org/resources/fact-sheets/blue-green-algae/>;