

Revising Harmful Algal Bloom Advisory Protocols and Assessment Methods



Water Quality Health Advisory Panel

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Discussion Outline

1. Should UDOH and UDEQ revise the Guidance for Local Health Departments to incorporate EPA's recommended toxin thresholds for microcystin and cylindrospermopsin?
2. Should UDOH and UDEQ revise the Guidance for Local Health Departments threshold advisories (e.g., swimming closure between 20,000-100,000 cells/mL and/or 4-20 µg/L microcystin) ?
3. Should public health advisories be altered in cases where high cyanobacteria cell densities are observed but relatively low toxin concentrations are observed?
4. Should DWQ revise the 303(d) Assessment Methodology for the 2018 Integrated Report to incorporate the toxin thresholds identified in EPA's draft guidance?
5. Do WQHAP members have comments on EPA's draft guidelines for recreational thresholds for microcystins and cylindrospermopsin that DWQ should consider in preparing comments to EPA?

1. Should UDOH and UDEQ revise the Guidance for Local Health Departments to incorporate EPA's recommended toxin thresholds for microcystin and cylindrospermopsin?



UDEQ/UDOH Guidelines for HABs

Toxin Producing Blue-green algae Cell Density (cells/mL)	Microcystin Concentrations (µg/L)	Anatoxin-A ¹ (µg/L)	Chlorophyll <i>a</i> (µg/L)	Health Risks	Action Recommended	Relative Probability of Acute Health Risk
<20,000	<4	<20	<10	Negligible	None	Low
20,000-100,000	4-20	NA	10-50	Short-term effects e.g. skin irritation, gastrointestinal illness	Issue caution advisory; Post CAUTION sign; Weekly sampling recommended	Low to Moderate
100,000 – 10,000,000 or Reports of animal illnesses or death	20-2,000	NA	50-5,000	As above for low risk, and potential for long-term illness	Issue warning advisory; Post WARNING sign; Weekly sampling recommended	Moderate to High
>10,000,000 or Visible scum layer or Reports of human illness	>2,000	>20	>5,000	As above for moderate risk, and potential for acute poisoning	Issue Danger Advisory; Post DANGER sign; Weekly sampling recommended Consider Closure	High

¹ From [Oregon Public Health Advisory Guidelines](#)

NA = None available



Draft EPA Recreational Criteria or Swimming Advisory Recommendations for Microcystins and Cylindrospermopsins

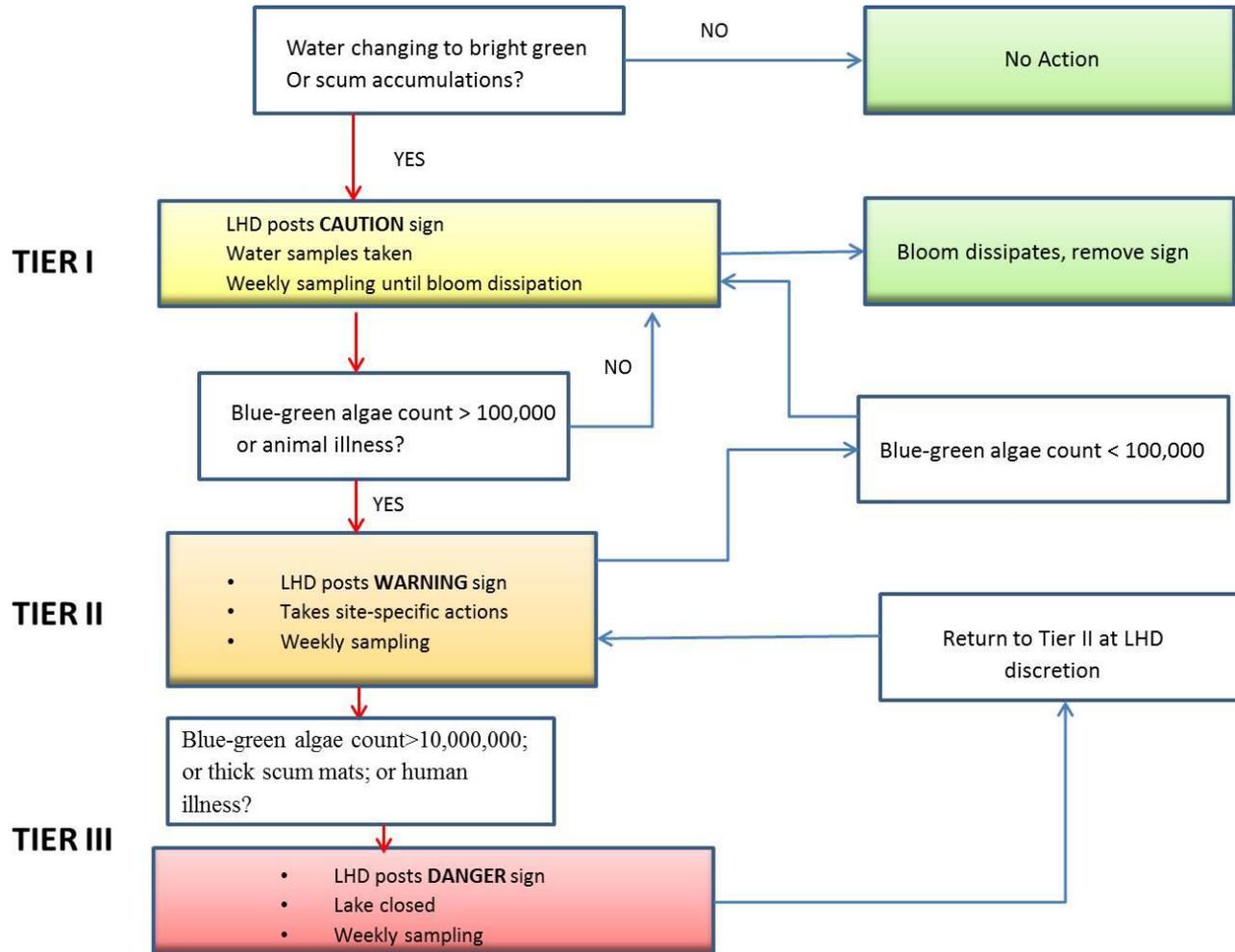
Application of Recommended Values	Microcystins			Cylindrospermopsin		
	Magnitude (µg/L)	Frequency	Duration	Magnitude (µg/L)	Frequency	Duration
Swimming Advisory	4	Not to be exceeded	One day	8	Not to be exceeded	One day
Recreational Water Quality Criteria		No more than 10 percent of days	Recreational season (up to one calendar year)		No more than 10 percent of days	Recreational season (up to one calendar year)



2. Should UDOH and UDEQ revise the Guidance for Local Health Departments threshold advisories (e.g., swimming closure between 20,000-100,000 cells/mL and/or 4-20 µg/L microcystin)?



HAB Decision-making Algorithm



Current Tier I Advisory

Toxin Producing Blue-green algae Cell Density (cells/mL)	Microcystin Concentrations ($\mu\text{g/L}$)	Health Risks
20,000-100,000	4-20	Short-term effects; e.g. skin irritation, gastrointestinal illness

CAUTION

TOXIC ALGAE MAY BE PRESENT
 Lake may be unsafe for people and pets

Until further notice:

- **Do not swim or water ski in areas of scum.**
No nade o practique el esquí acuático en áreas con espuma o verdín.
- **Do not drink the lake water.**
No tome el agua del lago.
- **Keep pets and livestock away.**
Mantenga alejados las mascotas y el ganado.
- **Clean fish well and discard guts.**
Limpie bien el pescado y deseche las tripas.
- **Avoid areas of scum when boating.**
Evite las áreas con espuma o verdín cuando ande en lancha.




Date Posted:

Call your doctor or veterinarian if you or your animals have sudden or unexplained sickness or signs of poisoning.
Learn more: habs.utah.gov

Utah Poison Control Center
(800) 222-1222

Report new algae blooms to the Department of Environmental Quality:
 (801) 536-4123

Call your local health department:





Current Tier II Advisory

Toxin Producing Blue-green algae Cell Density (cells/mL)	Microcystin Concentrations (µg/L)	Health Risks
100,000-10,000,000	20-2,000	As above for low risk, and potential for long-term illness

WARNING

TOXIC ALGAE PRESENT

Lake unsafe for people and pets

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3. Should public health advisories be altered in cases where high cyanobacteria cell densities are observed but relatively low toxin concentrations are observed?



Utah Poison Control Center



676 Reported Cases (As of November 1)

Human Exposure (533)	79%	Recreated in or exposed to Utah Lake Water
Animal Exposure (34)	5%	14 dogs (8 UT Co., 5 SL Co., 1 WY)
Information only (109)	16%	

32% of cases are symptomatic

Symptoms Reported:

GI: diarrhea, nausea, vomiting, and abdominal pain

Skin: rash and irritation

Neuro: headache, dizziness, drowsiness

Ocular: irritation

EPA Acknowledgment of Toxin Indicator Limitations

- "Cyanobacterial cells cause allergenicity and irritation in animal, independent of whether the cyanobacterial cells produce toxin."
- "These [studies] support that there is no relationship between cyanotoxin content and the allergenic effect of cyanobacteria."
- "Overall, these studies provide evidence of significant associations between cyanobacterial cell exposure and human health effects even in the absence of cyanotoxins."

4. Should DWQ revise the 303(d) Assessment Methodology for the 2018 Integrated Report to incorporate the toxin thresholds identified in EPA's draft guidance?



Lake Assessment Guidance

Recreational Use Support

Beneficial Use Supported:

- The beneficial use is supported if cyanobacteria cell counts <20,000 cells/mL.

Beneficial Use Not Supported:

- The beneficial use is not supported if the cyanobacteria cell count exceeds 100,000 cells/mL for more than one sampling event or other narrative indicators (e.g., phycocyanin, chlorophyll-a, HAB beach warnings, suggest recreational uses are not being attained).

Insufficient Data and Information:

- The waterbody will be categorized 3A if there is one exceedance >20,000 cells/mL. These waterbodies will be prioritized for further evaluation with respective public health managing partners such as the State Health Department and State Parks Departments.



Draft EPA Recreational Criteria or Swimming Advisory Recommendations for Microcystins and Cylindrospermopsins

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5. Do WQHAP members have comments on EPA's draft guidelines for recreational thresholds for microcystins and cylindrospermopsin that DWQ should consider in preparing comments to EPA?



QUESTIONS

