Nevada Division of Environmental Protection

Workshop for proposed regulation R149-24
Surface Water Quality Criteria for Algal Toxins

August 11, 2025, 1:30pm

Presented by
Seth Alm, Standards, Assessment, and Monitoring Branch

Nevada Department of CONSERVATION & NATURAL RESOURCES

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

Algal Toxins in Nevada Surface Waters

This meeting is being held in-person and virtually

- Meeting is being recorded and transcribed
- Questions or comments? Please raise your hand, or use the "chat" function

Slides are available on the NDEP website

- https://ndep.nv.gov/water/rivers-streams-lakes/water-quality-standards/

Written comments accepted until ***5:00pm, August 14, 2025***

Outline

Clean Water Act Overview

- Beneficial Uses
- Criteria
- Antidegradation

Proposed Criteria

Algal Toxin Information

Justification and Benefits of Algal Toxin Standards

Comments/Discussion

Meeting Adjourned

Clean Water Act

Objective:

"To restore and maintain the chemical, physical, and biological integrity of the Nation's waters"

Goal:

To attain "fishable and swimmable" conditions wherever possible

Purpose:

Protect public health and welfare, enhance quality of water

Roles and Oversight

EPA Publishes Criteria Recommendations Under CWA Section 304(a)

CWA requires EPA to develop Nationally recommended criteria for surface water quality that accurately reflect the latest scientific knowledge on the impacts of pollutants on human health and the environment.

NDEP is then required by to consider these recommended criteria for adoption into Nevada's water pollution control regulations.

EPA published 304(a) Nationally recommended criteria for Algal Toxins in 2019.

Water Quality Standards

A water quality standard consist of three key components:

Beneficial Uses

What the water is used for (recreation, drinking water, aquatic life, and others)

Antidegradation

Prevents water quality from getting worse, especially high-quality or unique waters

Criteria

Science based limits for pollutants to protect uses

Beneficial Uses

Watering of Livestock

Irrigation

Aquatic Life

Recreation involving contact with the water

Recreation not involving contact with the water

Municipal or domestic supply

Industrial supply

Propagation of wildlife

Extraordinary aesthetic, ecological, or recreational value

Enhancement of water quality

Maintenance of a freshwater marsh

NAC445A.122

The Following standards are intended to protect both existing and designated beneficial uses and must not be used to prohibit the use of the water as authorized under title 48 of NRS

Criteria

STANDARDS OF WATER QUALITY
Las Vegas Wash at the Historic Lateral

PARAMETER	REQUIREMENTS TO MAINTAIN EXISTING HIGHER QUALITY	WATER QUALITY CRITERIA TO PROTECT BENEFICIAL USES	Beneficial Uses[a]										
			Livestock	Irrigation	Aquatic	Contact	Noncontact	Municipal	Industrial	Wildlife	Aesthetic	Enhance	Marsh
Beneficial Uses			X	X	X		X			X			X
Aquatic Life Species of Concern			Warm-water fish.[†]										
Temperature ΔT[b] - °C	ΔT = 0	S.V. ≤ 34°			*								
pH - SU		S.V. 6.5 - 9.0			*								
Dissolved Oxygen - mg/L		S.V. ≥ 5.0			*								
Total Inorganic Nitrogen (as N) - mg/L	95% of S.V. samples ≤ 20				*								
Nitrate (as N) - mg/L		S.V. ≤ 90			*								
Nitrite (as N) - mg/L		S.V. ≤ 5			*								
Total Suspended Solids - mg/L		S.V. ≤ 135[c]			*								
Total Dissolved Solids - mg/L	95% of S.V. samples ≤ 1900	S.V. ≤ 3000	*										
Fecal Coliform No./100 ml		d											*
E. coli - cfu/100 mL		A.G.M. ≤ 630					*						
Toxic Materials		e											

X = Beneficial use is applicable to the waterbody
* = The most restrictive beneficial use criteria

Antidegradation

Antidegradation is a Federally required program element that aims to maintain and protect existing quality and preserve the unique attributes and conditions of high-quality waters.

The Antidegradation review is completed during the surface water discharge permitting process.

Antidegradation Requirements

NRS 445A.565

40 CFR § 131.12

Proposed Regulation R149-24

R149-24: Algal Toxins

Establishes numeric surface water quality criteria for cylindrospermopsin and microcystins (algal toxins), supporting the recreation involving contact with the water beneficial use

Amends NAC 445A.1236 to include the "recreation involving contact with the water" beneficial use and adds numeric criteria values supporting that use

Chemical	Municipal or Domestic Supply (µg/L)	Aquatic Life[1,2] (µg/L)	Irrigation (µg/L)	Watering of Livestock (µg/L)	*Recreation Involving Contact With the Water (µg/L)*
Microcystins	-	-	-	-	*8[j,k(8)]*
Cylindrospermopsin	-	-	-	-	*15[j,k(8)]*

Proposed Regulation R149-24

R149-24: Algal Toxins

Proposed technical corrections to:

Add a footnote to the water quality standards for cyanide, indicating that the standard is expressed as free cyanide

Corrects the spelling of the term “Heptachlor Epoxide”

Cyanide	200[a,(5)]	-	~~[Heptacholor]~~ ***Heptachlor*** Epoxide	-	-
1-hour average	-	22[f,(5)]			
96-hour average	-	5.2[f,(5)]	1-hour average	-	0.52[f]
			96-hour average	-	0.0038[f]

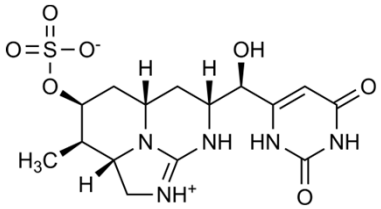
What are Algal Toxins?

Algal toxins are harmful chemicals produced by certain types of cyanobacteria (blue-green algae) found in surface waters.

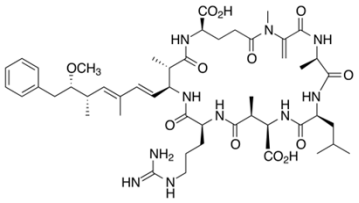
Produced during excessive growth, called a **Harmful Algal Bloom (HAB)**

Not all algae produce toxins, but some harm people, pets, livestock and wildlife.

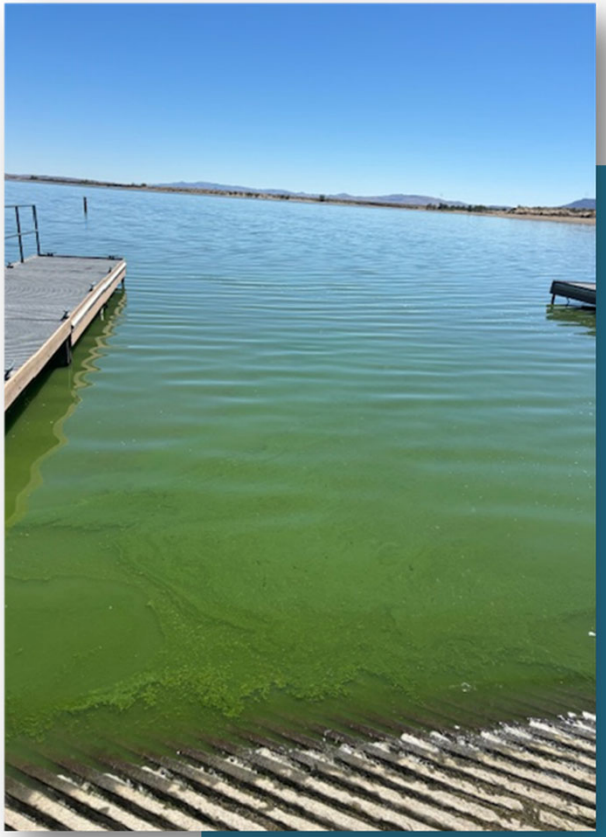
People are most often exposed through swimming, wading, or ingesting contaminated water during recreational activities.

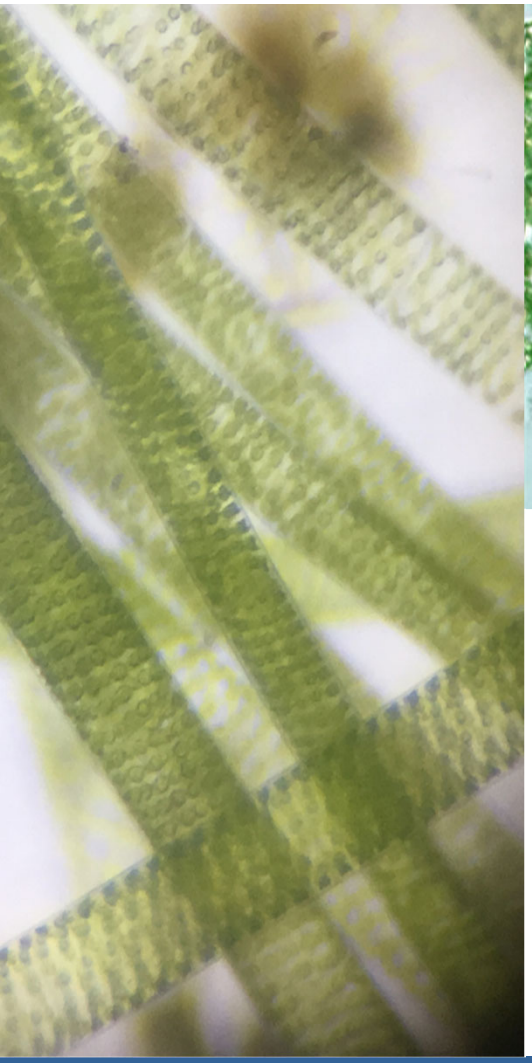


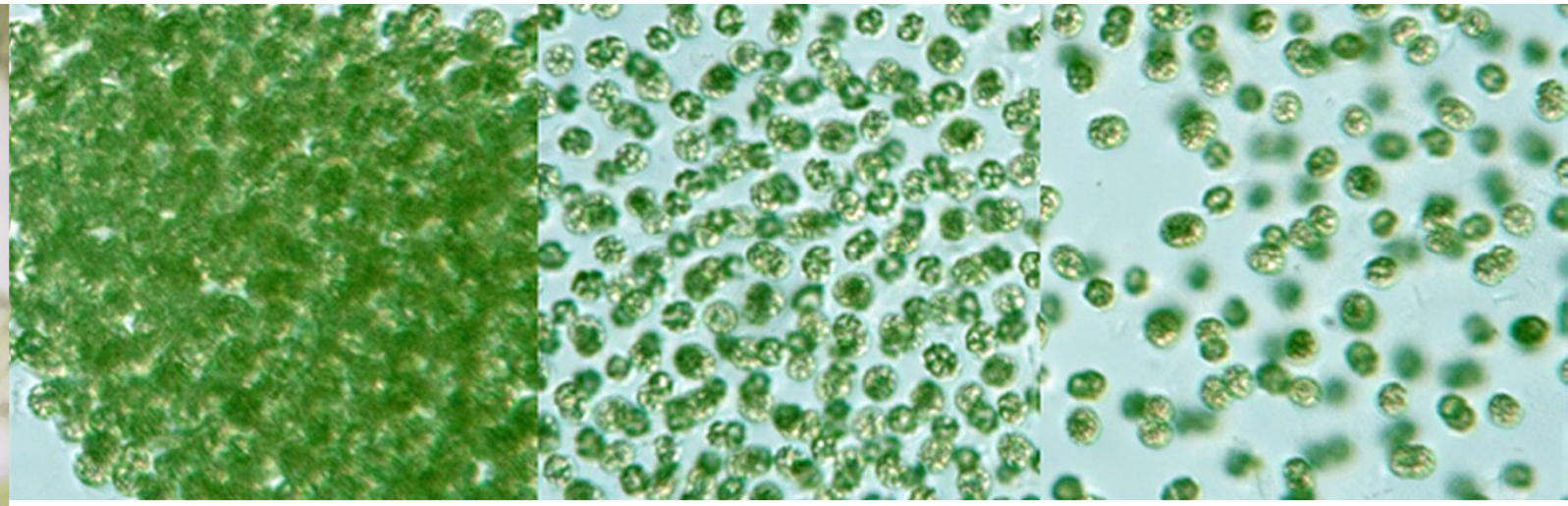
Cylindrospermopsin



Microcystin-LR





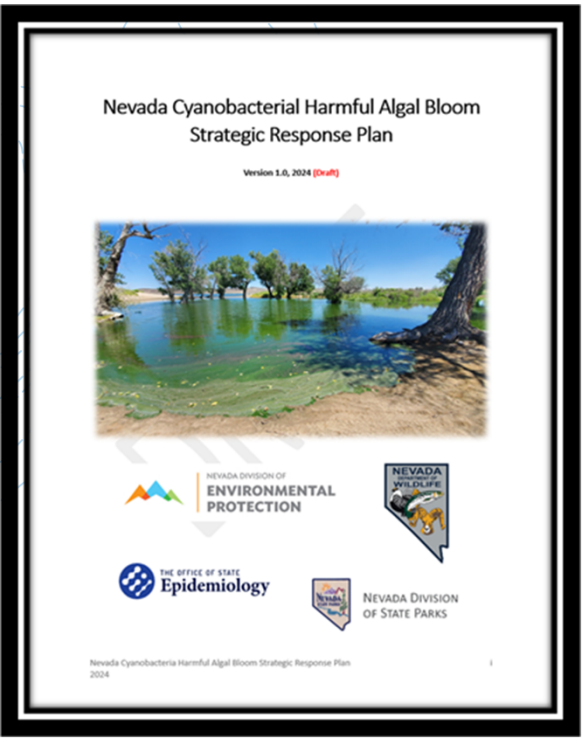


Public Health Risks

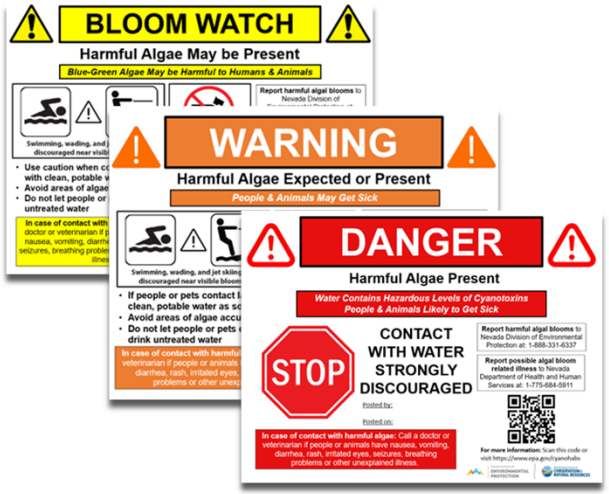
- Microcystins: linked to liver damage
- Cylindrospermopsin: linked to kidney and liver damage
- Risk of exposure is highest during full water contact recreation (Swimming, skiing, tubing, etc.)

Existing HAB Monitoring and Response Program

Interlocal agreement between five State agencies established the task force, with the goal of monitoring and responding to HABs.



Strategic Response Plan establishes thresholds for issuing recreational advisories



Purpose of existing program is to protect public health by assisting waterbody managers conduct public safety operations

The existing program does not establish criteria for the protection of beneficial uses

What R149-24 Proposes

- Adds two primary cyanotoxin thresholds to the NAC 445A 1236 table under the "recreation involving contact with the water" beneficial use
  - Microsystins: **8 µg/L**
  - Cylindrospermopsin: **15 µg/L**
- Defines frequency and duration of exceedances suitable for determining beneficial use support

Chemical	Municipal or Domestic Supply (µg/L)	Aquatic Life[1,2] (µg/L)	Irrigation (µg/L)	Watering of Livestock (µg/L)	*Recreation Involving Contact With the Water (µg/L)*
Microcystin	-	-	-	-	*8[i,k(8)]*
Cylindrospermopsin	-	-	-	-	*15[i,k(8)]*

(8) The applicable criterion value must not be exceeded in more than three separate 10-day non-rolling periods in consecutive water years. As used in this footnote, "water year" means the 12-month period beginning on October 1 and ending on September 30 of the immediately following calendar year.

Why is this needed?

Nevada is required to consider for adoption into its water quality standards all EPA Nationally recommended criteria published under section 304(a) of the CWA

Nevada does not have criteria to determine beneficial use support of the RWC beneficial use for algal toxins

Without numeric algal toxin standards, the RWC beneficial use support is inadequately determined

HAB Monitoring in Nevada

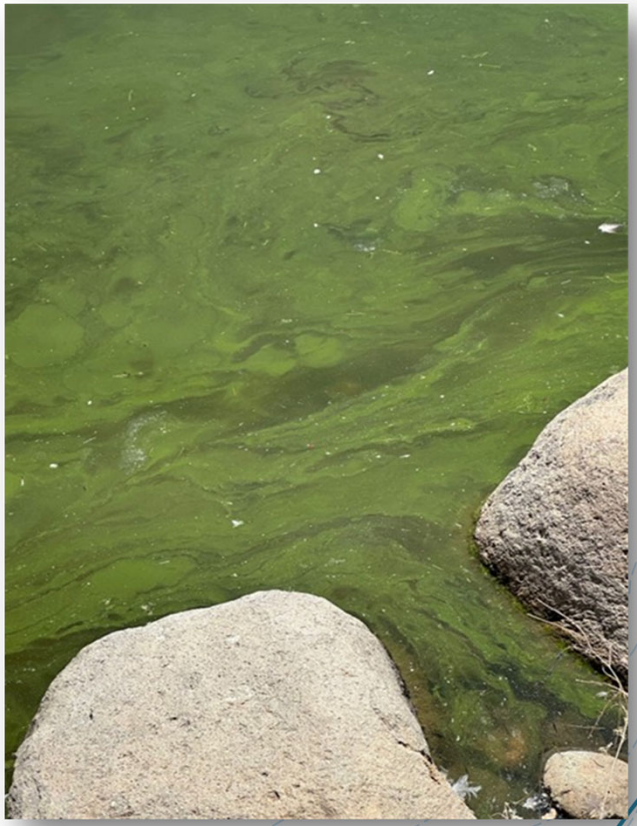
Summary of NDEP 2024 data

49 samples collected for algal toxin analysis

Toxin levels observed up to 6,962.5 µg/L microcystins

21 recreational health advisories issued on 12 waterbodies

4 waterbodies exceeded EPA Nationally recommended criteria



Benefits of Proposed Regulation

Establishes clear standards to determine RWC beneficial use support statewide

Ensures Nevada is aligned with EPA guidance and best scientific understanding

Further protects public health by identifying waterbodies with frequent HAB events that can cause harm

Supports consistent monitoring, assessment, and permitting decisions under the CWA

Supporting Information

Additional information available on the NDEP website

Regulation language
Rationale
Fact Sheet
EPAs 2019 Nationally Recommended Criteria for Algal Toxins

https://ndep.nv.gov/water/rivers-streams-lakes

Next steps for R149-24

Comments received during this workshop, and written comments received by ***August 14*** will be considered

NDEP intends to present the proposed regulation to the State Environmental Commission (SEC) to be considered for adoption

SEC Hearing scheduled for ***September 9*** with additional opportunity for public comment

NDEP HAB Program

https://ndep.nv.gov/water/rivers-streams-lakes/water-quality-monitoring/harmful-algal-bloom-program

Thank You

Comment deadline

August 14, 2025, 5:00pm PST

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Questions or Comments?

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  - Microsystins: **8 µg/L**
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Chemical	Municipal or Domestic Supply	Aquatic Life[1,2]	Irrigation	Watering of Livestock	*Recreation Involving Contact With the Water*
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	*(µg/L)*
Microcystin	-	-	-	-	*8[i,k(8)]*
Cylindrospermopsin	-	-	-	-	*15[i,k(8)]*

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Supporting Information

Draft reg language

Fact sheet

Rationale

EPA 2019 304(a) criteria

NDEP Harmful Algal Bloom Program

Supporting Information

445A.1236 Standards for toxic materials applicable to designated waters.

https://ndep.nv.gov/water/rivers-streams-lakes/water-quality-standards/current-and-past-actions

Antidegradation Regulation