



Fact Sheet: Proposed Regulation of the State Environmental Commission R149-24 Algal Toxins

Statutory Requirements: State and Federal Regulations

Nevada state law (Nevada Revised Statutes [NRS] 445A.520) requires the State to establish water quality standards to protect beneficial uses of surface waters of the State. Additionally, Section 303 of the Clean Water Act (CWA) and other Federal regulations (40 Code of Federal Regulations [CFR] Part 131) require that States and authorized tribes routinely review and, as appropriate, modify water quality standards that protect the designated uses of surface waters. Such standards also provide the basis for controlling discharges or releases of pollutants into surface waters of the State.

Requirements for water quality standards are contained in NRS 445A.425, 445A.520, and 445A.565 and surface water quality standards for waters of the State of Nevada are found in the Nevada Administrative Code (NAC) 445A.11704 through 445A.2234 inclusive.

The proposed regulation will add *Recreation Involving Contact with the Water (RWC)* beneficial use to the table of standards for toxic materials, add the analytes *microcystins* and *cylindrospermopsin* to the list of chemicals in the table, and add numerical criteria for those analytes.

Nevada Criteria for Algal Toxins in Surface Waters

In 2019, EPA issued CWA Section 304(a) recreational water quality criteria recommendations for two algal toxins, *microcystins* and *cylindrospermopsin*. This recommendation reflects the latest peer-reviewed scientific knowledge. The criteria are designed to protect the public from incidental exposure to harmful levels of these algal toxins while participating in water-contact activities in freshwater where immersion and incidental ingestion of water are likely (US EPA, 2019). Such activities include, but are not limited to, swimming, water skiing, tubing, water play by children, or similar water-contact activities in waterbodies designated for such recreational uses. NDEP's proposed criteria are summarized in the table below.

Microcystins Magnitude (µg/L)	Cylindrospermopsin Magnitude (µg/L)	Duration	Frequency
8	15	1 in 10-day assessment period across a water year	Not more than 3 excursions in a water year in more than one consecutive year

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

Exposure to elevated levels of microcystins can potentially lead to liver damage, while cylindrospermopsin can lead to kidney and liver damage. To protect the beneficial use of recreation involving contact with the water (RWC), NDEP proposes to adopt EPA's current recommended human health recreational ambient water quality criteria (EPA 2019).

Occurrence of Algal Toxins in Nevada

Cyanobacteria, often referred to as blue-green algae, are naturally occurring photosynthetic bacteria found in surface waters. Some cyanobacteria species can produce toxins including microcystins and cylindrospermopsin. When environmental conditions are favorable it can promote excessive growth of cyanobacteria resulting in high cyanobacterial cell densities, known as blooms. The abundance of toxigenic cyanobacteria can vary within the overall cyanobacteria population, between waterbody to waterbody, and over time within a single waterbody.

In 2024, NDEP collected 49 samples in Nevada's surface waters with algal toxin concentrations ranging from 0 micrograms per liter ($\mu\text{g/L}$) to 6962.5 $\mu\text{g/L}$. Twenty-one recreational advisories were issued on twelve separate waterbodies to protect public health, with four of those waters experiencing algal toxin concentrations above the proposed criteria values.

Summary

The absence of algal toxin surface water quality criteria in the Nevada Administrative Code may not adequately protect the designated use of RWC. Addition of these criteria will ensure adequate protection of the RWC beneficial use throughout the State. In 2019, EPA published the *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin* that describe the magnitude, duration, and frequency of algal toxins not expected to result in adverse human health effects from short-term recreational exposure via incidental ingestion while swimming. The EPA recommends a magnitude of 8 $\mu\text{g/L}$ for microcystins and 15 $\mu\text{g/L}$ for cylindrospermopsin not be exceeded by a duration and frequency outlined in the above table.

Consistent with Nevada's *Continuing Planning Process* document, NDEP proposes to adopt the EPA's current recommended water quality criteria for microcystins and cylindrospermopsin to protect the beneficial use of RWC in NAC 445A.1236.

Additionally, this regulation makes editorial corrections to: (1) add a footnote to the water quality standards for cyanide; and (2) the spelling of the term "Heptachlor Epoxide".

References

Bureau of Water Quality Planning – Current and Past Actions

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

Proposed Regulation of The State Environmental Commission: R149-24

<https://www.leg.state.nv.us/Register/2024Register/R149-24P.pdf>

Nevada Administrative Code: Standards for Water Quality

<https://www.leg.state.nv.us/nac/nac-445a.html#NAC445ASec11704>

Nevada Revised Statutes: Water Pollution Control

<https://www.leg.state.nv.us/nrs/nrs-445a.html>

EPA Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin

<https://www.epa.gov/sites/default/files/2019-05/documents/hh-rec-criteria-habs-document-2019.pdf>

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