Nevada Division of Environmental Protection
Bureau of Water Quality Planning

Proposed Changes to Select Water Quality Standards For The Inorganic Toxic Chemicals (NAC 445A.144) Related to Aquatic Life Beneficial Use

FACT SHEET
May 2006

Background

Section 303 of the Clean Water Act and 40 CFR 131 give states responsibility for setting, reviewing and revising water quality standards. Water quality standards include criteria that provide limits on a particular pollutant or limits on a condition of a waterbody designed to protect and support a designated use. Under Section 304(a) of the Clean Water Act, the U.S. Environmental Protection Agency (EPA) publishes and periodically updates water quality criteria reflecting the latest scientific data and information on the environmental effects of pollutants. The revised criteria are used by states and tribes to modify water quality standards that provide for the protection and propagation of aquatic life and wildlife; for recreation in and on the water; public water supplies; and agricultural and industrial uses. State of Nevada requirements for water quality standards are contained in the Nevada Revised Statutes 445A.425, 445A.520, and 445A.565 and water quality standards for waters of Nevada are found in the Nevada Administrative Code (NAC) 445A.118 through 445A.225.

Proposed Regulation Changes

The Nevada Division of Environmental Protection (NDEP) is proposing changes to select water quality standards for the inorganic toxic chemicals related to aquatic life. The proposed changes involve revising and/or amending the aquatic life criteria for the metals and inorganic chemical compounds contained in NAC 445A.144, "Standards for Toxic Materials Applicable to Designated Waters." The proposed revisions are based on updated criteria values that have been recommended by the U.S. Environmental Protection Agency (EPA) as national recommended water quality criteria for protection of aquatic life [May 2005]. NDEP is also proposing to add recommended aquatic life criteria for aluminum and chloride to NAC 445A.144 since the EPA guidance [May 2005] includes these parameters. No changes are proposed to be made at this time to the other inorganic chemicals standards contained in NAC 445A.144 related to municipal and domestic supply, irrigation, and watering of livestock, or to the standards for the organic chemicals related to any beneficial use which are also contained in NAC 445A.144.

The proposed revisions are summarized in the following tables. Table 1 compares the existing and the proposed revised/updated aquatic life criteria for metals and inorganic compounds. The recommended aquatic life criteria values for aluminum and chloride are shown in Table 2.

For questions, comments or additional information please contact:

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Table 1. Comparison of Existing and Proposed Revised/Updated Aquatic Life Criteria for Metals and Inorganic Compounds

Chemical	Existing Aquatic Life Criteria (µg/l)	Chemical	Proposed Aquatic Life Criteria (µg/l)
Arsenic (III) 1-hour average (Dissolved) 96-hour average (Dissolved)	 342 180	Arsenic 1-hour average (Dissolved) 96-hour average (Dissolved)	 340 150
Cadmium 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.85)*e^{(1.128[\ln(hardness)]-3.828)}$ $(0.85)*e^{(0.7852[\ln(hardness)]-3.49)}$	Cadmium 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(1.136672-[\ln(hardness)(0.041838)]) * e^{(1.0166[\ln(hardness)]-3.924)}$ $(1.101672-[\ln(hardness)(0.041838)]) * e^{(0.7409[\ln(hardness)]-4.719)}$
Chromium (VI) 1-hour average (Dissolved) 96-hour average (Dissolved)	 15 10	Chromium (VI) 1-hour average (Dissolved) 96-hour average (Dissolved)	 16 11
Chromium (III) 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.85)*e^{(0.819[\ln(hardness)]+3.688)}$ $(0.85)*e^{(0.819[\ln(hardness)]+1.561)}$	Chromium (III) 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.316)*e^{(0.819[\ln(hardness)]+3.7256)}$ $(0.86)*e^{(0.819[\ln(hardness)]+0.6848)}$
Copper 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.85)*e^{(0.9422[\ln(hardness)]-1.464)}$ $(0.85)*e^{(0.8545[\ln(hardness)]-1.465)}$	Copper 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.96)*e^{(0.9422[\ln(hardness)]-1.700)}$ $(0.96)*e^{(0.8545[\ln(hardness)]-1.702)}$
Cyanide [Free] 1-hour average (Total) 96-hour average (Total)	 22 5.2	Cyanide [Free] 1-hour average (Total) 96-hour average (Total)	 22 5.2
Iron (Total)	1,000	Iron (Total) 96-hour average	 1,000
Lead 1-hour average (Dissolved) 96-hour average Dissolved)	 $(0.50)*e^{(1.273[\ln(hardness)]-1.46)}$ $(0.25)*e^{(1.273[\ln(hardness)]-4.705)}$	Lead 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(1.46203-[\ln(hardness)(0.145712)] * e^{(1.273[\ln(hardness)]-1.460)}$ $(1.46203-[\ln(hardness)(0.145712)]) * e^{(1.273[\ln(hardness)]-4.705)}$
Mercury 1-hour average (Dissolved) 96-hour average (Total)	 2.0 0.012	Mercury 1-hour average (Dissolved) 96-hour average (Dissolved)	 1.4 0.77
Molybdenum (Total)	19	Molybdenum (Total)	19
Nickel 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.85)*e^{(0.846[\ln(hardness)]+3.3612)}$ $(0.85)*e^{(0.846[\ln(hardness)]+1.1645)}$	Nickel 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.998)*e^{(0.846[\ln(hardness)]+2.255)}$ $(0.997)*e^{(0.846[\ln(hardness)]+0.0584)}$

Table 1. Comparison of Existing and Proposed Revised/Updated Aquatic Life Criteria for Metals and Inorganic Compounds

Chemical	Existing Aquatic Life Criteria (µg/l)	Chemical	Proposed Aquatic Life Criteria (µg/l)
Selenium 1-hour average (Total) 96-hour average (Total)	 20 5	Selenium 96-hour average (Total)	 5
Silver (Dissolved)	$(0.85)*e^{(1.72[\ln(hardness)]-6.52)}$	Silver 1-hour average (Dissolved)	$(0.85)*e^{(1.72[\ln(hardness)]-6.59)}$
Sulfide (undissociated hydrogen sulfide) (Total)	2.0	Sulfide (undissociated hydrogen sulfide) 96-hour average (Total)	2.0
Zinc 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.85)*e^{(0.8473[\ln(hardness)]+0.8604)}$ $(0.85)*e^{(0.8473[\ln(hardness)]+0.7614)}$	Zinc 1-hour average (Dissolved) 96-hour average (Dissolved)	 $(0.978)*e^{(0.8473[\ln(hardness)]+0.884)}$ $(0.986)*e^{(0.8473[\ln(hardness)]+0.884)}$

Table 2. Proposed New Metal and Inorganic Compound Aquatic Life Criteria for Inclusion in NAC 445A.144.

Chemical	Aquatic Life Criteria (µg/l)
Aluminum 1-hour average (Total) 96-hour average (Total)	 750 87
Chloride 1-hour average (Dissolved) 96-hour average (Dissolved)	 860,000 230,000