R129-12 Aquatic Life Toxic Materials Related to Aquatic Life Beneficial Use

Questions During Public Workshops

CARSON CITY WORKSHOP, MAY 8, 2012
Aquatic Life Toxics

Question: Do any toxic constituents qualify as contaminants of emerging concern?

Response: Yes, one example is the chloropyrifos. There are others, but EPA has not developed criteria and we do not have the where-with-all to develop criteria ourselves. We will wait for EPA to develop criteria.

Question: Does the chlorine standard have any implications on waste water treatment plants?

Response: There is a potential, but we do not have any data to know. Chlorine has a 15 minute degradation time and we cannot sample and have it analyzed. We are looking into buying meters to measure chlorine in the field.

LAS VEGAS WORKSHOP, MAY 9, 2012
Aquatic Life Toxics

Question: In changing from a 24-hour to a 96-hour criteria, we are not conducting 24 or 96 hour average sampling though, some of us are collecting 24hr composite samples. What will this mean to our sampling programs?

Response: This change is proposed to remain consistent with other western states and the EPA criteria. We are in the process of trying to determine ourselves what sampling program is necessary and how to collect the samples. But basically you need more than one sample to calculate an average and our thought is that a composite sample could be used for both the 24 and 96hr criteria.

Question: What happens if the detection limit is higher than the standard?

Response: If the detection limit is higher than the standard and the analysis is a non-detect, then we assume the standard has been met. We would discuss with you the possibility of lowering your detection limit.

Question: For the standards with lower criteria than detection limits, what laboratory methods is EPA suggesting we use?

Response: There may be existing EPA methods or EPA approved methods to use and we believe EPA is developing additional methods to be used.

Question: There may be a problem with chlorine because the dischargers use chlorine in their treatment and we don't think it is possible to analyze to .011 mg/l. How are we (dischargers) going to prove our discharge is meeting the requirement once it gets put in our permit?

Response: Thank you for bringing this up, we will need to look into this further.

ELKO WORKSHOP, MAY 16, 2012
Aquatic Life Toxics

No questions were asked.

Written Comments/Questions during the Public Comment Period

Question: Four comment letters (attached) were received during the public comment period.

Comment Author/Entity	Letter Date	Comment(s) Synopsis
Clark County Water Reclamation District	June 6, 2012	Proposed limits for chlorine are lower than current authorized technology can measure
Southern Nevada Water Authority	June 6, 2012	Proposed chlorine detection limits are not reliably attainable
City of Las Vegas	June 6, 2012	Proposed WQS for chlorine are unnecessary
City of Henderson	June 7, 2012	Chlorine level change in NAC 445A.1236 is not necessary

Each comment letter expressed similar concerns over the proposed change to the water quality standard for chlorine. NDEP thanks all that provided written comments as they provided good information regarding the proposed chlorine standard within NAC 445A.1236. The basic consensus of the comments was that the proposed chlorine standards of 0.019 mg/l (19 µg/l) and 0.011 mg/l (11 µg/l) are not necessary and would not be attainable with current sampling/analytical technologies.

Response: The proposed chlorine acute (19 µg/l) and chronic standards (11 µg/l) have been removed from petition #P2012_10 which changes the aquatic life standards contained in NAC 445A.1236 for the following reasons:

a. There is very little data available for chlorine, particularly at the proposed detection limits. NDEP has not collected any water quality data for chlorine.
b. Chlorine is highly reactive and volatile, and subject to interferences due to particles, color, organic and inorganic compounds, resulting in a 15 minute holding time for analysis. This results in measurement of chlorine using field instrumentation.

NDEP will be purchasing a hand held field meter to collect chlorine water quality data and will revisit adding chlorine to Nevada's water quality standards at a later date.

Wednesday, June 6, 2012

John Heggeness, Branch Supervisor
Nevada Division of Environmental Protection
Bureau of Water Quality Planning
901 S. Stewart Street, Suite 4001
Carson City, NV 89701

RE: comments on NDEP's "Proposed Changes to Select Water Quality Standards for Toxic Materials (NAC 445A.1236) Related to Aquatic Life Beneficial Use, April 2012"

Dear Mr. Heggeness,

The city of Las Vegas (city) appreciates the opportunity to comment on the above referenced proposed changes to Nevada's Water Quality Standards (WQS). The city is a stakeholder in this process as we discharge treated wastewater to the Las Vegas Wash and to various sites for direct reuse.

Our comments are restricted to the proposed addition of new WQS for chlorine.

1. The proposed WQS for chlorine are unnecessary.

The proposed aquatic life WQS (acute 19 µg Cl_2/L and chronic 11 µg Cl_2/L) for chlorine (expressed as total residual chlorine) are not "new". They are described in EPA's Quality Criteria for Water (Gold Book, May 1986) and all versions of EPA's National Recommended Water Quality Criteria since April 1999. Despite these listings, aquatic life in Nevada has been protected from chlorine toxicity by conditions in discharge permits. Generally, these conditions are mandated dechlorination and demonstration of no "detectable" chlorine in discharges. "Detectable" is generally less than 100 µg CL_2/L, the reporting detection limit of the DPD colorimetric, field spectrophotometer method. To our knowledge, chlorine toxicity is not a problem in Nevada's waters. There is no problem to solve. The new WQS are unnecessary. We urge NDEP to continue, as you have successfully in the past, to regulate chlorine through conditions in discharge permits related to dechlorination and the "detection" of chlorine.

2. The proposed WQS for chlorine will be a problem for NDEP, ambient monitoring agencies, and dischargers.

The problem will not be related to a real presence of residual chlorine in ambient waters and discharges. It will be a measurement and reporting problem. Depending on sources, the method detection limit (MDL) for the DPD colorimetric, field spectrophotometer method for total residual chlorine is 20 to 50 µg CL_2/L. The reporting detection limit (RDL) is 50 to 100 µg CL_2/L. A RDL of 100 µg CL_2/L is what our laboratory uses and is what is most typical or "consensus". All these numbers are over the proposed WQS.

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Chlorine residual measurements must be done immediately. Regardless, laboratory techniques do not offer much improvement in sensitivity over field spectrophotometers. Attempts to report data down to the lowest MDL figure of 0.02 µg CL_2/L would result in frequent reporting of false positives over the WQS in both ambient waters and discharges that actually have a chlorine demand, not a chlorine residual. As a case in point, we frequently see instrument readings from our treatment plant effluents at or above 20 µg Cl_2/L. These effluents have dechlorinating agent residual of 1500 to 2500 µg SO_2/L. A chlorine residual in these samples is a chemical impossibility. The "false" readings are primarily a result of limitations in the sensitivity of the technique.

3. Other states have found other ways to deal with the recommended standards.

For instance, the current Los Angeles Region Water Quality Control Plan (http://www.waterboards.ca.gov/losangeles/water_issues/programs/basin_plan/electronics_documents/bp3_water_quality_objectives.pdf) does not contain the proposed criteria, but includes the following simple language:

"Chlorine residual shall not be present in surface water discharges at concentrations that exceed 0.1 mg/L and shall not persist in receiving waters at any concentration that causes impairment of beneficial uses."

This approach makes perfect sense considering the discussion presented here and is essentially what NDEP has been doing, and doing successfully, for decades.

In conclusion, the proposed standards are unnecessary and problematic. We urge NDEP to table the establishment of chlorine WQS and continue regulating chlorine as you have successfully in the past. There is no urgency as there is no problem to solve. If NDEP needs to have something more on the "books" with regard to chlorine, we suggest further investigation and discussions preceding the next standards cycle to generate language that is appropriate for our waterbodies.

If you have any questions about any of the comments in this letter, please do not hesitate to contact me at 702-229-2440 or dfischer@lasvegasnevada.gov. Thank you again.

Sincerely,

Daniel C. Fischer
Environmental Laboratory and Compliance Manager

CC: David L. Mendenhall, Brian Oswalt; city of Las Vegas
Adrian Edwards, Howard Analla, Dana LaRance; city of Henderson
Dave Commons, Reed Scheppmann; city of North Las Vegas
Doug Drury, Jeff Mills, Leanna Risso, Devon Morgan; CCWRD
Peggy Roefer, Ron Zegars; SNWA
Larry Bazel; Briscoe Ivester & Bazel

Clark County
Water Reclamation
DISTRICT

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June 6, 2012

John Heggeness, Branch Supervisor
Nevada Division of Environmental Protection
Bureau of Water Quality Planning
901 S. Stewart Street
Carson City, NV 89701

Dear Mr. Heggeness,

The Clark County Water Reclamation District (CCWRD) respectfully wishes to submit comments on the "Draft Rationale for Proposed Changes to Select Water Quality Standards for Toxic Materials (NAC 445A.1236) Related to Aquatic Life Beneficial Use."

The District has numerous discharge permits to cover the areas where they are responsible for treating wastewater. The Central Plant permit is issued in concert with the discharge permits for the City of Henderson, the City of Las Vegas, and the City of North Las Vegas who discharge to the waters of the Las Vegas Wash. Our Laughlin plant's discharge permit is up for renewal and negotiations with NDEP will begin in the next few months. The following comments are made in this light.

The proposed limits for chlorine, a maximum concentration of 0.019 mg/L and continuous concentration of 0.011 mg/L, were developed for the protection of aquatic life and are based upon ideal research conditions. Our concern is with the implementation of this standard. The standard specifies levels that are lower than currently authorized technology can measure. In addition, chlorine analysis must be done within a 15 minute hold time. Situations encountered often require measurement in the field because the hold time is so brief. Field methods have higher detection limits than laboratory methods. Both laboratory and field methods for chlorine are subject to numerous interferences such that, in reality *no methods* currently exist that can prove compliance with the proposed standard.

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CCWRD is concerned that these extremely low limits would require addressing analytical limitations during the permit negotiation process. Testing for chlorine residual in the field with accuracy sufficient to meet the proposed limits will present technical issues that require considerable effort to resolve. Finally, it would be difficult to validate on-line analyzer readings with field readings, a situation often required to document compliance.

The District would like NDEP to consider the analytical capabilities of laboratories and monitoring equipment before setting the proposed water quality standards.

If you have any questions about any of the comments in this letter, please do not hesitate to contact me at 702-668-8070 or sdonnelly@cleanwaterteam.com.

Sincerely,

Sandra Donnelly

Sandra Donnelly
Compliance Administrator
Clark County Water Reclamation District

cc: Dan Fisher, City of Las Vegas
Dana LaRance, City of Henderson
Dave Commons, City of North Las Vegas
Ron Zegers, Southern Nevada Water Authority

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June 6, 2012

John Heggeness, Branch Supervisor
Nevada Division of Environmental Protection
Bureau of Water Quality Planning
901 S. Stewart Street
Carson City, NV 89701

Dear Mr. Heggeness,

The Southern Nevada Water Authority (Authority) appreciates the opportunity to comment on the "Draft Rationale for Proposed Changes to Select Water quality Standards for Toxic Materials (NAC 445A.1236) Related to Aquatic Life Beneficial Use."

The Authority is a cooperative agency formed in 1991 to address Southern Nevada's unique water needs on a regional basis. The Authority is governed by a seven-member agency Board comprised of representatives from each of its member organizations. The Authority's mission is to manage the region's water resources and develop solutions that will ensure adequate future water supplies for the Las Vegas valley.

The proposed detection limits for chlorine, with a maximum concentration of 0.019 mg/L and a continuous concentration of 0.011 mg/L, are so low that accurate detection at these concentrations, especially in the field, are unreliable. All the accepted methods for chlorine are subject to potential interferences from particles, color, inorganic and organic compounds, and the buffering capacity of the sample. Due to these interferences, the detection limit for the most common field method, the DPD Colorimetric Method, is 0.1 mg/L.

The Authority's concern is that if the Water Quality Standards include these extremely low detection limits, these limits will be used as discharge permit requirements. Testing for chlorine residual in the field to meet the discharge permit requirements will become impossible. Only a small number of on-line chlorine analyzers can detect chlorine at these concentrations and there will be no way to validate the on-line reading with field readings. Chlorine residual samples have a 15 minute holding time. Laboratory facilities are not always within 15 minutes of every potential sampling location.

The Authority suggests NDEP consider the analytical capabilities of laboratories and monitoring equipment before adopting standards.

If you have any questions about any of the comments in this letter, please do not hesitate to contact me at (702) 567-2001 or ron.zegers@snwa.com.

Sincerely,

Ronald E. Zegers
Director, Southern Nevada Water Authority

THE CITY OF HENDERSON
A Place To Call Home

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June 7, 2012

VIA EMAIL AND US MAIL

John Heggeness, Branch Supervisor
Nevada Division of Environmental Protection
Bureau of Water Quality Planning
901 S. Stewart Street
Carson City, NV 89701

Subject: Comments on NDEP's "Proposed Changes to Select Water Quality Standards for Toxic Materials (NAC 445A.1236) Related to Aquatic Life Beneficial Use, April 2012"

Dear Mr. Heggeness,

The City of Henderson (City) appreciates the opportunity to comment on the "Draft Rationale for Proposed Changes to Select Water Quality Standards for Toxic Materials (NAC 445A.1236) Related to Aquatic Life Beneficial Use."

The City would like to suggest that the implementation of chlorine levels recommended in the Water Quality Standards is not necessary. Very low levels of chlorine have already been mandated by NPDES permits at the City for the last 18 years, which has allowed for development of a robust plant and animal ecosystem in the Las Vegas Wash. Additionally, the extremely low chlorine levels indicated in the standards pose sampling and measurement issues that would be difficult to resolve.

The majority of the Las Vegas Wash (Wash) water consists of highly treated effluent discharged from the four Las Vegas Valley water reclamation facilities. The quality of effluent discharge is dictated by each entity's NPDES discharge permit, with strict limitation for chlorine residual concentration (0.10 mg/L). Over 60 studies, surveys, and reports done over the years by the Bureau of Reclamation, U.S. Fish and Wildlife Service, Southern Nevada Water Authority (SNWA), and others support that fact that the Wash has a thriving ecology, full of a variety of healthy plants and animals[1]. None of the studies refer to chlorine levels from point source dischargers as having a negative effect on aquatic life in the Wash. Additionally, an evaluation of the scientific research available on residual chlorine effects on aquatic organisms indicates that concentrations less than 0.1 mg/L are toxic to green sunfish (Lepomis cyanellus) and fathead minnow (Pimephales promelas)[2]. These fish species, along with five additional non-native species, were observed living in the Wash during a survey conducted by SNWA in 2002-2003.

The proposed standard for chlorine, with a maximum concentration of 0.019 mg/L and a continuous concentration of 0.011 mg/L, is very low. Many field instruments for chlorine analyses cannot attain detection limits as low as these standards. Even methods that can theoretically detect chlorine at these concentrations cannot produce reliable results with the accuracy necessary to evaluate compliance with these standards and often produce false positive results. Chlorine is also highly reactive and volatile, which is the basis for the U.S. Environmental Protection Agency's recommended maximum 15 minute holding time for total residual chlorine (TRC) analysis. This 15 minute holding time generally rules out a laboratory based approach to analyzing TRC. This makes accurate measurement of ambient chlorine at the concentrations proposed a challenge.

In conclusion, the proposed standards are unnecessary and problematic. We urge NDEP to postpone the establishment of aquatic life water quality chlorine standards at this time.

If you have any questions, please contact via email or call me at 702-267-2700.

Sincerely,

Adrian J. Edwards
Wastewater Operations Manager

AJE:mas

cc: Priscilla Howell, Manager of Utility Support Services
Brenda Pohlmann, Environmental Programs Manager

[1] http://www.lvwash.org/html/resources_library_ecology.html

[2] Dena McCann, Division of Water Quality, State Water Resources Control Board, California EPA, June 2006, "Draft Substitute Environmental Document, Total Residual Chlorine & Chlorine-Produced Oxidants Policy of California"