

# Ammonia Criteria

WESTCAS 2014 Winter  
Regulatory-Legislative Forum  
February 19, 2014

# Agenda

- Federal Ammonia Criteria
- Issues For Dischargers
- What States Can Do
- Additional Information
- WESTCAS Action Items
- Next steps
- Q&A/Discussion

# Federal Ammonia Criteria

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**John Moses,**  
Director, Collection Strategies Division,  
[FR Doc. 2013-20454 Filed 8-21-13; 8:45 am]  
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## ENVIRONMENTAL PROTECTION AGENCY

[EPA-HQ-OW-2009-0921; FRL-9810-01]

### Final Aquatic Life Ambient Water Quality Criteria For Ammonia—Freshwater 2013

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Notice of availability of final criteria.

**SUMMARY:** Pursuant to section 304(a) of the Clean Water Act (CWA), the Environmental Protection Agency (EPA) is announcing the availability of final national recommended ambient water quality criteria for the protection of aquatic life from effects of ammonia in freshwater (EPA 822-R-13-001). The final criteria incorporate the latest scientific knowledge on the toxicity of ammonia to freshwater aquatic life. On December 30, 2009, EPA published draft national recommended water quality criteria for ammonia and provided the public an opportunity to provide scientific views. Aquatic life criteria are developed based on EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985), (EPA/R-85-100). EPA's recommended section 304(a) water quality criteria provide guidance to States and authorized Tribes in adopting water quality standards for protecting aquatic life and human health. EPA's recommended water quality criteria by themselves have no binding legal effect. These national recommended criteria for ammonia in freshwater are intended to protect aquatic life and do not address human health toxicity data. The water quality criteria for ammonia for the protection of saltwater organisms are not being updated at this time. EPA's national recommended final acute ambient water quality criteria (AWQC) for protecting freshwater organisms from potential effects of ammonia is 17 mg/L total ammonia nitrogen (TAN) and the final chronic AWQC for ammonia is 1.9 mg/L TAN at pH 7.0 and temperature 20 °C.

**ADDRESSES:** Scientific views received from the public on the draft ammonia criteria documents are available from the EPA Docket Center and are

identified by Docket ID No. EPA-HQ-OW-2009-0921. They may be accessed online at:

- [www.regulations.gov](http://www.regulations.gov): Follow the on-line instructions.
- Email: [OW-Docket@epa.gov](mailto:OW-Docket@epa.gov).
- Mail: US Environmental Protection Agency; EPA Docket Center (EPA/DC) Water Docket, MC 2822T; 1200 Pennsylvania Avenue NW., Washington, DC 20460.

- On Site: EPA Docket Center, 1301 Constitution Ave. NW., EPA West, Room 3334, Washington, DC. This Docket Facility is open from 8:30 a.m. until 4:30 p.m., EST, Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the Office of Water is (202) 566-2426.

For additional information about EPA's public docket visit the EPA Docket Center homepage at <http://www.epa.gov/epahome/dockets.htm>.

**FOR FURTHER INFORMATION CONTACT:** Lisa Huff, Health and Ecological Criteria Division (4304T), U.S. EPA, 1200 Pennsylvania Ave. NW., Washington, DC 20460; (202) 566-0787; [huff.lisa@epa.gov](mailto:huff.lisa@epa.gov).

#### SUPPLEMENTARY INFORMATION:

##### I. What are water quality criteria?

Water quality criteria are either narrative descriptions of water quality or scientifically derived numeric values that protect aquatic life or human health from the deleterious effects of pollutants in ambient water.

Section 304(a)(1) of the Clean Water Act (CWA) requires EPA to develop and publish and, from time to time, revise, criteria for protection of water quality and human health that accurately reflect the latest scientific knowledge. Water quality criteria developed under section 304(a) are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting pollutant concentrations in ambient water.

Section 304(a) criteria provide guidance to States and authorized Tribes in adopting water quality standards that ultimately provide a basis for assessing water body health and controlling discharges or releases of pollutants. Under the CWA and its implementing regulations, States and authorized Tribes are to adopt water quality criteria to protect designated uses (e.g., public water supply, aquatic life, recreational use, or industrial use).

EPA's recommended water quality criteria do not substitute for the CWA or regulations, nor are they regulations themselves. Thus, EPA's recommended criteria do not impose legally binding requirements. States and authorized Tribes have the discretion to adopt, where appropriate, other scientifically defensible water quality criteria that differ from these recommendations.

##### II. What is ammonia and why is EPA concerned about it?

Ammonia is a constituent of nitrogen pollution. Unlike other forms of nitrogen, which can cause eutrophication of a water body at elevated concentrations, the primary concern with ammonia is its direct toxic effects on aquatic life, which are exacerbated by elevated pH and temperature. Ammonia is considered one of the most important pollutants in the aquatic environment not only because of its highly toxic nature and occurrence in surface water systems, but also because many effluents have to be treated in order to keep the concentrations of ammonia in surface waters from being unacceptably high. Ammonia can enter the aquatic environment via direct means such as municipal effluent discharges and the excretion of nitrogenous wastes from animals, and indirect means such as nitrogen fixation, air deposition, and runoff from agricultural lands.

##### III. What are the 2013 ammonia criteria recommendations?

EPA is today publishing final national recommended ambient water quality criteria for protecting freshwater aquatic life for ammonia. These final criteria updates are based on EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985), (EPA/R-85-100). These Guidelines describe the Agency's current approach for deriving national recommended water quality criteria to protect aquatic life. The latest toxicity data and other information on the effects of ammonia on freshwater aquatic life were obtained from reliable sources and subjected to both internal and external scientific peer review. The national recommended water quality criteria for ammonia in saltwater are not being updated at this time.

The available data for ammonia, evaluated in accordance with EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985), indicate that freshwater aquatic animals would have



United States  
Environmental Protection  
Agency

Office of Water  
4304T

EPA 822-R-13-001  
April 2013

## AQUATIC LIFE AMBIENT WATER QUALITY CRITERIA FOR AMMONIA – FRESHWATER 2013

# Federal Ammonia Criteria

- Draft 2009 criteria included mussel/snail presence-absence evaluation, but not included in Final Criteria
- Criteria revised downward based on greater sensitivity of juvenile mussels and gill-bearing, non-pulmonate snails
- Criteria still temperature and pH dependent

# Federal Ammonia Criteria

(from Executive Summary, EPA 822-R-13-001; April 2013)

<b>Criterion Duration</b>	<b>1999 AWQC Update Criteria Magnitude</b>		<b>2009 Draft AWQC Update Criteria<sup>c</sup> Magnitude</b>		<b>2013 AWQC Update Criteria Magnitude</b>
	pH 8.0, (mg TAN/L)	pH 7.0, T=20°C (mg TAN/L)	pH 8.0, T=25°C (mg TAN/L)	pH 7.0, T=20°C (mg TAN/L)	pH 7.0, T=20°C (mg TAN/L)
Acute (1-hr average)	5.6 <sup>a</sup>	24 <sup>a</sup>	2.9	19	17 <sup>a</sup>
Chronic (30-d rolling average)	1.2	4.5 <sup>b</sup>	0.26	0.91	1.9*
*Not to exceed 2.5 times CCC or 4.8 mg TAN/L (at pH 7, 20°C) as a 4-day average within the 30-days, more than once in three years on average.					
Criteria frequency: Not to be exceeded more than once in three years on average.					

<sup>a</sup> Salmonids present

<sup>b</sup> Based on renormalization of data to pH 7 and 20°C

<sup>c</sup> Mussels present

# Clean Water Act Requirements related to Water Quality Standards (WQS)

- CWA Section 304(a) provides guidance to states and tribes in adopting water quality standards.
- CWA Section 303(c)(1) requires states to review their water quality standards every three years and revise to protect designated uses

# Issues for Dischargers

More stringent WQS for Ammonia



Reasonable Potential to Exceed WQS



Lower WQBELs in Permits



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# Federal Acute Criteria

# Arizona Acute Standard

Table 5b. Temperature and pH-Dependent Values of the CMC (Acute Criterion Magnitude) – *Oncorhynchus spp.* Absent.

pH	Temperature (°C)																														
	0-10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30										
6.5	51	48	44	41	37	34	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9										
6.6	49	46	42	39	36	33	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5										
6.7	46	44	40	37	34	31	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0										
6.8	44	41	38	35	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5										
6.9	41	38	35	32	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9										
7.0	38	35	33	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9	7.3										
7.1	34	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7										
7.2	31	29	27	25	23	21	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6.0										
7.3	27	26	24	22	20	18	17	16	14	13	12	11	10	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3										
7.4	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7										
7.5	21	19	18	17	15	14	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0										
7.6	18	17	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5										
7.7	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9										
7.8	13	12	11	10	9.3	8.5	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5										
7.9	11	9.9	9.1	8.4	7.7	7.1	6.6	3.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1										
8.0	8.8	8.2	7.6	7.0	6.4	5.9	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7										
8.1	7.2	6.8	6.3	5.8	5.3	4.9	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4										
8.2	6.0	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2										
8.3	4.9	4.6	4.3	3.9	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.96										
8.4	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79										
8.5	3.3	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.90	0.83	0.77	0.71	0.65										
8.6	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.96	0.88	0.81	0.75	0.69	0.63	0.58	0.54										
8.7	2.3	2.2	2.0	1.8	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.94	0.87	0.80	0.74	0.68	0.62	0.57	0.53	0.49	0.45										
8.8	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37										
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.40	0.37	0.34	0.32										
9.0	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27										

Table 25. Acute Criteria for Total Ammonia (in mg/L as N)  
Aquatic and Wildlife coldwater, warmwater, and edw

pH	A&Wc	A&Ww and A&W edw
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32



# Federal Chronic Criteria

# Arizona Chronic Standard

Table 6. Temperature and pH-Dependent Values of the CCC (Chronic Criterion Magnitude).

Temperature (°C)																													
pH	0-7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30					
6.5	4.9	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.5	1.4	1.3	1.2	1.1					
6.6	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1					
6.7	4.8	4.5	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1					
6.8	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1					
6.9	4.5	4.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0					
7.0	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.99					
7.1	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95					
7.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.90					
7.3	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.97	0.91	0.85					
7.4	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.90	0.85	0.79					
7.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.83	0.78	0.73					
7.6	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.98	0.92	0.86	0.81	0.76	0.71	0.67						
7.7	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60					
7.8	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53					
7.9	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.50	0.47					
8.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60	0.56	0.53	0.50	0.44	0.44	0.41					
8.1	1.5	1.5	1.4	1.3	1.2	1.1	1.1	0.99	0.92	0.87	0.81	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.40	0.38	0.35					
8.2	1.3	1.2	1.2	1.1	1.0	0.96	0.90	0.84	0.79	0.74	0.70	0.65	0.61	0.57	0.54	0.50	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.30					
8.3	1.1	1.1	0.99	0.93	0.87	0.82	0.76	0.72	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.40	0.38	0.35	0.33	0.31	0.29	0.27	0.26					
8.4	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.50	0.47	0.44	0.41	0.39	0.36	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22					
8.5	0.80	0.75	0.71	0.67	0.62	0.58	0.55	0.51	0.48	0.45	0.42	0.40	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.24	0.22	0.21	0.20	0.18					
8.6	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.33	0.31	0.29	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.16	0.15					
8.7	0.57	0.54	0.51	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13					
8.8	0.49	0.46	0.43	0.40	0.38	0.35	0.33	0.31	0.29	0.27	0.26	0.24	0.23	0.21	0.20	0.19	0.17	0.16	0.15	0.14	0.13	0.13	0.12	0.11					
8.9	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.12	0.11	0.10	0.09					
9.0	0.36	0.34	0.32	0.30	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.11	0.10	0.09	0.09	0.08					

Table 26. Chronic Criteria for Total Ammonia (mg/L as N)  
Aquatic and Wildlife coldwater, warmwater, and edw

	Temperature, °C									
pH	0	14	16	18	20	22	24	26	28	30
6.5	6.67	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.91	5.37	4.70	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.73	4.30	3.78	3.33	2.92	2.57	2.26	1.98	1.74
7.5	4.36	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

## Historical Note

Appendix A repealed; new Appendix A adopted effective April 24, 1996 (Supp. 96-2). Amended by final rulemaking at 8 A.A.R. 1264, effective March 8, 2002 (Supp. 02-1). Appendix A, Table 2 amended to correct references to footnotes (Supp. 02-4). Amended by final rulemaking at 9 A.A.R. 716, effective April 8, 2003 (Supp. 03-1). Amended by final rulemaking at 14 A.A.R. 4708, effective January 31, 2009 (Supp. 08-4).

# What States Can Do

EPA issued:

## *Flexibilities for States Applying EPA's Ammonia Criteria Recommendations (EPA- 820-F-13-001, April 2013)*



United States  
Environmental Protection Agency

Office of Water  
Mail Code 4305T

EPA-820-F-13-001  
April 2013

### *Flexibilities for States Applying EPA's Ammonia Criteria Recommendations*

#### **Background**

The U.S. Environmental Protection Agency (EPA) is updating its 1999 Clean Water Act (CWA) § 304(a) national ambient water quality criteria recommendations for ammonia to account for the sensitivity of freshwater mussels and snails to ammonia toxicity. The updated criteria recommendations reflect new science on juvenile mussels and gill-bearing, non-pulmonate snails. Through extensive peer review processes, reviewers agreed on the quality and acceptability of the new data EPA included in the quantitative derivations of the updated recommendations. The criteria recommendations for ammonia apply to all freshwaters for the protection of the aquatic community, including both freshwater mussels and snails.

Freshwater mussels are highly sensitive to ammonia toxicity and represent the most sensitive species in the dataset for the criteria recommendations. New science has demonstrated that freshwater snails are also sensitive to ammonia toxicity. Both mussels and snails are important to the environment because they serve as food sources for other organisms in the food web and provide vital services in improving and maintaining water quality. Specifically, mussels are filter feeders and can filter nutrients, toxics, and other pollutants out of the water, thereby helping to control the levels of these pollutants and reduce exposure to humans and other aquatic organisms. Snails feed on organic debris including algae, which helps to reduce the effects of eutrophication and keeps bottom substrates clean for other benthic organisms.

#### **Flexibilities for Applying EPA's Ammonia Criteria Recommendations**

This section describes some of the flexibilities that states<sup>1</sup> may want to consider in adoption and application of EPA's ammonia criteria recommendations. These flexibilities include the Recalculation Procedure for site-specific criteria derivation, variances, revisions to designated uses, dilution allowances, and compliance schedules.

##### ***1. Recalculation Procedure for Site-specific Criteria Derivation***

The water quality standards (WQS) regulation at 40 CFR § 131.11(b)(1)(ii) provides states with the opportunity to adopt water quality criteria that are "...modified to reflect site-specific conditions." As with any criteria, site-specific criteria must be based on a sound scientific rationale in order to protect the designated use and are subject to review and approval or disapproval by EPA.

<sup>1</sup> Throughout this document, the term "states" refers to authorized tribes and U.S. territories in addition to states.



# What States Can Do

- Recalculation procedure for site-specific criteria derivation
- Variances
- Revisions to designated uses
- Dilution allowances
- Compliance schedules

# What States Can Do

- Recalculation Procedure for Site-Specific Criteria Derivation
  - No target species present or documented – use data from next most sensitive species – may result in less stringent standard
  - Available EPA Guidance
    - *Revised Deletion Process for the Site-Specific Recalculation Procedure for Aquatic Life Criteria* (EPA-823-R-13-001, April 2013)
    - *Water Quality Standards Handbook* (EPA-823-B-12-002, March 2012)

# What States Can Do

- Variances

- Where designated use is unattainable or unknown
- Does not change designated use but relaxes need to meet standard for limited time period
- Requires interim discharge limits in permits
- Requirements vary from state to state (e.g. discharger-specific, multiple dischargers, watershed-basis)
- Must meet at least one of 40 CFR §131.10(g)(1)-(6) conditions.
  - Most likely §131.10(g)(6), where imposition of water quality-based controls would result in “substantial and widespread economic and social impact

# What States Can Do

- Revisions to Designated Uses
  - If designated use is determined to be “ultimately” unattainable”.
  - Requires Use Attainability Analysis (UAA)
    - Meet one of the conditions of 40 CFR §131.10(g)(1)-(6)

# What States Can Do

- Dilution Allowances
  - Applicable in states that allow mixing or dilution
  - There must be sufficient water or flow to meet the mixing or dilution requirements



# What States Can Do

- Compliance Schedules
  - Discharger-specific
  - Must be allowed by water quality standards
  - Where uses are attainable, but dischargers need time to comply

# Additional Information

- What types of demonstrations are necessary?
  - Studies may be simple to complex
  - Look for presence of target mussels and snails
    - Habitat suitability
    - Historical data
    - Symbiotic species

# Additional Information

- What types of demonstrations are necessary?
  - Questions from NACWA Water Quality Committee (NACWA 2014 Winter Conference, Santa Fe, NM)
    - How extensive does the search for snails and mussels have to be?
    - Are mussels and snails not present because they have already been adversely impacted by an existing discharge?
    - Are the targeted, but absent, snails and mussels appropriate surrogates for other organisms that are in the stream?

# Additional Information

- Existing efforts
  - National Association of Clean Water Agencies / Association of Clean Water Administrators (ACWA) non-applicability protocol
  - Virginia applicability in intermittent streams

# WESTCAS Action Items

- Determine how new ammonia criteria compare with current ammonia standards in arid west states
- Determine which flexibilities, described by EPA, are available in arid west states

# WESTCAS Action Items

- Establish WESTCAS Ammonia Criteria Subcommittee
  - Determine timing and scope of Triennial Reviews
  - Initiate discussions with states on plans for reviewing/revising ammonia standards
  - Evaluate/develop approach similar to Virginia and intermittent streams for applying ammonia criteria to arid west intermittent, ephemeral, and effluent dependent streams (In Arizona, remember A.A.C. R18-11-113.D)
- Other activities?



# WESTCAS Action Items

Or do we just wait and see what happens?





## Next Steps

- Watch and participate in NACWA/ACWA work (coordinate with and provide information to NACWA)



# Ammonia Criteria

Q&A/Discussion