Implementation of Ammonia Criteria

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The revised criteria include toxicity data through October 2012 reflecting freshwater unionid mussel and non-pulmonate (gill-bearing) snail sensitivity.

One set of criteria applicable to all fresh water to protect the aquatic community as a whole, including sensitive mollusks which are present in nearly all fresh waters of the contiguous U.S.

- Site-specific criteria recalculations are permitted for sites where mussels are absent, as appropriate.
- Recalculated site-specific values (e.g., for sites with mussels absent) are provided in Appendix N of the 2013 ammonia criteria document.

Several supporting documents developed to aid states considering adoption of the updated criteria.
Technical Support Document for Conducting and Reviewing Freshwater Mussel Occurrence Surveys for the Development of Site-specific WQC for Ammonia

- Provides a basic overview of mussel survey techniques, sampling methods, data sources, and additional information for individuals without mussel survey experience.

- The methods document is broken into three parts:
  - Part A - methods for determining mussel presence/absence, etc.
  - Part B - mussel sampling methods and considerations, including real-life examples
  - Part C - checklist of key elements of a proposed survey methodology
Flexibilities for States Applying EPA's Ammonia Criteria Recommendations

Provides a framework to show when each flexibility can be used individually or in combination in the water quality standards adoption and application processes.

- Resident species recalculation procedure
- WQS Variances
- Revision to Designated Uses
- Dilution Allowances
- Compliance Schedules
More Resources

Link to Criteria Document

- **2013 Aquatic Life Ambient Water Quality Criteria for Ammonia Freshwater**

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Appendix
Comparison 1999 to 2013 Ammonia ALC

- **1999 Criteria**
  - Acute = 24 mg N/L at pH 7 (Salmonids most sensitive)
  - Chronic = 4.5 mg N/L at pH 7 and 20 °C (Hyalella and fingernail clam most sensitive)
  - Also 1999 chronic criteria reflected the greater sensitivity of fish early life stages (ELS) than juvenile and adult stages to chronic toxicity of ammonia with site-specific criteria for waters with fish ELS present and absent.

- **2013 Ammonia ALC**
  - Reflects the sensitivity of freshwater mussels and non-pulmonate snails
  - Acute = 17 mg N/L at pH 7 and 20 °C (Mussels most sensitive)
  - Chronic = 1.9 mg N/L at pH 7 and 20 °C (Mussels most sensitive)
Duration and Frequency for 2013 Ammonia Criteria are the Same as in 1999 and Draft 2009 Criteria

- Duration for acute criterion is 1-hour average
- Duration for chronic ammonia criterion is a 30-day averaging period
- In addition, chronic concentration is not to exceed 2.5 times the CCC as a 4-day average within 30 days (e.g., 4.8 mg TAN/L at pH 7 and temperature 20 °C) more than once in 3 years on average
- Frequency for both acute and chronic criteria is not to be exceeded more than once in 3 years on average
<table>
<thead>
<tr>
<th>Criterion Duration</th>
<th>1999 AWQC Update Criteria Magnitude</th>
<th>2009 Draft AWQC Update Criteria Magnitude</th>
<th>2013 AWQC Update Criteria Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pH 8.0, (mg TAN/L)</td>
<td>pH 8.0, T=25°C (mg TAN/L)</td>
<td>pH 7.0, T=20°C (mg TAN/L)</td>
</tr>
<tr>
<td>Acute (1-hr average)</td>
<td>5.6(^a)</td>
<td>24(^a)</td>
<td>2.9</td>
</tr>
<tr>
<td>Chronic (30-d rolling average)</td>
<td>1.2</td>
<td>4.5(^b)</td>
<td>0.26</td>
</tr>
</tbody>
</table>

\(^a\) Salmonids present  
\(^b\) Based on renormalization of data to pH 7 and 20°C  
\(^c\) Mussels present

*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.