Toxics Manual

Proposed Revisions to Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances

Water Quality Standards
Erin Strang
February 2009
Outline

• How can I participate and get more information?
• What is the Toxics Manual?
• Why update the Toxics Manual?
• What are the changes?
• Why is the Toxics Manual changing?
• How you can comment on the proposed changes?
How can I participate and get more information?

Public Workshops:

**Juneau:**
- 4 pm to 6 pm on Tuesday, January 20, 2009,
- Main Conference Room, ADEC, 410 Willoughby Avenue

**Fairbanks:**
- 4 pm to 6 pm on Wednesday, January 21, 2009,
- Conference Room B/C, ADEC, 610 University Avenue
How can I participate and get more information?

Public Hearing:

**Anchorage (with Statewide call-in):**

Oral or written testimony may be given at a public hearing
- 4 pm to 6 pm on Thursday, January 22, 2009,
- 1st Floor Main Conference Room, ADEC, 555 Cordova Street

Statewide call-in available by dialing 1-800-315-6338, Conference Code 2881 followed by the pound (#) sign

Website: [http://www.dec.state.ak.us/water/wqsar/wqs/index.htm](http://www.dec.state.ak.us/water/wqsar/wqs/index.htm)
What are Water Quality Standards?

Use + Criteria = Standard

• Designated water use classes (7)
  – Drinking, fishing, swimming & other uses
• In Alaska, all waters protected for all uses
• Criteria are pollutant limits to protect uses
• Most stringent criteria becomes the WQS
Water Quality Standards Documents

• Alaska surface water quality is regulated using two documents:
  – Water Quality Standards (WQS) in 18 AAC 70
  – Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances (Toxics Manual)

• The Toxics Manual is adopted by reference as a part of the WQS
What is the Toxics Manual?

- Establishes standards (criteria) that limit the amount of toxic pollutants in Alaska’s waters
- Protects and maintains the quality of Alaskan waters
- Originally based on EPA’s Nationally Recommended Water Quality Criteria
Why update the Toxics Manual?

Clean Water Act review requirement:

– Must review every 3 years
– Must adopt criteria as strict as EPA’s nationally recommended criteria for priority toxic pollutants within 5 years, or risk promulgation
– Provides an opportunity to update and improve Alaska’s Water Quality Standards
What are the changes?

Criteria Changes:

• Update drinking water criteria
• Modify chronic aluminum criterion for freshwater
• Revise freshwater and salt water aquatic life criteria as recommended by EPA
• Correct typographical error in the salt water ammonia criteria
• Include new narrative language for all uses
What are the changes?

Layout Changes:
• Update the format of the toxics manual for ease of use
• Reorganizes the numeric criteria into a single table format which shows all criteria types for each parameter
## Toxics Manual Formatting Changes

### WATER QUALITY CRITERIA FOR TOXICS AND OTHER DELETERIOUS SUBSTANCES (µg/l unless shown otherwise)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>CAS Number</th>
<th>Type of Pollutant</th>
<th>Drinking Water</th>
<th>Stockwater</th>
<th>Irrigation Water</th>
<th>Aquatic Life for Fresh Water</th>
<th>Aquatic Life for Marine Water</th>
<th>Human Health for Consumption of:</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>7439921</td>
<td>INORG</td>
<td>—</td>
<td>50</td>
<td>5,000</td>
<td>See Appendix A (1-hr avg)</td>
<td>See Appendix B (1-hr avg)</td>
<td>—</td>
<td>Stockwater: EPA Green Book; EPA Blue Book; Aquatic Life: 57 FR 60/848; 60 FR 22228; 65 FR 31682; 67 FR 79091; EPA 440-5-84-027; EPA 822-Z-99-001; EPA NRWQC 2006</td>
</tr>
<tr>
<td>Lindane (gamma-BHC)</td>
<td>58899</td>
<td>PEST SVOC</td>
<td>0.2</td>
<td>—</td>
<td>—</td>
<td>0.95 (1-hr avg)</td>
<td>—</td>
<td>—</td>
<td>Drinking Water: 18 AAC §10.300(b); Aquatic Life: 57 FR 60/848; 65 FR 31682; 67 FR 79091; EPA 440-5-80-054; EPA 820-B-96-001; EPA NRWQC 2006</td>
</tr>
<tr>
<td>Lithium</td>
<td>7439932</td>
<td>INORG</td>
<td>—</td>
<td>2,500</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Malathion</td>
<td>121755</td>
<td>PEST</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.1</td>
<td>—</td>
<td>—</td>
<td>Aquatic Life: 67 FR 79091; EPA Red Book; EPA 440-9-76-023; EPA 822-Z-99-001; EPA NRWQC 2006</td>
</tr>
<tr>
<td>Manganese</td>
<td>7439965</td>
<td>INORG</td>
<td>—</td>
<td>200</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>50 50; 100 50</td>
</tr>
</tbody>
</table>

Criteria Changes: Drinking Water

• Aldicarb, Aldicarb Sulfone, and Aldicarb Sulfoxide
  – New criteria for these three pollutants

• Arsenic
  – Decreased from 50 μg/L to 10 μg/L

• Nickel
  – Deleted based on EPA guidance

• Uranium
  – New criterion for this pollutant
Options for aluminum chronic criterion:

NOTE: DEC does not have a preferred option and is requesting comment on either option.

Option 1:
- Retain the current chronic aquatic life criterion only for conditions where toxicity is greatest

<table>
<thead>
<tr>
<th>Proposed chronic aluminum criteria</th>
<th>pH</th>
<th>Hardness (as CaCO₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td>87 µg/L</td>
<td>&lt; 7.0</td>
<td>&lt; 50 ppm</td>
</tr>
<tr>
<td>750 µg/L</td>
<td>≥ 7.0</td>
<td>≥ 50 ppm</td>
</tr>
</tbody>
</table>
Criteria Changes: Freshwater Aquatic Life

Aluminum chronic criterion:

**Option 2**
- Retain the current chronic aluminum criterion for all waters
  - at any pH and hardness level
  - wait for better scientific understanding of aluminum toxicity

<table>
<thead>
<tr>
<th>Current chronic aluminum criteria</th>
<th>pH</th>
<th>Hardness (as CaCO₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td>87 µg/L</td>
<td>6.5 and 9.0</td>
<td>Not considered</td>
</tr>
</tbody>
</table>
Criteria Changes: Freshwater Aquatic Life

• **Diazinon** (acute and chronic criteria)
  – New freshwater aquatic life criteria recommended by EPA

• **Nonylphenol** (acute and chronic criteria)
  – New freshwater aquatic life criteria recommended by EPA

• **Tributyltin** (chronic criterion only)
  – Increased from 0.063 μg/L to 0.072 μg/L based on EPA guidance
Criteria Changes: Salt Water Aquatic Life

- **Ammonia** (acute and chronic criteria)
  - Correction of a unit conversion error will cause the criteria values to be slightly decreased

- **Diazinon** (acute and chronic criteria)
  - New salt water aquatic life criteria recommended by EPA

- **Nonylphenol** (acute and chronic criteria)
  - New salt water aquatic life criteria recommended by EPA

- **Tributyltin** (acute and chronic criteria)
  - Acute criterion increased from 0.37 µg/L to 0.42 µg/L
  - Chronic criterion decreased from 0.010 µg/L to 0.0074 µg/L
Criteria Changes: Narrative Criteria

Addition of narrative criteria to the WQS:

– Many known toxic substances have no numeric criteria
– Update adds narrative criteria to the WQS regulations for all uses
– Criteria will protect against the adverse effects of a vast array of substances whose toxicity is either unknown or insufficiently quantified to specify numeric criteria
“Toxic and other deleterious substances may not be introduced at concentrations which cause, or can reasonably be expected to cause, either singly or in combination, adverse effects on the use.”
## Summary of Toxics Manual Changes

<table>
<thead>
<tr>
<th></th>
<th>Drinking Water</th>
<th>Freshwater Acute</th>
<th>Freshwater Chronic</th>
<th>Saltwater Acute</th>
<th>Saltwater Chronic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldicarb</td>
<td>New</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aldicarb Sulfone</td>
<td>New</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aldicarb Sulfoxide</td>
<td>New</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Aluminum</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Less Stringent</td>
<td>Unchanged</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Ammonia (total)</td>
<td>N/A</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>More Stringent</td>
<td>More Stringent</td>
</tr>
<tr>
<td>Arsenic</td>
<td>More Stringent</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Diazinon</td>
<td>N/A</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Nickel</td>
<td>Deleted</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Unchanged</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Nonylphenol</td>
<td>N/A</td>
<td>New</td>
<td>New</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>Tributyltin</td>
<td>N/A</td>
<td>Unchanged</td>
<td>Less Stringent</td>
<td>Less Stringent</td>
<td>More Stringent</td>
</tr>
<tr>
<td>Uranium</td>
<td>New</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
How to comment

• Give oral or written testimony at the Public Hearing:
  – 4 pm to 6 pm on Thursday, January 22, 2009

• Submit written comment via mail or email to:
  Erin Strang
  Alaska Department of Environmental Conservation
  Division of Water, Water Quality Standards
  610 University Avenue
  Fairbanks, AK 99709
  erin.strang@alaska.gov

• All written comments must be received by
  5 PM on February 6, 2009
Staff contacts and resources

Erin Strang
(907) 451-2881
erin.strang@alaska.gov
Toxics Manual Package Lead

Jim Powell
(907) 465-5185
jim.powell@alaska.gov
Water Quality Standards Section Chief

http://www.dec.state.ak.us/water/wqsar/wqs/index.htm