



**UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

National Marine Fisheries Service

P.O. Box 21668

Juneau, Alaska 99802-1668

February 6, 2009

Erin Strang
Alaska Department of Environmental Conservation
Division of Water
Water Quality Standards
610 University Drive
Fairbanks, Alaska 99709

Dear Ms. Strang:

The National Marine Fisheries Service (NMFS) has reviewed the Alaska Department of Environmental Conservation's (DEC) proposed update to the *Alaska Water Quality Criteria Manual for Toxic and Other Deleterious Organic and Inorganic Substances* (Toxics Manual). The Clean Water Act requires states to update state toxics criteria to be consistent with the national recommended criteria every three to five years. The Toxics Manual will be adopted by reference in the Alaska Water Quality Standards' regulations at 18 AAC 70. The proposed revision updates toxics criteria to reflect the Environmental Protection Agency's (EPA) current national recommendations.

Section 305(b)(4)(A) of the Magnuson-Stevens Fishery Conservation and Management Act requires NMFS to make conservation recommendations regarding any federal or state agency action that would adversely affect Essential Fish Habitat (EFH). The following comments describe our concerns to living marine resources, including EFH, as they relate to the proposed revisions to Aquatic Life Criteria as described by DEC.

Freshwater Aquatic Life Criteria Changes

Aluminum chronic criterion (less stringent): The current Alaska water quality criteria for aluminum for the protection of freshwater aquatic life are 87 µg/L (chronic) and 750 µg/L (acute). DEC adopted this standard based on the EPA's recommended aquatic life criteria for aluminum, as identified in EPA's guidance, *Ambient Water Quality for aluminum* (1988). DEC states that "Scientific literature indicates that in acidic waters with low hardness levels, chronic aluminum exposure is toxic to aquatic life. In waters with higher pH and higher hardness levels, there is significantly less documentation of chronic aluminum toxicity." DEC is considering two options:

Option 1 – Modify the language to retain the current chronic aquatic life criterion under conditions where toxicity is greatest, but apply a less stringent acute criterion in waters with both pH higher than 7.0 and hardness levels greater than 50 ppm as CaCO₃.

Option 2: - Retain the current chronic aluminum criterion for waters at any pH and hardness level until scientific understanding of aluminum toxicity advances.



Aluminum toxicity is dependent on the form of aluminum and its solubility¹. Adverse impacts, such as increased fish mortality, decreased growth, and decreased reproductive potential, vary with both pH and life history stage². Therefore, we agree with DEC's statement, "...other parameters can have a significant effect on the toxicity of chronic aluminum exposure, making it difficult to set a pH and hardness based chronic water criterion," and recommend that DEC select Option 2.

Tributyltin (TBT) chronic criterion (less stringent): TBT is an organotin compound used primarily as a biocide in antifouling paints. It is extremely toxic to aquatic organisms. Environmental exposure occurs mainly from its application as a biocide in antifouling paints applied to ship hulls to keep barnacles and other fouling organisms from attaching to the hull. This can occur directly (point source) from the vessel itself, or in runoff in stormwater from boatyards either due to boat storage or maintenance activities.

NMFS recognizes that DEC proposes to make the numeric value of the chronic criterion less stringent based on EPA guidance given in *Ambient Aquatic Life Water Quality Criteria for Tributyltin (TBT) - Final* (EPA 822-R-03-031). However, because TBT is extremely toxic to aquatic life and resistant to natural degradation in water, we recommend that DEC retain the current, more conservative standard in Alaska.

Salt Water Aquatic Life Criteria Changes:

Tributyltin acute criterion (less stringent): For the same reasons stated above, NMFS recommends that DEC retain the current, more conservative standard in Alaska

Additional Criteria to Consider

In its dissolved state, Copper is highly toxic to a broad range of aquatic species, including algae, macrophytes, aquatic invertebrates, and fishes. Recent literature has shown that fish behaviors can be disrupted by concentrations of dissolved Copper that are at or slightly above ambient concentrations (i.e., background)³. NMFS recommends that DEC take this opportunity to update the State's criteria for Copper to reflect the evidence presented in current literature. NMFS is available to assist DEC in this effort.

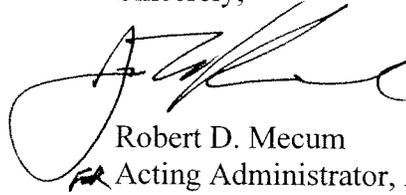
¹ Batten Jr., G.L. and G.K. Lafayette. Aluminum Oxide, Soluble Aluminum, and Coral Toxicity. Seachem Laboratories, 1000 Seachem Drive, Madison, GA 30650. Accessed February 6, 2009, online at: <http://www.seachem.com/support/AluminumSolubilityToxicity.pdf>.

² Baker, J.P. and C.L. Schofield. 1982. Aluminum Toxicity to Fish in Acidic Waters. *Water, Air, and Soil Pollution* 18 (1982) 289-309. Available online at: <http://www.springerlink.com/content/m58j5rujr1523226/fulltext.pdf>

³ Hecht, S.A., D.H. Baldwin, C.A. Mebane, T. Hawkes, S.J.Gross, and N.L. Scholz. 2007. An overview of sensory effects on juvenile salmonids exposed to dissolved copper: Applying a benchmark concentration approach to evaluate sublethal neurobehavioral toxicity. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-83, 39 p.

Thank you for the opportunity to comment on the proposed updates. Should you have any questions regarding EFH or these comments, please contact Ms. Jeanne Hanson of my Anchorage staff at jeanne.hanson@noaa.gov or (907) 271-3029.

Sincerely,

A handwritten signature in black ink, appearing to read 'R. Mecum', with a large, stylized initial 'R'.

Robert D. Mecum

Acting Administrator, Alaska Region

cc:

DEC - jim.powell@alaska.gov

EPA - Palmer.John@epamail.epa.gov