

Renewal of Cooperative Research and Development Agreement (CRADA) for Aquatic Life Bioavailability Modeling for Metals

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The Environmental Protection Agency (EPA) has renewed a Cooperative Research and Development Agreement (CRADA) between the Agency and eight metals associations. Originally established in 2017, the agreement leverages the knowledge and resources of scientists inside and outside of the EPA to better protect aquatic life from metals pollution in lakes, rivers and streams. Through the CRADA, the Agency will continue collaborating with metals association scientists who have technical expertise in aquatic toxicity of metals and how water chemistry variables, such as pH, dissolved organic carbon, and hardness, affect metal toxicity. The CRADA supports development of models and the generation and gathering of toxicity data, which the EPA can use to predict the bioavailability and toxicity of metals to aquatic life when developing ambient water quality criteria under the Clean Water Act. States, Tribes and territories can consider the EPA's aquatic life criteria for metals when administering their water quality protection programs.

Aquatic Life Criteria for Metals

The EPA's Aquatic Life Criteria (ALC) are national, science-based recommendations on the levels of pollutants in water that are not expected to harm aquatic plants and animals. States and Tribes may use the recommended criteria as part of their own water quality standards, modify the recommended criteria to reflect site-specific conditions, or propose other scientifically defensible values. The EPA has developed recommended ALC for nine metals (aluminum, cadmium, chromium (III and IV), copper, iron, lead, nickel, silver, and zinc) and is systematically updating metals criteria over time to incorporate the latest science regarding the effects of water chemistry variables on the bioavailability and toxicity of metals.

CRADA Outcomes and Future Direction

Since 2017, the EPA has been successfully collaborating with these metals industry partners: Aluminum Association, Aluminum REACH Consortium, Cobalt Institute, Copper Development Association, International Copper Association, International Lead Association, International Zinc Association, and NiPERA Inc. As a result of this partnership, the EPA has supported:

- The development of the EPA's 2018 updated national recommended aquatic life criteria for aluminum which provides flexibility to states in developing site-specific criteria based on local water conditions.
- The development of an overarching modeling framework and simplified models for metals that better reflect their toxicity to fish and other aquatic life.
- The generation of aquatic toxicity data for metals that are applied to the models.

The 2026 metals CRADA will provide a continued mechanism for the EPA to collaborate with technical experts from industry to optimize and develop models that support the agency's updating of metals ALC to protect aquatic life. This CRADA includes finalizing model development for nickel, zinc and lead; developing models for cobalt; applying existing bioavailability models to complete ALC for nickel, zinc lead, and cobalt; and scoping an update of the copper ALC.

Where can I find more information?

Please contact Christine Bergeron at Bergeron.Christine@epa.gov and visit the EPA's [Aquatic Life Criteria and Methods for Toxics](#) webpage.