



FACT SHEET

Dissolved Inorganic Substances

Why are dissolved inorganic substances a high priority?

Water quality criteria for dissolved inorganic substances are measured as total dissolved solids (TDS). TDS is a basic indicator of water quality that can include a diverse group of compounds that can become dissolved in water. Recent scientific literature on TDS and its effects on fish and other aquatic life indicate toxicity for certain types of TDS may occur at lower concentrations than the current standard. Based on these studies the department will be evaluating revisions to the current standard.

What will DEC be proposing?

Given the literature review findings, DEC will consider revising the current TDS criterion for freshwater aquatic life. In consultation with EPA and others, DEC will consider possible changes to ensure protection of the growth and propagation of Alaskan species of fish and other aquatic life. The workgroup will work in consultation with EPA to create a protective criterion for Alaskan species.

Background

Natural waters contain various types and concentrations of TDS and they are an essential constituent of water for growth, reproduction, and the general health of aquatic organisms. Some TDS can be toxic at very low concentrations.

The current TDS criterion is 1000 mg/l for aquaculture and the growth and propagation of fish, shellfish, other aquatic life and wildlife. Under the current criterion, a performance based approach is required for wastewater discharge with TDS in the 500-1000 mg/l range. Site specific criteria (largely for mining operations) have been adopted ranging from 300 mg/l to 1500 mg/l for certain designated waterbodies.

The Department has completed a scientific literature review of recent research on TDS and its effect on fish and other aquatic life. The goal of the review was to use the information to evaluate Alaska's water quality standard for TDS. Over 30 literature studies were reviewed and a number of the studies found toxicity values (LC 50) at less than the current standard of 1000 mg/l. Findings included shifts in biotic communities and biodiversity, exclusion of less-tolerant species, and acute or chronic effects at specific stages in life. Results varied dependent on the fish species and when exposure occurred.

2006 Proposed Narrative Standard for Natural Conditions
Department of Environmental Conservation

Review of the studies found few documented effects of elevated TDS or different ions on aquatic plants and algae.

Who is affected?

- Mines using lime-based or other pH treatment.
- Any facility that employs an advance treatment process including drinking water treatment, large municipal waste water plants, waste water recycling operations or facilities using reverse osmosis; and Coal bed methane facilities.
- Other waterbody users.

For more Information

If you have questions or comments see our website at
<http://www.state.ak.us/dec/water/wqsar/wqs/triennialreview> or contact

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