STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

Water Quality Criteria

Idaho's water quality standards prescribe certain criteria that must be met to ensure the beneficial uses of the state's surface waters are supported. These criteria can be numeric or narrative. Numeric criteria are use-specific, while narrative criteria are general, applying to all waters regardless of use. Federal water quality standard regulations require that together, the numeric and narrative criteria must contain sufficient parameters or constituents to protect the beneficial use.

Numeric Water Quality Criteria

Numeric criteria are required where necessary to protect beneficial uses. Individual numeric criteria are based on specific data and scientific assessment of adverse effects. Numeric criteria represent limits and/or ranges of chemical concentrations, like dissolved oxygen, or physical conditions, like water temperature and turbidity.

Although most people focus on the face value or concentration component of numeric criteria, most numeric criteria incorporate a duration and frequency of exposure in addition to a magnitude. A typical numeric statement for an aquatic life criterion usually consists of a pair of concentrations and averaging periods (i.e., duration—acute or chronic). Criteria for toxics substances, for example, typically use a one-hour averaging period for an acute (short-term exposure) concentration and a four-day average for a chronic (long-term exposure) concentration. These criteria are values that should not be exceeded more than once in three years (frequency) if aquatic life is to be supported. Human health criteria are based on lifetime exposure and bioaccumulation of substances.

The duration and frequency components of criteria, while grounded in toxicological mechanisms, present challenges in monitoring and assessment. To fully and accurately assess compliance requires abundant data. Typically, abundant data are not available and so various assumptions and extrapolations need to be made.

Idaho has numeric criteria for temperature, dissolved oxygen, pH, turbidity, bacteria, ammonia, and toxic substances (including metals and human-made organic chemicals). The criteria values and the applicability of the criteria to a specific water body depend on the beneficial use of the water.

Narrative Water Quality Criteria

To supplement numeric criteria, Idaho has adopted narrative criteria. Such criteria are statements that describe the desired water quality goal, such as Idaho's waters being free from pollutants such as oil and scum, color and odor, and other substances that can harm people and fish. Narrative criteria are statements that guide protection of beneficial uses from impairment by pollutants. Narrative criteria are employed for pollutants for which numeric criteria are difficult to specify, such as color and odor, or where natural occurrence and variability make general limits impractical, such as with sediment and nutrients.

Site-Specific Water Quality Criteria

DEQ's water quality criteria may not always reflect the toxicity of a pollutant in a specific water body. Therefore, DEQ has found it may be prudent to develop new water quality criteria or modify existing criteria that will effectively protect designated and existing beneficial uses in certain water bodies as a result of site-specific analyses.

Site-specific criteria are allowed by regulation and, as with all criteria, are subject to EPA review and approval. As with all water quality criteria, site-specific criteria must be based on sound scientific principles to protect the beneficial use.

The following are acceptable conditions for developing site-specific criteria:

- Resident species of a water body are more or less sensitive than those species used to develop a water quality criterion.
- Biological availability and/or toxicity of a pollutant have been altered due to differences between the physicochemical characteristics of the water in a water body and the laboratory water used in developing a water quality criterion (e.g., hardness, temperature, or pH).
- Seasonal changes to the physicochemical characteristics of a water body affect the biological availability and/or toxicity of a pollutant (seasonally dependent site-specific criteria).
- Existing ambient water quality is not protected with statewide water quality criteria.
- Other factors or combinations of factors that may warrant modifications to the criteria.

DEQ's procedures to derive site-specific criteria can be found in Idaho's Water Quality Standards.