



Negotiated Rulemaking
Docket No. 58-0102-1802



Revision of Recreation Use and Criteria and Adoption of Aquatic Life Criteria for Three Toxics



June 28, 2018

Outline

- Comment Summary
- Review of Draft 3
- Relationship of Statistical Threshold Values (STV) and geometric mean concentrations
- Discussion



Comments

- Received comments from:
 - Upper Snake River Tribes Foundation
 - City of Meridian
 - USEPA Region 10
 - Association of Idaho Cities
 - Idaho Conservation League

USRT

- DEQ should protect highest user group; subsistence life-style of tribal users increases exposure to pollutants in fish and water
 - Recreational criteria (*E. coli* and enterococci) are based on protection of swimmers; risk does not vary based on other risk factors or swimming frequency
 - Toxics revisions are for protection of aquatic life; fish consumption levels are not relevant to this rulemaking

USRT

- Monitoring locations and frequency
 - Monitoring is scheduled to meet multiple priorities: regional data needs, site accessibility, use intensity, and resource availability
 - DEQ regional offices host coordination meetings and BAG meetings to discuss monitoring priorities



Meridian

- Combining PCR and SCR into new REC use is more protective; Classifies waters as having possible ingestion and fish consumption
- Recommend maintaining separate sub-categories

Human Health

Recreation

Domestic
Water Supply

E. coli

Toxics – Fish
Only (210.01.b)

Toxics – Fish +
Water

Human Health

Recreation

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E. coli

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Toxics – Fish +
Water

(3-28-18)

b. Table 2 contains criteria set for protection of human health. The Water & Fish criteria apply to waters designated for domestic water supply use. The Fish Only criteria apply to waters designated for primary or secondary contact recreation use. (3-28-18)

Table 2. Criteria for Protection of Human Health (based on consumption of:)

Compound	a CAS Number	Carcinogen?	Water & Fish (µg/L)		Fish Only (µg/L)	
Inorganic Compounds/Metals						
Antimony	7440360		5.2	b	190	b
Arsenic	7440382	Y	10	cd	10	cdj

Note: In 2008, Idaho adopted 10 µg/L as its CWA arsenic criterion for both exposure through fish consumption and direct contact.

Recreation

Primary

406 CFU/100 mL

Secondary

576 CFU/100 mL

Recreation

Primary

406 CFU / 100 mL

Secondary

576 CFU / 100 mL

5 sample geometric mean
 ≤ 126 CFU / 100 mL

Meridian

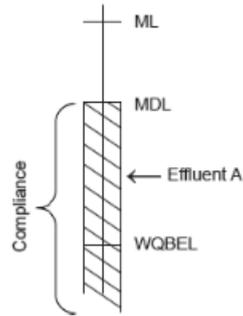
- Both SCR and PCR apply criteria based on incidental ingestion (FIB) and fish consumption (toxics)
- Criteria are the same regardless of sub-category
- Combining into REC does not change numeric criteria, where they are applied, or level of protection

Meridian

- Concerns that proposed carbaryl criterion is lower than analytically detectable
 - CWA does not allow for consideration of feasibility, including detectability, when setting criteria
 - IPDES User's Guide identifies how to implement WQBELs when they are lower than detection

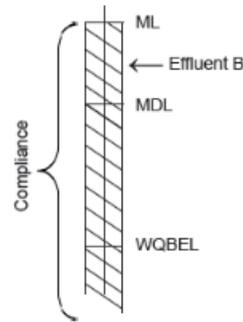
WQBEL < MDL < ML

A. Effluent < MDL = Compliance



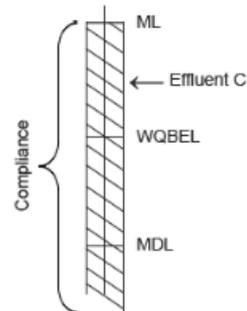
B. Effluent > MDL = Compliance

Unless analytically and statistically confirmed to be above the MDL by a sufficient number of samples, analyses, and use of appropriate statistical techniques.



MDL < WQBEL < ML

C. Effluent < ML = Compliance



ML - minimum level of quantification
 MDL - method detection limit
 WQBEL - water quality-based effluent limit

Figure 11. Compliance with water quality-based effluent limits that are below the MDL or ML.

- IPDES Users Guide, Page 168

Meridian

- Selection of Laboratories:
 - Idaho Bureau of Labs and Anatek Labs (Moscow, Idaho)

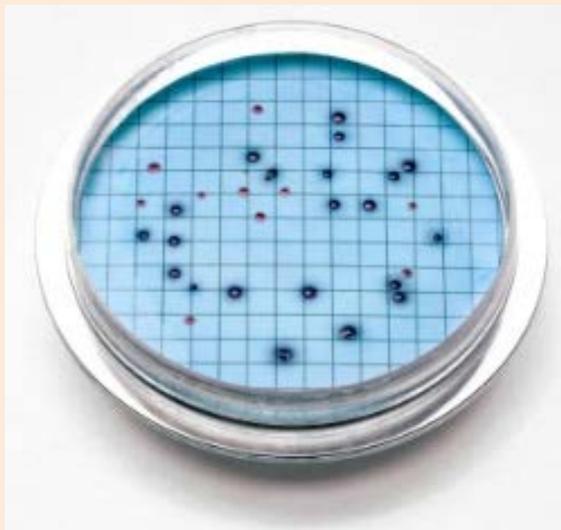
Analyte	Method
Carbaryl	EPA 531.2
Diazinon	EPA 525.2
Acrolein	EPA 8260B

EPA

- Support collapse of PCR and SCR into single REC use
- Interpret *E. coli* and enterococci as independently applicable indicators
- Interpret STV and geomean as independently applicable criteria

EPA

- Interpret STV frequency and duration statements to apply to the same 30-day period as the geomean
 - STV would be 10% exceedance frequency over *any* 30-day period with valid samples



EPA

- Do not support inclusion of the data sufficiency statements (e.g., “*based on a minimum of five samples...30 day period*”) in rule
 - DEQ believes this makes it clear to both DEQ staff and the public

IAC

- Requested additional rulemaking
- Ask that DEQ either present ambient enterococci data or discuss monitoring effort
 - No Idaho laboratories currently certified as there is no current demand
 - DEQ does not currently collect enterococci
 - Proposed concentrations based on relationship to illness from national studies; ambient concentrations would be irrelevant to setting protective criteria

IAC

- Suggest that enterococci only be used when paired with *E. coli* criteria exceedance, that enterococci not be independently applicable
 - Both indicators are valid indicators, and are associated with rates of illness in swimmers
 - No scientific basis for one over the other, or needing both

STV and Geomean

- Both the Geomean Criteria and the Statistical Threshold Value Criteria are based on the relationship of FIB concentrations to incidences of illness in swimmers
- The STV represents the 90th percentile of FIB concentrations that would result in a geomean that exceeds criteria

Arithmetic & Geometric Means

Arithmetic Mean(average)

$$AM = \frac{a_1 + a_2 + a_3 + \dots + a_n}{n}$$

Geometric Mean

$$GM = \sqrt[n]{a_1 a_2 a_3 \dots a_n}$$

STV and Geomean

- Proposed STV criteria values have a duration (30 days) and frequency (10% exceedance)
- While typical monitoring for geomean calculations is weekly, there is nothing to preclude more frequent monitoring to confirm STV exceedance is representative
- DEQ data confirms the statistical basis for the STV

STV and Geomean

- Reviewed readily available *E. coli* data from DEQ regions
 - Collected for assessment, TMDL, and 5-year review purposes

STV and Geomean

- 332 geomeans from sites throughout Idaho
 - Calculated from 5 samples collected ~weekly
- 258 sets had at least one sample that exceeded the Primary Contact SSM of 406 cfu/100 mL
- 231 sets resulted in calculated geomean concentrations that exceeded 126 CFU/100 mL

STV and Geomean

- 89.5% of the time, when an *E. coli* sample exceeded the PCR SSM (406 CFU/100 mL), the subsequent geometric mean of 5 samples over thirty days exceeded the *E. coli* criterion of 126 CFU/100 mL.



Proposed Draft 3

- 251.02.a. ***E. coli* Bacteria**. Waters designated for recreation are not to contain *E. coli* bacteria, used as indicators of human pathogens, in concentrations exceeding:

Proposed Draft 3

- i. Geometric Mean Criterion. Not to contain *E. coli* in concentrations exceeding a geometric mean of one hundred and twenty-six (126) *E. coli* colony forming units (CFU) per one hundred (100 mL) based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period; ~~and~~ or
- Statistical Threshold Value (STV). No greater than ten percent (10%) of valid samples collected over a thirty (30) day period are to contain *E. coli* bacteria in concentrations exceeding an STV of four hundred and ten (410) *E. coli* CFU per one hundred (100) mL; or

Proposed Draft 3

- 251.02.b. **Enterococci.** Waters designated for recreation are not to contain enterococci bacteria, used as indicators of human pathogens, in concentrations exceeding:

Proposed Draft 3

- i. Geometric Mean Criterion. Not to contain enterococci bacteria in concentrations exceeding a geometric mean of thirty-five (35) enterococci CFU per one hundred (100 mL) based on a minimum of five (5) samples taken every three (3) to seven (7) days over a thirty (30) day period; ~~and~~ or
- Statistical Threshold Value (STV). No greater than ten percent (10%) of valid samples collected over a thirty (30) day period are to contain enterococci bacteria in concentrations exceeding an STV of one hundred and thirty (130) enterococci CFU per one hundred (100) mL.

Proposed Draft 3

- Two Fecal Indicators (*E. coli* and enterococci)
- Two criteria per indicator (geomean and STV)
- Each is independently applicable
- Either indicator is sufficient for determining compliance with WQS

Next Steps

- Comments to Draft 3: July 11, 2018