Oregon DEQ Aquatic Life Toxics Criteria Rulemaking

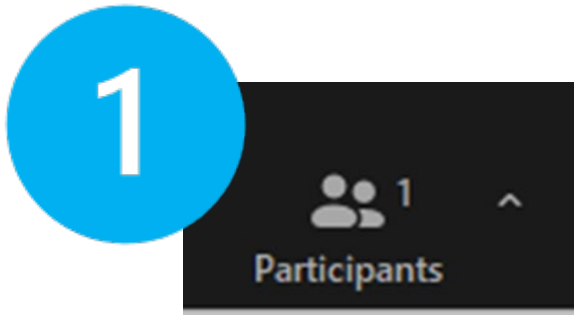
Rulemaking Advisory Committee Meeting #2

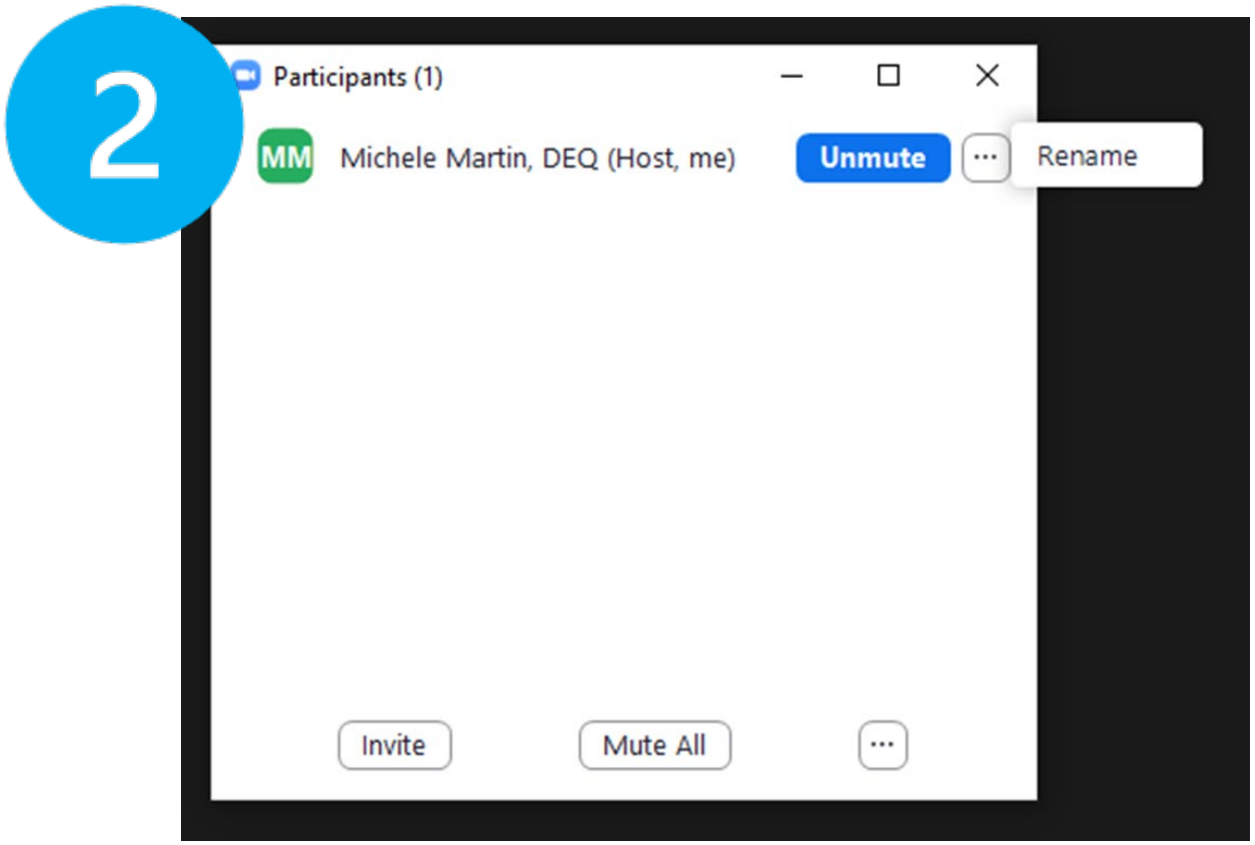
Monday, Nov. 13, 2023

Zoom meeting logistics

- Trina Mayberry – DEQ Admin. Support
- “Raise hand” to be recognized for questions or comments
- Feel free to post questions into the chat and we will respond
- If you are listening on the phone:
  - Press *9 To raise your hand
  - Press *6 Unmute/Mute your line
- Today’s meeting will be recorded

Add “AC” to your name in Zoom to identify you as an advisory committee member, e.g., AC Michele Martin





Introductions

DEQ Staff

Staff Name	Role	Contact
Trina Mayberry	Admin Support and Technical Assistance	trina.mayberry@deq.oregon.gov
Michele Martin	Meeting Facilitator	michele.martin@deq.oregon.gov
Kaley Major	Project Manager, Technical Lead	kaley.major@deq.oregon.gov
Debra Sturdevant	WQ Standards Program Lead	debra.sturdevant@deq.oregon.gov
Connie Dou	WQ Program Manager	connie.dou@deq.oregon.gov

Advisory committee membership

Committee Members

Name	Affiliation
Emily Bowes	Rogue Riverkeeper
Michael Campbell	Stoel Rives LLP
Catherine Corbett	Lower Columbia Estuary Partnership
Mike Eliason	Oregon Forest & Industries Council (OFIC)
Raj Kapur Alternate: Julia Crown	Oregon Association of Clean Water Agencies (OR-ACWA)
Hannah LaGassey Alternate: Marnie Keller	Cow Creek Band of the Umpqua Tribe of Indians
Sharla Moffett	Oregon Business & Industry
Lauren Poor	Oregon Farm Bureau
Glen Spain	Pacific Coast Federation of Fishermen's Associations (PCFFA)

Government Advisors

Name	Affiliation
Becky Anthony	Oregon Department of Fish and Wildlife
Jeremy Buck	U.S. Fish and Wildlife Service
Cory Engel	Oregon Department of Transportation
Michelle Maier	U.S. Environmental Protection Agency
Rebecca McCoun	Oregon Department of Forestry
Kathryn Rifenburg Alternate: Gilbert Uribe	Oregon Department of Agriculture
Greg Sieglitz	NOAA – National Marine Fisheries Service

Agenda

Time	Topic
8:30 a.m.	Gather, Announcements
8:40 a.m.	Draft Fact Sheet and Issue Paper Discussion, question and answer session
9:30 a.m.	Break
9:40 a.m.	Draft Rule Language Discussion
10:10 a.m.	Draft Fiscal and Economic Impact Statement Discussion
10:50 a.m.	Questions from the public
11 a.m.	Break
11:10 a.m.	Discussion, request for RAC review, question and answer session, final thoughts
11:30 a.m.	Adjourn meeting

Draft Fact Sheet and Issue Paper Discussion

Break

Draft Rule Language Discussion

Revising OAR 340-041-8033

OAR 340-041-8033
Table 30
Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
7	Chlordane	57749	y	2.4 [A]	0.0043 [A]	0.09 [A]	0.004 [A]
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*							
8	*Chloride*	16887006	n	860,000	230,000	--	--
9	*Chlorine*	7782505	n	19	11	13	7.5
10	*Chlorpyrifos*	2921882	n	0.083	0.041	0.011	0.0056
11	Chromium III	16065831	n	*See* **C, F**	*See* **C, F**	--	--
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.*							
[F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote F at bottom of Table 30.*							

OAR 340-041-8033
Table 31
Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
56	Acenaphthene	83329	1,700	520	970	710
17	Acrolein	107028	68	21	55	
18	Acrylonitrile	107131	7,550	2,600		
1	Antimony	7440360	9,000	1,600		
19	Benzene	71432	5,300		5,100	700
59	Benzidine	92875	2,500			
3	Beryllium	7440417	130	5.3		
19 B	BHC (Hexachlorocyclohexane-Technical)	319868	100		0.34	
21	Carbon Tetrachloride	56235	35,200		50,000	

Revising Table 30: Acrolein

DISCUSSION DRAFT OAR 340-041-8033

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
1	Acrolein	107028	y	3.0	3.0	--	--

NOTE: These acrolein criteria are not effective for Clean Water Act purposes until approved by EPA.

Revising Table 30: Cadmium

DISCUSSION DRAFT OAR 340-041-8033
Table 30
Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
86	Cadmium	7440439	n	*See* C, F~~E~~	*See* **C, F**	3340 [C]	7.9~~8.8~~ [C]

[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.*

~~[E] *The freshwater criterion for this metal is expressed as "total recoverable" and is a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote E at bottom of Table 30.*~~

[F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use the formula under expanded endnote F at bottom of Table 30.*

NOTE: The freshwater acute cadmium criterion and both saltwater cadmium criteria are not effective for Clean Water Act purposes until approved by EPA. However, the freshwater acute cadmium criterion is a federally promulgated criterion currently effective in Oregon.

Revising Table 30: Cadmium (continued)

8~~6~~	Cadmium	7440439	n	*See* C, F~~E~~	*See* **C, F**	33~~40~~ [C]	7.9~~8.8~~ [C]

[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.*

~~[E] *The freshwater criterion for this metal is expressed as "total recoverable" and is a function of hardness (mg/L) in the water column. To calculate the criterion, use formula under expanded endnote E at bottom of Table 30.*~~

[F] *The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. To calculate the criterion, use the formula under expanded endnote F at bottom of Table 30.*

NOTE: The freshwater acute cadmium criterion and both saltwater cadmium criteria are not effective for Clean Water Act purposes until approved by EPA. However, the freshwater acute cadmium criterion is a federally promulgated criterion currently effective in Oregon.

Revising Table 30: Cadmium - continued

Remove Endnote E

~~**Endnote E: Equation for Hardness-Dependent Freshwater Cadmium Acute Criteria**~~

~~The freshwater criterion for this metal is expressed as total recoverable with two significant figures, and is a function of hardness (mg/L) in the water column. Criteria values based on hardness are calculated using the following formula (CMC refers to the acute criterion):~~

~~$CMC = (\exp(m_A*[\ln(\text{hardness})] + b_A))$~~

~~Chemical~~	~~m_A~~	~~b_A~~	~~m_C~~	~~b_C~~
~~Cadmium~~	~~1.128~~	~~-3.828~~	~~N/A~~	~~N/A~~

Update Endnote F

Values for Calculating Hardness-Dependent Metals Criteria				
Chemical	**m_A**	**b_A**	**m_C**	**b_C**
Cadmium	~~N/A~~0.9789	-3.866~~N/A~~	0.7409	-4.719

Conversion Factor (CF) Table for Dissolved Metals				
Chemical	**Freshwater**		**Saltwater**	
	Acute	**Chronic**	**Acute**	**Chronic**
Arsenic	1.000	1.000	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]~~N/A~~	1.101672-[(ln hardness)(0.041838)]	0.994	0.994

Revising Table 30: Carbaryl

DISCUSSION DRAFT OAR 340-041-8033
Table 30
Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
9	*Carbaryl*	63252	n	2.1	2.1	1.6	--
NOTE: These carbaryl criteria are not effective for Clean Water Act purposes until approved by EPA.							

Revising Table 30: Diazinon

DISCUSSION DRAFT OAR 340-041-8033

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
20	*Diazinon*	333415	n	0.17	0.17	0.82	0.82

NOTE: These diazinon criteria are not effective for Clean Water Act purposes until approved by EPA.

Revising Table 30: Tributyltin

DISCUSSION DRAFT OAR 340-041-8033

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
444 ~~0~~	*Tributyltin (TBT)*	688733	n	0.46	0.072 ~~0.063~~	0.42 ~~0.37~~	0.0074 ~~0.01~~

NOTE: The freshwater chronic and both saltwater criteria for tributyltin are not effective for Clean Water Act purposes until approved by EPA. The acute criterion is not changing and is effective.

Revising Table 30: Aluminum

DISCUSSION DRAFT OAR 340-041-8033
Table 30
Aquatic Life Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS Number	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
5	*Aluminum*	7429905	n	*See* **O, P**	*See* **O, P**	--	--

O The freshwater criterion for aluminum is a function of the pH, dissolved organic carbon, and total hardness in the water column. Acute (CMC) and chronic (CCC) freshwater aluminum criteria values for a site shall be calculated using the 2018 Aluminum Criteria Calculator (Aluminum Criteria Calculator V.2.0.xlsx), or a calculator in R or other software package using the same 1985 Guidelines calculation approach and underlying model equations as in the Aluminum Criteria Calculator V.2.0.xlsx, as defined in EPA's Final Aquatic Life Ambient Water Quality Criteria for Aluminum (EPA 822-R-18-001) and referenced at the bottom of Table 30. See also endnote O for procedures and information.

P For characterizing ambient waters, Oregon will use analytical methods that measure the bioavailable fraction of aluminum. Oregon will measure total recoverable aluminum where required by Federal regulations.

NOTE: These aluminum criteria are not effective for Clean Water Act purposes until approved by EPA. However, this is a federally promulgated aluminum criterion currently effective in Oregon.

Revising Table 30: Aluminum (continued)

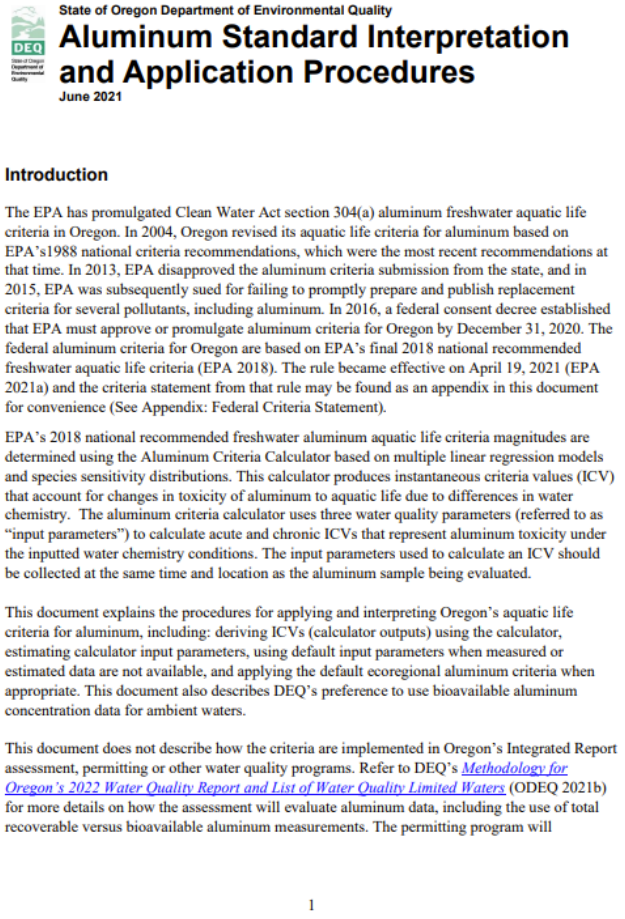
5	*Aluminum*	7429905	n	*See* **O, P**	*See* **O, P**	--	--

[O] The freshwater criterion for aluminum is a function of the pH, dissolved organic carbon, and total hardness in the water column. Acute (CMC) and chronic (CCC) freshwater aluminum criteria values for a site shall be calculated using the 2018 Aluminum Criteria Calculator (Aluminum Criteria Calculator V.2.0.xlsx), or a calculator in R or other software package using the same 1985 Guidelines calculation approach and underlying model equations as in the Aluminum Criteria Calculator V.2.0.xlsx, as defined in EPA's Final Aquatic Life Ambient Water Quality Criteria for Aluminum (EPA 822-R-18-001) and referenced at the bottom of Table 30. See also endnote O for procedures and information.

[P] For characterizing ambient waters, Oregon will use analytical methods that measure the bioavailable fraction of aluminum. Oregon will measure total recoverable aluminum where required by Federal regulations.

NOTE: These aluminum criteria are not effective for Clean Water Act purposes until approved by EPA. However, this is a federally promulgated aluminum criterion currently effective in Oregon.

Specifying application procedures for aluminum



State of Oregon Department of Environmental Quality

Aluminum Standard Interpretation and Application Procedures

June 2021

Introduction

The EPA has promulgated Clean Water Act section 304(a) aluminum freshwater aquatic life criteria in Oregon. In 2004, Oregon revised its aquatic life criteria for aluminum based on EPA's1988 national criteria recommendations, which were the most recent recommendations at that time. In 2013, EPA disapproved the aluminum criteria submission from the state, and in 2015, EPA was subsequently sued for failing to promptly prepare and publish replacement criteria for several pollutants, including aluminum. In 2016, a federal consent decree established that EPA must approve or promulgate aluminum criteria for Oregon by December 31, 2020. The federal aluminum criteria for Oregon are based on EPA's final 2018 national recommended freshwater aquatic life criteria (EPA 2018). The rule became effective on April 19, 2021 (EPA 2021a) and the criteria statement from that rule may be found as an appendix in this document for convenience (See Appendix: Federal Criteria Statement).

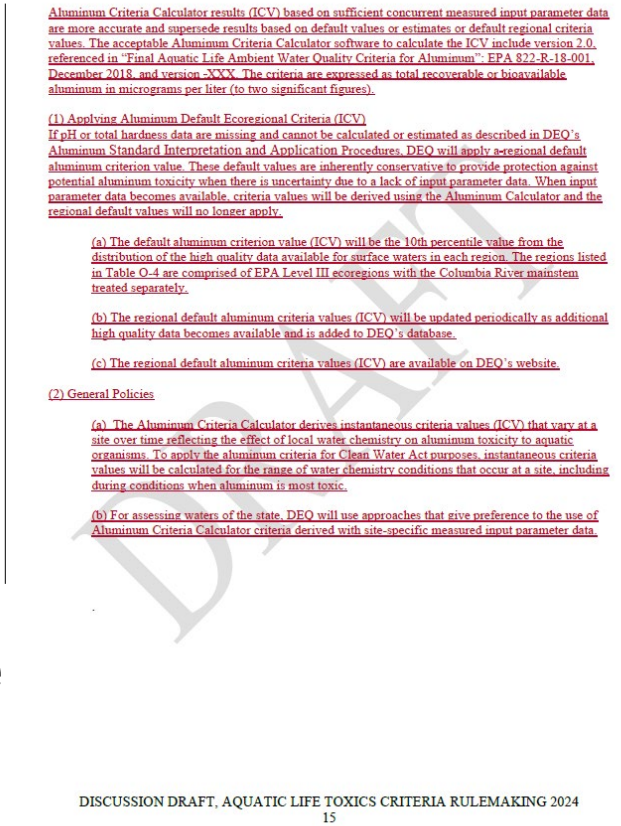
EPA's 2018 national recommended freshwater aluminum aquatic life criteria magnitudes are determined using the Aluminum Criteria Calculator based on multiple linear regression models and species sensitivity distributions. This calculator produces instantaneous criteria values (ICV) that account for changes in toxicity of aluminum to aquatic life due to differences in water chemistry. The aluminum criteria calculator uses three water quality parameters (referred to as "input parameters") to calculate acute and chronic ICVs that represent aluminum toxicity under the inputted water chemistry conditions. The input parameters used to calculate an ICV should be collected at the same time and location as the aluminum sample being evaluated.

This document explains the procedures for applying and interpreting Oregon's aquatic life criteria for aluminum, including: deriving ICVs (calculator outputs) using the calculator, estimating calculator input parameters, using default input parameters when measured or estimated data are not available, and applying the default ecoregional aluminum criteria when appropriate. This document also describes DEQ's preference to use bioavailable aluminum concentration data for ambient waters.

This document does not describe how the criteria are implemented in Oregon's Integrated Report assessment, permitting or other water quality programs. Refer to DEQ's *Methodology for Oregon's 2022 Water Quality Report and List of Water Quality Limited Waters* (ODEQ 2021b) for more details on how the assessment will evaluate aluminum data, including the use of total recoverable versus bioavailable aluminum measurements. The permitting program will

1

- Add Endnote O
  - Inputs for aluminum criteria calculator: dissolved organic carbon, pH, and total hardness
  - Procedures specify what to do when input data are missing



Aluminum Criteria Calculator results (ICV) based on sufficient concurrent measured input parameter data are more accurate and supersede results based on default values or estimates or default regional criteria values. The acceptable Aluminum Criteria Calculator software to calculate the ICV include version 2.0, referenced in "Final Aquatic Life Ambient Water Quality Criteria for Aluminum": EPA 822-R-18-001, December 2018, and version -XXX. The criteria are expressed as total recoverable or bioavailable aluminum in micrograms per liter (to two significant figures).

(1) Applying Aluminum Default Ecoregional Criteria (ICV)
If pH or total hardness data are missing and cannot be calculated or estimated as described in DEQ's Aluminum Standard Interpretation and Application Procedures, DEQ will apply a regional default aluminum criterion value. These default values are inherently conservative to provide protection against potential aluminum toxicity when there is uncertainty due to a lack of input parameter data. When input parameter data becomes available, criteria values will be derived using the Aluminum Calculator and the regional default values will no longer apply.

(a) The default aluminum criterion value (ICV) will be the 10th percentile value from the distribution of the high quality data available for surface waters in each region. The regions listed in Table O-4 are comprised of EPA Level III ecoregions with the Columbia River mainstem treated separately.

(b) The regional default aluminum criteria values (ICV) will be updated periodically as additional high quality data becomes available and is added to DEQ's database.

(c) The regional default aluminum criteria values (ICV) are available on DEQ's website.

(2) General Policies

(a) The Aluminum Criteria Calculator derives instantaneous criteria values (ICV) that vary at a site over time reflecting the effect of local water chemistry on aluminum toxicity to aquatic organisms. To apply the aluminum criteria for Clean Water Act purposes, instantaneous criteria values will be calculated for the range of water chemistry conditions that occur at a site, including during conditions when aluminum is most toxic.

(b) For assessing waters of the state, DEQ will use approaches that give preference to the use of Aluminum Criteria Calculator criteria derived with site-specific measured input parameter data.

DISCUSSION DRAFT, AQUATIC LIFE TOXICS CRITERIA RULEMAKING 2024
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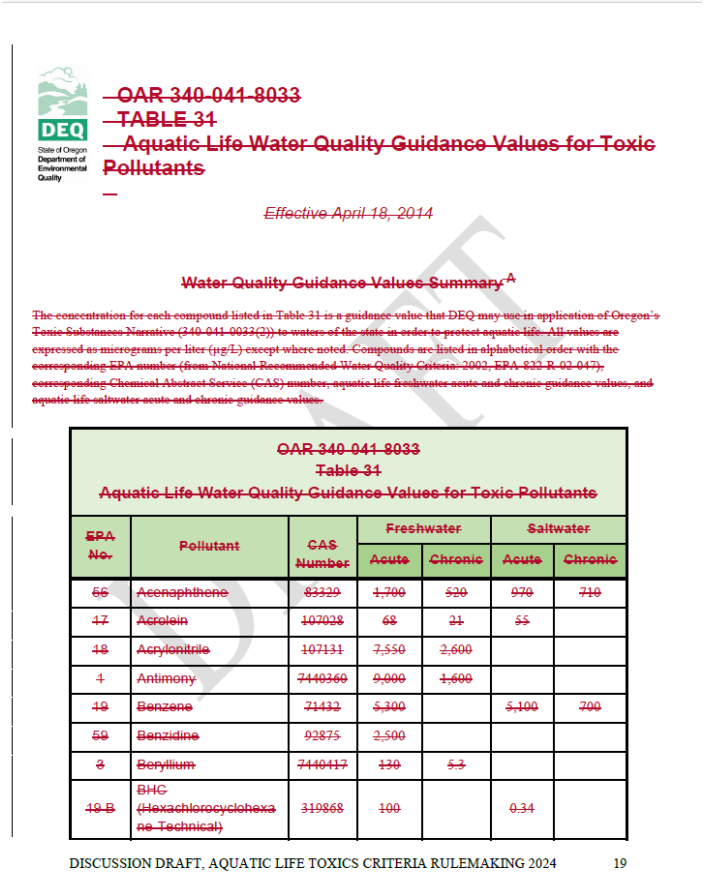
Proposing to Remove Table 31

- Table 31: Aquatic Life Water Quality Guidance Values for Toxic Pollutants
  - Not regulatory values
  - Outdated

- DEQ is developing narrative toxics criterion (OAR 340-041-0033(1)) application procedures



~~OAR 340-041-8033~~
~~TABLE 31~~
~~Aquatic Life Water Quality Guidance Values for Toxic Pollutants~~

~~Effective April 18, 2014~~

~~Water Quality Guidance Values Summary~~ [A]

~~The concentration for each compound listed in Table 31 is a guidance value that DEQ may use in application of Oregon's Toxic Substances Narrative (340-041-0033(2)) to waters of the state in order to protect aquatic life. All values are expressed as micrograms per liter (µg/L) except where noted. Compounds are listed in alphabetical order with the corresponding EPA number (from National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047), corresponding Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic guidance values, and aquatic life saltwater acute and chronic guidance values.~~

~~OAR 340-041-8033~~
~~Table 31~~
~~Aquatic Life Water Quality Guidance Values for Toxic Pollutants~~

~~EPA No.~~	~~Pollutant~~	~~CAS Number~~	~~Freshwater~~		~~Saltwater~~	
			~~Acute~~	~~Chronic~~	~~Acute~~	~~Chronic~~
~~56~~	~~Acenaphthene~~	~~83329~~	~~1,700~~	~~520~~	~~970~~	~~710~~
~~17~~	~~Acrolein~~	~~107028~~	~~68~~	~~21~~	~~55~~	
~~18~~	~~Acrylonitrile~~	~~107131~~	~~7,550~~	~~2,600~~		
~~1~~	~~Antimony~~	~~7440360~~	~~9,000~~	~~1,600~~		
~~19~~	~~Benzene~~	~~71432~~	~~5,300~~		~~5,100~~	~~700~~
~~59~~	~~Benzidine~~	~~92875~~	~~2,500~~			
~~3~~	~~Beryllium~~	~~7440417~~	~~130~~	~~5.3~~		
~~19.B~~	~~BHC (Hexachlorocyclohexane Technical)~~	~~319868~~	~~100~~		~~0.34~~	

DISCUSSION DRAFT, AQUATIC LIFE TOXICS CRITERIA RULEMAKING 2024 19

Break

Draft Fiscal Impact Statement Discussion

Advisory committee fiscal review

DEQ is asking for the committee member input on:

- Whether the proposed rules would have a fiscal impact
- The extent of the impact
- Whether the proposed rules would have a significant adverse impact on small businesses
  - If so, then how DEQ can reduce impact

Draft statement of fiscal and economic impact

State Cost of Compliance

- State Agencies
  - DEQ (Permitting, Assessment, TMDL)
  - Oregon Department of Agriculture
  - Oregon Department of Transportation
  - Oregon Department of Forestry
  - Oregon Department of Fish and Wildlife

Draft statement of fiscal and economic impact

State Cost of Compliance

Local Governments

Large businesses (>50 employees)

Small businesses (50 or fewer employees)

- Type businesses subject to rule
- Projected record keeping required
- Project equipment, supplies, labor required
- How DEQ involved small businesses in process

Draft statement of fiscal and economic impact

State Cost of Compliance

Public

Other sections of the Fiscal Impact Statement

Fee Analysis – no fees

Housing Cost – no proposed impact

Racial Equity – statewide pollution reduction, greater impact in polluted areas

Clarifying questions from the public

Break

Discussion, request for RAC review, question and answer session, final thoughts

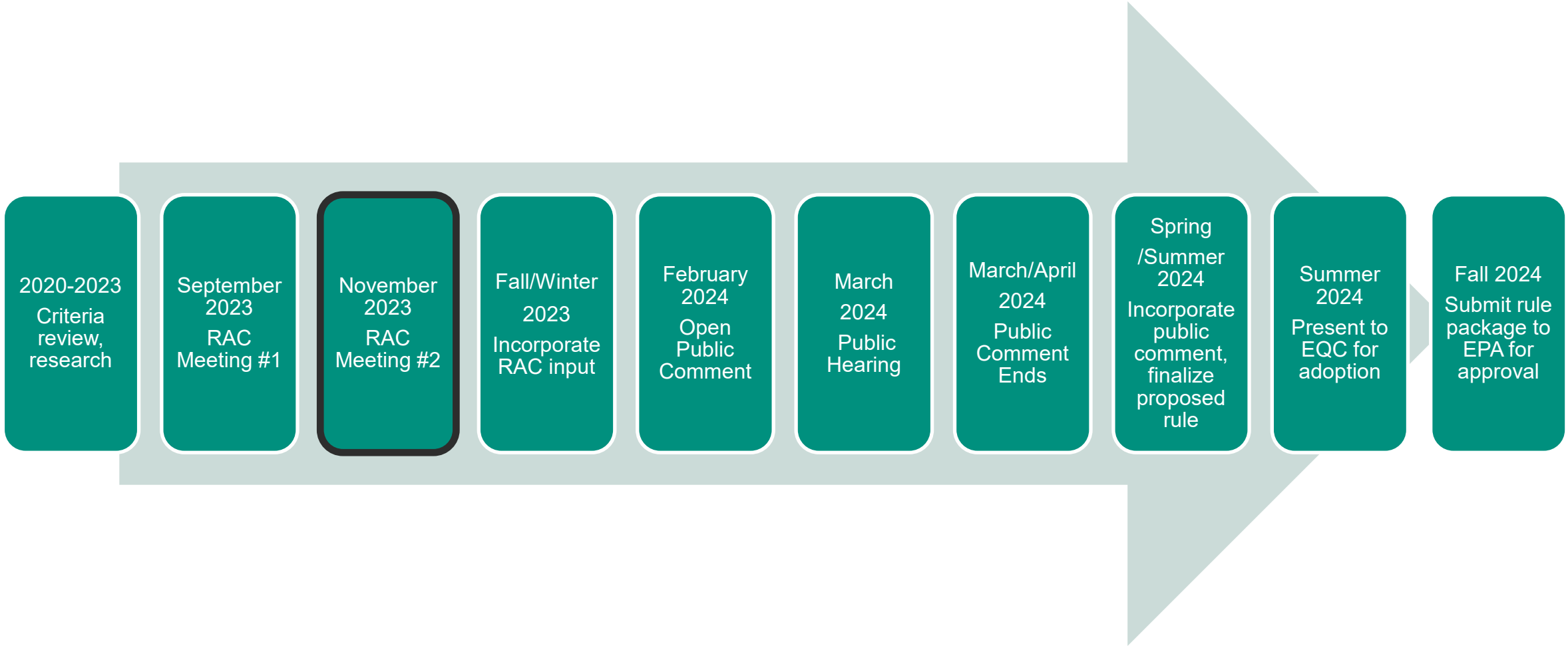
DEQ support and website

Aquatic Life Toxics Criteria 2024

The rulemaking web page will include:

- advisory committee charter
- committee roster
- meeting agenda and Zoom link
- meeting summaries
- other meeting materials

Project timeline (estimated)



Remaining RAC goals and schedule

	Nov. 13:	Nov. 17:	Dec. 1:	Dec. 15:	Early January
RAC Action:	RAC Meeting #2	RAC sends comments to DEQ for **first drafts** of: -Fiscal -Rule Language	RAC sends DEQ comment on draft meeting summary	RAC sends comments to DEQ for **second drafts** of: -Fiscal -Rule Language	
DEQ Action:		DEQ sends RAC draft meeting summary	DEQ sends RAC second drafts of: -Fiscal -Rule Language		DEQ sends RAC-input-incorporated drafts before public comment (informational)

DEQ staff contacts

Primary Contact and Project Manager:
Kaley Major
Water Quality Standards Specialist
503-229-6121
kaley.major@deq.oregon.gov

Alternate Contact:
Debra Sturdevant
Water Quality Standards Program Lead
503-229-6691
debra.sturdevant@deq.oregon.gov

Rulemaking web page: Aquatic Life Toxics Criteria 2024

Title VI and alternative formats

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Contact: 800-452-4011 | TTY: 711 | deqinfo@deq.state.or.us