Invitation to Comment

Corrections and Clarifications to Toxics Water Quality Standards

DEQ invites input on proposed amendments to permanent rules in chapter 340 of the Oregon Administrative Rules.

State of Oregon Department of Environmental Quality

DEQ proposal

DEQ proposes the following changes to OAR 340, division numbers 040 and 041, to correct and clarify wording describing the state's water quality toxics standards:

- Address the U.S. Environmental Protection Agency's Jan. 31, 2013 disapprovals of 11 pesticides and selenium aquatic life toxics criteria that DEQ submitted to EPA in 2004. EPA's disapproval is based on a lack of clarification rather than concerns about the aquatic protectiveness of the criteria.
- Re-propose aquatic life toxics criteria for arsenic and chromium VI that DEQ inadvertently omitted from a table of toxics criteria during a 2007 rulemaking.
- Consolidate effective aquatic life toxics criteria from Tables 20, 33A and 33B to a new Table 30. As a result, DEQ proposes to remove Tables 20, 33A and 33B from OAR 340.
- Other corrections and clarifications to the state's toxic substances rule to correct typographical errors and incorrect references, and to provide additional clarifying information to rules and tables containing the aquatic life and human health water quality toxics criteria.

DEQ's objective

The objective of this rulemaking is to address a number of EPA disapprovals of Oregon's aquatic life toxics criteria and to correct errors from earlier rulemakings. If Oregon does not make these revisions, EPA is required to put in place its own regulations addressing the deficiencies. DEQ anticipates prompt EPA approval.

Note: DEQ will not address EPA disapprovals of the freshwater aquatic life toxics criteria for aluminum, ammonia, cadmium (acute criterion only) or copper. DEQ will propose remedies to address these disapprovals in subsequent rulemakings.

Who does this affect?

Parties affected by this proposal include industrial and municipal dischargers to state waters. Specifically, regulated parties include those industrial dischargers categorized as "primary dischargers" by the federal permitting regulations and required to monitor for toxic pollutants, and generally major municipal dischargers, with an average dry weather design flow of more than one million gallons per day. Because the proposed amendments are straightforward and do not impose additional requirements to the affected parties, DEQ does not expect significant impacts from the proposed rulemaking.

Sign up for notices

Get email updates about this proposed rule by signing up at:
http://www.deq.state.or.us/wq/standards/StandardsClarification.htm

Attend a hearing

DEQ invites you to attend the public hearing listed below. The presiding officer will provide a brief overview of the proposal before inviting your spoken or written comment on the proposed rule revisions.

Portland
811 SW Sixth Ave.
10th floor, Room EQC-A
Time: 6 p.m.
Date: Wednesday, Sept. 18, 2013
Presiding Officer: DEQ staff

Comment deadline

To consider comments on the proposed rules, DEQ must receive the comment by 5 p.m. Monday, Sept. 30, 2013.

Submit written comments

Online
Comment form

By mail
Oregon DEQ
Attn: Andrea Matzke
811 SW Sixth Ave.
Portland, OR 97204

By fax
503-229-6037
Attn: Andrea Matzke

At hearing
See "Attend a hearing"

Issued 08/15/13
Andrea Matzke
503-229-5384

More information

The rule proposal and notice for this rulemaking are on DEQ's website: http://www.deq.state.or.us/regulations/proposedrules.htm

What has happened so far?

Advisory committee

DEQ convened an advisory committee June 25, 2013, and provided a summary of the rulemaking proposal. The committee had an opportunity to provide any potential fiscal or economic impacts at a July 11, 2013 meeting. Details on this rulemaking, including information and materials from the advisory committee meetings, are on DEQ's website: http://www.deq.state.or.us/wq/standards/StandardsClarification.htm

Documents used to develop proposal

DEQ relied on the following documents to consider the need for the proposed rule and to prepare the rulemaking documents.

- EPA Jan. 31, 2013 action letter on Oregon's 2004 aquatic life criteria and associated documents: http://www.deq.state.or.us/wq/standards/toxics.htm
- DEQ response letter to EPA's Jan. 31, 2013 letter: http://www.deq.state.or.us/wq/standards/docs/toxics/ResponseLetterEPA.pdf
- Current OAR 340-040-0020, OAR 340-040-0080, OAR 340-041-0009, and OAR 340-041-0033
- Current Tables 20, 33A, 33B, 33C, 40: http://www.deq.state.or.us/wq/standards/toxics.htm

What will happen next?

DEQ will prepare a written response to each comment or summary of similar comments received by the comment deadline. DEQ may modify the rule proposal based on the comments.

Comments and responses will become part of the DEQ staff report that will go to the Oregon Environmental Quality Commission for final decision.

Present proposal to the commission

The Environmental Quality Commission is the board that reviews all proposed changes to division 340 of the Oregon Administrative Rules. The commission adopts, rejects, or adopts with changes, any proposed rule.

DEQ plans to take this proposal to the commission for final decision at its December 2013 meeting in Portland. Proposed amendments would become effective April 18, 2014. EPA must subsequently approve revisions it considers as water quality standards before those revisions become applicable for Clean Water Act programs.

Accessibility information

To schedule a review of all websites and documents referenced in this announcement, call Andrea Matzke, Portland, at 503-229-5384 or 1-800-452-4011, ext. 5384 toll-free in Oregon.

Please notify DEQ of any special physical or language accommodations or if you need information in large print, Braille or another format. To make these arrangements, contact DEQ Communications and Outreach, Portland, at 503-229-5696 or call toll-free in Oregon at 1-800-452-4011; fax to 503-229-6762; or email to deqinfo@deq.state.or.us. People with hearing impairments may call 711.

Corrections and Clarifications to Toxics Water Quality Standards Regulations

Proposed Rule Revisions

340-041-0033

Toxic Substances

(1) Amendments to~~in~~ sections (41-5) and (~~6~~7) of this rule (OAR 340-041-0033) and associated revisions to Tables 20, 33A, 33B, 33C, and 40 ~~do not~~ become effective on April 18, 2014. The amendments do not become applicable for purposes of ORS chapter 468B or the federal Clean Water Act, however, unless approved by ~~and until~~ EPA ~~approves the provisions it identifies as water quality standards~~ pursuant to 40 CFR 131.21 (4/27/2000).

(2) **Toxic Substances Narrative.** Toxic substances may not be introduced above natural background levels in waters of the state in amounts, concentrations, or combinations that may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare or aquatic life, wildlife, or other designated beneficial uses.

(3) **Aquatic Life Numeric Criteria**. Levels of toxic substances in waters of the state may not exceed the applicable aquatic life criteria listed in Table 30. ~~Tables 20, 33A, and 33B. Tables 33A and 33B, adopted on May 20, 2004, update Table 20 as described in this section.~~

~~(a) Each value for criteria in Table 20 is effective until the corresponding value in Tables 33A or 33B becomes effective.~~

~~(A) Each value in Table 33A is effective on February 15, 2005, unless EPA has disapproved the value before that date. If a value is subsequently disapproved, any corresponding value in Table 20 becomes effective immediately. Values that are the same in Tables 20 and 33A remain in effect.~~

~~(B) Each value in Table 33B is effective upon EPA approval.~~

~~(b) The department will note the effective date for each value in Tables 20, 33A, and 33B as described in this section.~~

(4) **Human Health Numeric Criteria**. The criteria for waters of the state listed in Table 40 are established to protect Oregonians from potential adverse health effects associated with long-term exposure to toxic substances associated with consumption of fish, shellfish, and water.

(5) To establish permit or other regulatory limits for toxic substances for which criteria are not included in Table 30 or Table 40~~s 20, 33A, or 33B~~, the department may use the guidance values in Table 31~~3C~~, public health advisories, and other published scientific literature. The department may also require or conduct bio-assessment studies to monitor the toxicity to aquatic life of complex effluents, other suspected discharges, or chemical substances without numeric criteria.

(6) Establishing Site-Specific Background Pollutant Criteria: This provision is a performance based water quality standard that results in site-specific human health water quality criteria under the conditions and procedures specified in this rule section. It addresses existing permitted discharges of a pollutant removed from the same body of water. For waterbodies where a discharge does not increase the pollutant's mass and does not increase the pollutant concentration by more than 3%, and where the water body meets a pollutant concentration associated with a risk level of $1x10^{-4}$, DEQ concludes that the pollutant concentration continues to protect human health.

(a) Definitions: For the purpose of this section (OAR 340-041-0033(6)):

(A) "Background pollutant concentration" means the ambient water body concentration immediately upstream of the discharge, regardless of whether those pollutants are natural or result from upstream human activity.

(B) An "intake pollutant" is the amount of a pollutant that is present in public waters (including groundwater) as provided in subsection (C), below, at the time it is withdrawn from such waters by the discharger or other facility supplying the discharger with intake water.

(C) "Same body of water": An intake pollutant is considered to be from the "same body of water" as the discharge if the department finds that the intake pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee. This finding may be deemed established if:

(i) The background concentration of the pollutant in the receiving water (excluding any amount of the pollutant in the facility's discharge) is similar to that in the intake water;

(ii) There is a direct hydrological connection between the intake and discharge points; and

(I) The department may also consider other site-specific factors relevant to the transport and fate of the pollutant to make the finding in a particular case that a pollutant would or would not have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee.

(II) An intake pollutant from groundwater may be considered to be from the "same body of water" if the department determines that the pollutant would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee, except that such a pollutant is not from the same body of water if the groundwater contains the pollutant partially or entirely due to past or present human activity, such as industrial, commercial, or municipal operations, disposal actions, or treatment processes.

(iii) Water quality characteristics (e.g., temperature, pH, hardness) are similar in the intake and receiving waters.

(b) Applicability

(A) Site-specific criteria may be established under this rule section only for carcinogenic pollutants.

(B) Site-specific criteria established under this rule section apply in the vicinity of the discharge for purposes of establishing permit limits for the specified permittee.

(C) The underlying waterbody criteria continue to apply for all other Clean Water Act programs.

(D) The site-specific background pollutant criterion will be effective upon department issuance of the permit for the specified permittee.

(E) Any site-specific criteria developed under this procedure will be re-evaluated upon permit renewal.

(c) A site-specific background pollutant criterion may be established where all of the following conditions are met:

(A) The discharger has a currently effective NPDES permit;

(B) The mass of the pollutant discharged to the receiving waterbody does not exceed the mass of the intake pollutant from the same body of water, as defined in section (6)(a)(C) above, and, therefore, does not increase the total mass load of the pollutant in the receiving water body;

(C) The discharger has not been assigned a TMDL wasteload allocation for the pollutant in question;

(D) The permittee uses any feasible pollutant reduction measures available and known to minimize the pollutant concentration in their discharge;

(E) The pollutant discharge has not been chemically or physically altered in a manner that causes adverse water quality impacts that would not occur if the intake pollutants were left in-stream; and,

(F) The timing and location of the pollutant discharge would not cause adverse water quality impacts that would not occur if the intake pollutant were left in-stream.

(d) The site-specific background pollutant criterion must be the most conservative of the following four values. The procedures deriving these values are described in the sections (6)(e) of this rule.

(A) The projected in-stream pollutant concentration resulting from the current discharge concentration and any feasible pollutant reduction measures under (c)(D) above, after mixing with the receiving stream.

(B) The projected in-stream pollutant concentration resulting from the portion of the current discharge concentration associated with the intake pollutant mass after mixing with the receiving stream. This analysis ensures that there will be no increase in the mass of the intake pollutant in the receiving water body as required by condition (c)(B) above.

(C) The projected in-stream pollutant concentration associated with a 3% increase above the background pollutant concentration as calculated:

(i) For the mainstem Willamette and Columbia Rivers, using 25% of the harmonic mean flow of the waterbody.

(ii) For all other waters, using 100% of the harmonic mean flow or similar critical flow value of the waterbody.

(D) A criterion concentration value representing a human health risk level of 1 ? 10^{-4}. This value is calculated using EPA's human health criteria derivation equation for carcinogens (EPA 2000), a risk level of 1 ? 10^{-4}, and the same values for the remaining calculation variables that were used to derive the underlying human health criterion.

(e) Procedure to derive a site-specific human health water quality criterion to address a background pollutant:

(A) The department will develop a flow-weighted characterization of the relevant flows and pollutant concentrations of the receiving waterbody, effluent and all facility intake pollutant sources to determine the fate and transport of the pollutant mass.

(i) The pollutant mass in the effluent discharged to a receiving waterbody may not exceed the mass of the intake pollutant from the same body of water.

(ii) Where a facility discharges intake pollutants from multiple sources that originate from the receiving waterbody and from other waterbodies, the department will calculate the flow-weighted amount of each source of the pollutant in the characterization.

(iii) Where intake water for a facility is provided by a municipal water supply system and the supplier provides treatment of the raw water that removes an intake water pollutant, the concentration and mass of the intake water pollutant shall be determined at the point where the water enters the water supplier's distribution system.

(B) Using the flow weighted characterization developed in Section (6)(e)(A), the department will calculate the in-stream pollutant concentration following mixing of the discharge into the receiving water. The resultant concentration will be used to determine the conditions in Section (6)(d)(A) and (B).

(C) Using the flow weighted characterization, the department will calculate the in-stream pollutant concentration based on an increase of 3% above background pollutant concentration. The resultant concentration will be used to determine the condition in Section (6)(d)(C).

(i) For the mainstem Willamette and Columbia Rivers, 25% of the harmonic mean flow of the waterbody will be used.

(ii) For all other waters, 100% of the harmonic mean flow or similar critical flow value of the waterbody will be used.

(D) The department will select the most conservative of the following values as the site-specific water quality criterion.

(i) The projected in-stream pollutant concentration described in Section 6(e)(B);

(ii) The in-stream pollutant concentration based on an increase of 3% above background described in Section (6)(e)(C); or

(iii) A water quality criterion based on a risk level of 1 x 10^{-4}.

(f) Calculation of water quality based effluent limits based on a site-specific background pollutant criterion:

(A) For discharges to receiving waters with a site-specific background pollutant criterion, the department will use the site-specific criterion in the calculation of a numeric water quality based effluent limit.

(B) The department will compare the calculated water quality based effluent limits to any applicable aquatic toxicity or technology based effluent limits and select the most conservative for inclusion in the permit conditions.

(g) In addition to the water quality based effluent limits described in Section (6)(f), the department will calculate a mass-based limit where necessary to ensure that the condition described in Section (6)(c)(B) is met. Where mass-based limits are included, the permit shall specify how compliance with mass-based effluent limitations will be assessed.

(h) The permit shall include a provision requiring the department to consider the re-opening of the permit and re-evaluation of the site-specific background pollutant criterion if new information shows the discharger no longer meets the conditions described in subsections (6)(c) and (e).

(i) Public Notification Requirements.

(A) If the department proposes to grant a site-specific background pollutant criterion, it must provide public notice of the proposal and hold a public hearing. The public notice may be included in the public notification of a draft NPDES permit or other draft regulatory decision that would rely on the criterion and will also be published on the water quality standards website;

(B) The department will publish a list of all site-specific background pollutant criteria approved pursuant to this rule. A criterion will be added to this list within 30 days of its effective date. The list will identify: the permittee; the site-specific background pollutant criterion and the associated risk level; the waterbody to which the criterion applies; the allowable pollutant effluent limit; and how to obtain additional information about the criterion.

(7) Arsenic Reduction Policy: The inorganic arsenic criterion for the protection of human health from the combined consumption of organisms and drinking water is 2.1 micrograms per liter. While this criterion is protective of human health and more stringent than the federal maximum contaminant level (MCL) for arsenic in drinking water, which is 10 micrograms per liter, it nonetheless is based on a higher risk level than the Commission has used to establish other human health criteria. This higher risk level recognizes that much of the risk is due to naturally high levels of inorganic arsenic in Oregon's waterbodies. In order to maintain the lowest human health risk from inorganic arsenic in drinking water, the Commission has determined that it is appropriate to adopt the following policy to limit the human contribution to that risk.

(a) The arsenic reduction policy established by this rule section does not become applicable for purposes of ORS chapter 468B or the federal Clean Water Act unless and until the numeric arsenic criteria established by this rule are approved by EPA pursuant to 40 CFR 131.21 (4/27/2000).

(b) It is the policy of the Commission that the addition of inorganic arsenic from new or existing anthropogenic sources to waters of the state within a surface water drinking water protection area be reduced the maximum amount feasible. The requirements of this rule section (OAR 340-041-0033(~~4~~7)) apply to sources that discharge to surface waters of the state with an ambient inorganic arsenic concentration equal to or lower than the applicable numeric inorganic arsenic criteria for the protection of human health.

(c) The following definitions apply to this section (OAR 340-041-0033(~~4~~7)):

(A) "Add inorganic arsenic" means to discharge a net mass of inorganic arsenic from a point source (the mass of inorganic arsenic discharged minus the mass of inorganic arsenic taken into the facility from a surface water source).

(B) A "surface water drinking water protection area," for the purpose of this section, means an area delineated as such by DEQ under the source water assessment program of the federal Safe Drinking Water Act, 42 U.S.C. ¦ 300j 13. The areas are delineated for the purpose of protecting public or community drinking water supplies that use surface water sources. These delineations can be found at DEQ's drinking water program website.

(C) "Potential to significantly increase inorganic arsenic concentrations in the public drinking water supply source water" means:

(i) to increase the concentration of inorganic arsenic in the receiving water for a discharge by 10 percent or more after mixing with the harmonic mean flow of the receiving water; or

(ii) as an alternative, if sufficient data are available, the discharge will increase the concentration of inorganic arsenic in the surface water intake water of a public water system by 0.021 micrograms per liter or more based on a mass balance calculation.

(d) Following the effective date of this rule, applications for an individual NPDES permit or permit renewal received from industrial dischargers located in a surface water drinking water protection area and identified by DEQ as likely to add inorganic arsenic to the receiving water must include sufficient data to enable DEQ to determine whether:

(A) The discharge in fact adds inorganic arsenic; and

(B) The discharge has the potential to significantly increase inorganic arsenic concentrations in the public drinking water supply source water.

(e) Where DEQ determines that both conditions in subsection (d) of this section (~~4~~7) are true, the industrial discharger must develop an inorganic arsenic reduction plan and propose all feasible measures to reduce its inorganic arsenic loading to the receiving water. The proposed plan, including proposed measures, monitoring and reporting requirements, and a schedule for those actions, will be described in the fact sheet and incorporated into the source's NPDES permit after public comment and DEQ review and approval. In developing the plan, the source must:

(A) Identify how much it can minimize its inorganic arsenic discharge through pollution prevention measures, process changes, wastewater treatment, alternative water supply (for groundwater users) or other possible pollution prevention and/or control measures;

(B) Evaluate the costs, feasibility and environmental impacts of the potential inorganic arsenic reduction and control measures;

(C) Estimate the predicted reduction in inorganic arsenic and the reduced human health risk expected to result from the control measures;

(D) Propose specific inorganic arsenic reduction or control measures, if feasible, and an implementation schedule; and

(E) Propose monitoring and reporting requirements to document progress in plan implementation and the inorganic arsenic load reductions.

(f) In order to implement this section, DEQ will develop the following information and guidance within 120 days of the effective date of this rule and periodically update it as warranted by new information:

(A) A list of industrial sources or source categories, including industrial stormwater and sources covered by general permits, that are likely to add inorganic arsenic to surface waters of the State.

(i) For industrial sources or source categories permitted under a general permit that have been identified by DEQ as likely sources of inorganic arsenic, DEQ will evaluate options for reducing inorganic arsenic during permit renewal or evaluation of Stormwater Pollution Control Plans.

(B) Quantitation limits for monitoring inorganic arsenic concentrations.

(C) Information and guidance to assist sources in estimating, pursuant to ~~paragraph~~subsection (~~d~~e)(C) of this section, the reduced human health risk expected to result from inorganic arsenic control measures based on the most current EPA risk assessment.

(g) It is the policy of the Commission that landowners engaged in agricultural or development practices on land where pesticides, fertilizers, or soil amendments containing arsenic are currently being or have previously been applied, implement conservation practices to minimize the erosion and runoff of inorganic arsenic to waters of the State or to a location where such material could readily migrate into waters of the State.

[ED. NOTE: Tables referencing the toxics criteria~~ed~~ are not included in rule text. Click here for a PDF copy of Table 30: Aquatic Life Water Quality Criteria for Toxic Pollutants. Click here for a PDF copy of Table 31: Aquatic Life Water Quality Guidance Values for Toxic Pollutants. Click here for a PDF copy of Table 40: Human Health Water Quality Criteria for Toxic Pollutants.~~available from the agency.~~]

[See end of this document for proposed amendments to Tables 30, 33C, and 40]

Stat. Auth.: ORS 468.020, 468B.030, 468B.035 & 468B.048
Stats. Implemented: ORS 468B.030, 468B.035 & 468B.048
Hist.: DEQ 17-2003, f. & cert. ef. 12-9-03; DEQ 3-2004, f. & cert. ef. 5-28-04; DEQ 17-2010, f. & cert. ef. 12-21-10; DEQ 8-2011, f. & cert. ef. 6-30-11; DEQ 10-2011, f. & cert. ef. 7-13-11

340-041-0009

Bacteria

(1) Numeric Criteria: Organisms of the coliform group commonly associated with fecal sources (MPN or equivalent membrane filtration using a representative number of samples) may not exceed the criteria described in paragraphs (a) and (b) of this paragraph:

(a) Freshwaters and Estuarine Waters Other than Shellfish Growing Waters:

(A) A 30-day log mean of 126 E. coli organisms per 100 milliliters, based on a minimum of five (5) samples;

(B) No single sample may exceed 406 E. coli organisms per 100 milliliters.

(b) Marine Waters and Estuarine Shellfish Growing Waters: A fecal coliform median concentration of 14 organisms per 100 milliliters, with not more than ten percent of the samples exceeding 43 organisms per 100 ml.

(2) Raw Sewage Prohibition: No sewage may be discharged into or in any other manner be allowed to enter the waters of the State, unless such sewage has been treated in a manner approved by the Department or otherwise allowed by these rules;

(3) Animal Waste: Runoff contaminated with domesticated animal wastes must be minimized and treated to the maximum extent practicable before it is allowed to enter waters of the State;

(4) Bacterial pollution or other conditions deleterious to waters used for domestic purposes, livestock watering, irrigation, bathing, or shellfish propagation, or otherwise injurious to public health may not be allowed;

(5) Effluent Limitations for Bacteria: Except as allowed in subsection (c) of this section, upon NPDES permit renewal or issuance, or upon request for a permit modification by the permittee at an earlier date, effluent discharges to freshwaters, and estuarine waters other than shellfish growing waters may not exceed a monthly log mean of 126 E. coli organisms per 100 ml. No single sample may exceed 406 E. coli organisms per 100 ml. However, no violation will be found, for an exceedance if the permittee takes at least five consecutive re-samples at four-hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample was taken and the log mean of the five re-samples is less than or equal to 126 E. coli. The following conditions apply:

(a) If the Department finds that re-sampling within the timeframe outlined in this section would pose an undue hardship on a treatment facility, a more convenient schedule may be negotiated in the permit, provided that the permittee demonstrates that the sampling delay will result in no increase in the risk to water contact recreation in waters affected by the discharge;

(b) The aquatic life criteria ~~in-stream criterion~~ for chlorine established in the water quality toxic substances rule under OAR 340-041-0033 ~~listed in Table 20~~ must be met at all times outside the assigned mixing zone;

(c) For sewage treatment plants that are authorized to use recycled water pursuant to OAR 340, division 55, and that also use a storage pond as a means to dechlorinate their effluent prior to discharge to public waters, effluent limitations for bacteria may, upon request by the permittee, be based upon appropriate total coliform limits as required by OAR 340, division 55:

(i) Class C limitations: No two consecutive samples may exceed 240 total coliform per 100 milliliters.

(ii) Class A and Class B limitations: No single sample may exceed 23 total coliform per 100 milliliters.

(iii) No violation will be found for an exceedance under this paragraph if the permittee takes at least five consecutive re-samples at four hour intervals beginning as soon as practicable (preferably within 28 hours) after the original sample(s) were taken; and in the case of Class C recycled water, the log mean of the five re-samples is less than or equal to 23 total coliform per 100 milliliters or, in the case of Class A and Class B recycled water, if the log mean of the five re-samples is less than or equal to 2.2 total coliform per 100 milliliters.

(6) Sewer Overflows in winter: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of November 1 through May 21, except during a storm event greater than the one-in-five-year, 24-hour duration storm. However, the following exceptions apply:

(a) The Commission may on a case-by-case basis approve a bacteria control management plan to be prepared by the permittee, for a basin or specified geographic area which describes hydrologic conditions under which the numeric bacteria criteria would be waived. These plans will identify the specific hydrologic conditions, identify the public notification and education processes that will be followed to inform the public about an event and the plan, describe the water quality assessment conducted to determine bacteria sources and loads associated with the specified hydrologic conditions, and describe the bacteria control program that is being implemented in the basin or specified geographic area for the identified sources;

(b) Facilities with separate sanitary and storm sewers existing on January 10, 1996, and which currently experience sanitary sewer overflows due to inflow and infiltration problems, must submit an acceptable plan to the Department at the first permit renewal, which describes actions that will be taken to assure compliance with the discharge prohibition by January 1, 2010. Where discharges occur to a receiving stream with sensitive beneficial uses, the Department may negotiate a more aggressive schedule for discharge elimination;

(c) On a case-by-case basis, the beginning of winter may be defined as October 15, if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses, including water contact recreation, will not be increased due to the date change.

(7) Sewer Overflows in summer: Domestic waste collection and treatment facilities are prohibited from discharging raw sewage to waters of the State during the period of May 22 through October 31, except during a storm event greater than the one-in-ten-year, 24-hour duration storm. The following exceptions apply:

(a) For facilities with combined sanitary and storm sewers, the Commission may on a case-by-case basis approve a bacteria control management plan such as that described in subsection (6)(a) of this rule;

(b) On a case-by-case basis, the beginning of summer may be defined as June 1 if the permittee so requests and demonstrates to the Department's satisfaction that the risk to beneficial uses, including water contact recreation, will not be increased due to the date change;

(c) For discharge sources whose permit identifies the beginning of summer as any date from May 22 through May 31: If the permittee demonstrates to the Department's satisfaction that an exceedance occurred between May 21 and June 1 because of a sewer overflow, and that no increase in risk to beneficial uses, including water contact recreation, occurred because of the exceedance, no violation may be triggered, if the storm associated with the overflow was greater than the one-in-five-year, 24-hour duration storm.

(8) Storm Sewers Systems Subject to Municipal NPDES Stormwater Permits: Best management practices must be implemented for permitted storm sewers to control bacteria to the maximum extent practicable. In addition, a collection-system evaluation must be performed prior to permit issuance or renewal so that illicit and cross connections are identified. Such connections must be removed upon identification. A collection system evaluation is not required where the Department determines that illicit and cross connections are unlikely to exist.

(9) Storm Sewers Systems Not Subject to Municipal NPDES Stormwater Permits: A collection system evaluation must be performed of non-permitted storm sewers by January 1, 2005, unless the Department determines that an evaluation is not necessary because illicit and cross connections are unlikely to exist. Illicit and cross-connections must be removed upon identification.

(10) Water Quality Limited for Bacteria: In those water bodies, or segments of water bodies identified by the Department as exceeding the relevant numeric criteria for bacteria in the basin standards and designated as water-quality limited under section 303(d) of the Clean Water Act, the requirements specified in section 11 of this rule and in OAR 340-041-0061(11) must apply.

(11) In water bodies designated by the Department as water-quality limited for bacteria, and in accordance with priorities established by the Department, development and implementation of a bacteria management plan may be required of those sources that the Department determines to be contributing to the problem. The Department may determine that a plan is not necessary for a particular stream segment or segments within a water-quality limited basin based on the contribution of the segment(s) to the problem. The bacteria management plans will identify the technologies, best management practices and/or measures and approaches to be implemented by point and nonpoint sources to limit bacterial contamination. For point sources, their National Pollutant Discharge Elimination System permit is their bacteria management plan. For nonpoint sources, the bacteria management plan will be developed by designated management agencies (DMAs) which will identify the appropriate best management practices or measures and approaches.

Stat. Auth.: ORS 468.020, 468B.030, 468B.035 & 468B.048
Stats. Implemented: ORS 468B.030, 468B.035 & 468B.048
Hist.: DEQ 17-2003, f. & cert. ef. 12-9-03; DEQ 6-2008, f. & cert. ef. 5-5-08; DEQ 10-2011, f. & cert. ef. 7-13-11

340-040-0020

General Policies

(1) Groundwater is a critical natural resource providing domestic, industrial, and agricultural water supply; and other legitimate beneficial uses; and also providing base flow for rivers, lakes, streams, and wetlands.

(2) Groundwater, once polluted, is difficult and sometimes impossible to clean up. Therefore, the EQC shall employ an anti-degradation policy to emphasize the prevention of groundwater pollution, and to control waste discharges to groundwater so that the highest possible water quality is maintained.

(3) All groundwaters of the state shall be protected from pollution that could impair existing or potential beneficial uses for which the natural water quality of the groundwater is adequate. Among the recognized beneficial uses of groundwater, domestic water supply is recognized as being the use that would usually require the highest level of water quality. Existing high quality groundwaters which exceed those levels necessary to support recognized and legitimate beneficial uses shall be maintained except as provided for in these rules.

(4) Numerical groundwater quality reference levels and guidance levels are listed in **Tables 1 through 3** of this Division. These levels have been obtained from the Safe Drinking Water Act, and indicate when groundwater may not be suitable for human consumption or when the aesthetic quality of groundwater may be impaired. They will be used by the Department and the public to evaluate the significance of a particular contaminant concentration, and will trigger necessary regulatory action. These levels should not be construed as acceptable groundwater quality goals because it is the policy of the EQC ~~(OAR 340-041-0026(1)(a))~~ to maintain and preserve the highest possible water quality.

(5) For pollutant parameters for which numerical groundwater quality reference levels or guidance levels have not been established, or for evaluating adverse impacts on beneficial uses other than human consumption, the Department shall make use of the most current and scientifically valid information available in determining at what levels pollutants may

affect present or potential beneficial uses. Such information shall include, but not be limited to, values set forth in OAR 340-041-0033 ~~Chapter 340, Division 41, Table 20~~.

(6) The Department shall develop, implement and conduct a comprehensive groundwater quality protection program. The program shall contain strategies and methods for problem prevention, problem abatement and the control of both point and nonpoint sources of groundwater pollution. The Department shall seek the assistance of federal, state, and local governments in implementing the program.

(7) In order to assure maximum reasonable protection of public health, the public shall be informed that groundwater, and most particularly local flow systems or water table aquifers, may not be suitable for human consumption due either to natural or human-caused pollution problems, and shall not be assumed to be safe for domestic use unless quality testing demonstrates a safe supply. The Department shall work cooperatively with the Water Resources Department and the Health Division in identifying areas where groundwater pollution may affect beneficial uses.

(8) It is the policy of the EQC that groundwater quality be protected throughout the state. The Department will concentrate its groundwater quality protection implementation efforts in areas where practices and activities have the greatest potential for degrading groundwater quality, and where potential groundwater quality pollution would have the greatest adverse impact on beneficial uses.

(9) The Department, as lead agency for groundwater quality protection, shall work cooperatively with the Water Resources Department, the lead agency for groundwater quantity management, to characterize the physical and chemical charac-teristics of the aquifers of the state. The Department will seek the assistance and cooperation of the Water Resources Department to design an ambient monitoring program adequate to determine representative groundwater quality for significant groundwater flow systems. The Department shall assist and cooperate with the Water Resources Department in its groundwater studies. The Department shall also seek the advice, assistance, and cooperation of local, state, and federal agencies to identify and resolve ground-water quality problems.

(10) It is the intent of the EQC to see that groundwater problems associated with areawide on-site sewage disposal are corrected by developing and implementing areawide abatement plans. In order to accomplish this, all available and appropriate statutory and administrative authorities will be utilized, including but not limited to: permits, special permit conditions, penalties, fines, EQC orders, compliance schedules, moratoriums, Department orders, and geographic area rules (OAR 340-071-0400). It is recognized, however, that in some cases the identification, evaluation and implementation of abatement measures may take time and that continued degradation may occur while the plan is being developed and implemented. The EQC may allow short-term continued degradation only if the beneficial uses, public health, and groundwater resources are not significantly affected, and only if the approved abatement plan is being implemented on a schedule approved by the Department.

(11) In order to minimize groundwater quality degradation potentially resulting from point source activities, point sources shall employ the highest and best practicable methods to prevent the movement of pollutants to groundwater. Among other factors, available technologies for treatment and waste reduction, cost effectiveness, site characteristics, pollutant toxicity and persistence, and state and federal regulations shall be considered in arriving at a case-by-case determination of highest and best practicable methods that protect public health and the environment.

(12) In regulating point source activities that could result in the disposal of wastes onto or into the ground in a manner which allows potential movement of pollutants to groundwater, the Department shall utilize all available and appropriate statutory and administrative authorities, including but not limited to: permits, fines, EQC orders, compliance schedules, moratoriums, Depart-ment orders, and geographic area rules. Groundwater quality protection requirements shall be

implemented through the Department's Water Pollution Control Program, Solid Waste Disposal Program, On-Site Sewage Disposal System Construction Program, Hazardous Waste Facility (RCRA) Program, Underground Injection Control Program, Emergency Spill Response Program, or other programs, whichever is appropriate.

Table 1

NUMERICAL GROUNDWATER QUALITY REFERENCE LEVELS: 1

Inorganic Contaminants -- Reference Level (mg/L)

Arsenic -- 0.05

Barium -- 1.0

Cadmium -- 0.01

Chromium -- 0.05

Fluoride -- 4.0

Lead -- 0.05

Mercury -- 0.002

Nitrate-N -- 10.0

Selenium -- 0.01

Silver -- 0.05

1All reference levels are for total (unfiltered) concentrations unless otherwise specified by the Department.

Table 2

NUMERICAL GROUNDWATER QUALITY REFERENCE LEVELS (Continued): 1

Organic Contaminants -- Reference Level (mg/L)

Benzene -- 0.005

Carbon Tetrachloride -- 0.005

p-Dichlorobenzene -- 0.075

1,2-Dichloroethane -- 0.005

1,1-Dichloroethylene -- 0.007

1,1,1-Trichloroethane -- 0.200

Trichloroethylene -- 0.005

Total Trihalomethanes -- 0.100

(the sum of concentrations bromodichloromethane, dibromochloromethane, tribromomethane (bromoform), and trichloromethane (chloroform))

Vinyl Chloride -- 0.002

2,4-D -- 0.100

Endrin -- 0.0002

Lindane -- 0.004

Methoxychlor -- 0.100

Toxaphene -- 0.005

2,4,5-TP Silvex -- 0.010

1All reference levels are for total (unfiltered) concentrations unless otherwise specified by the Department.

Table 3

NUMERICAL GROUNDWATER QUALITY GUIDANCE LEVELS: 1

Miscellaneous Contaminants -- Guidance Level (mg/L) 2

Chloride -- 250

Color -- 15 Color Units

Copper -- 1.0

Foaming agents -- 0.5

Iron -- 0.3

Manganese -- 0.05

Odor -- 3 Threshold odor number

pH -- 6.5-8.5

Sulfate -- 250

Total dissolved solids -- 500

Zinc -- 5.0

1All guidance levels except total dissolved solids and are for total (unfiltered) concentrations unless otherwise specified by the Department.

2Unless otherwise specified, except pH.

Stat. Auth.: ORS 468 & ORS 468B
Stats. Implemented: ORS 468.020, ORS 468.035, ORS 468B.155 & ORS 468B.165
Hist.: DEQ 24-1981, f. & ef. 9-8-81; DEQ 13-1984, f. & ef. 7-13-84; DEQ 27-1989, f. & cert. ef. 10-27-89; Renumbered from 340-041-0029; DEQ 4-1996, f. & cert. ef. 3-7-96

340-040-0080

Numerical Groundwater Quality Reference Levels and Guidance Levels

(1) The numerical groundwater quality reference levels and guidance levels contained in **Tables 1 through 3** of this Division are to be considered by the Department and the public in weighing the significance of a particular chemical concentration, and in determining the level of remedial action necessary to restore contaminated groundwater for human consumption. They are not to be construed as acceptable groundwater quality management goals. They are to be used by the Director and the EQC in establishing permit-specific and remedial action concentration limits according to the requirements of OAR 340-040-0030 through 340-040-0060.

(2) The Department shall periodically review information as it becomes available for establishing new numerical groundwater quality reference levels and guidance levels, and to ensure consistency with other statutorily mandated standards.

(3) Human consumption is recognized as the highest and best use of groundwater, and the use which usually requires the highest level of water quality. The numerical groundwater quality reference levels listed in **Tables 1** and **2** of this Division reflect the suitability of groundwater for human consumption.

(4) The numerical groundwater quality guidance levels listed in **Table 3** of this Division are for contaminants which do not adversely impact human health at the given concentrations. At considerably higher concentrations, human health implications may exist. These guidance levels are for contaminants that primarily affect the aesthetic qualities relating to the public acceptance of drinking water. The aesthetic degradation of groundwater may impair its beneficial use.

(5) For pollutant parameters for which numerical ground-water quality reference levels or guidance levels have not been established and listed in **Tables 1 through 3**, or for evaluating adverse impacts on beneficial uses other than human consumption, the Department shall make use of the most current and scientifically valid information available in determining at what levels pollutants may affect present or potential beneficial uses. Such information shall include, but not be limited to, values set forth in OAR 340-041-0033~~Chapter 340, Division 41, Table 20~~.

Stat. Auth.: ORS 468 & ORS 468B
Stats. Implemented: ORS 468.020, ORS 468.035, ORS 468B.155 & ORS 468B.165
Hist.: DEQ 24-1981, f. & ef. 9-8-81; DEQ 13-1984, f. & ef. 7-13-84; DEQ 27-1989, f. & cert. ef. 10-27-89; Renumbered from 340-041-0029

Note to Readers:

Proposed changes (in redlined font) to the Toxic Substances rule would move all the aquatic life criteria from Tables 20, 33A, and 33B into one new aquatic life criteria table, Table 30. As a result of this movement, Tables 20, 33A, and 33B are no longer needed and the proposal would delete the tables from the Toxic Substances rule in OAR 340-041-0033 (see deleted Tables 20, 33A, and 33B following Table 40 proposed revisions). Table 30 contains criteria established to protect fish and aquatic life use, including the criteria that (1) EPA approved in their Jan. 31, 2013 action; (2) remained unchanged; (3) are proposed to address an EPA disapproval; and (4) were previously effective (i.e. criteria contained in Table 20) for those cases where EPA disapproved pollutant criteria contained in Tables 33A or 33B and DEQ is not proposing remedies to address the disapprovals at this time. When a criterion submitted to EPA by the state is disapproved by EPA, the previously effective criterion remains in effect for federal Clean Water Act purposes.

The criteria in black type (i.e. not redline strikethrough) in Table 30 are currently effective and do not require Environmental Quality Commission adoption or EPA approval. Conversely, the redline/strikethrough proposed changes to Table 30 reflect corrections or clarifications to criteria, footnotes, and introductory language (originally associated with or contained in Tables 20, 33A, or 33B) to correct an EPA disapproval, or show changes to provide further clarifications on the toxics tables or rule language. The EQC must adopt these proposed changes and EPA must approve them before they become effective. The language portrayed in **grey** is explanatory in nature, intended to help the reader understand the origin of the criteria in the proposed table. Footnotes and endnotes may be found within the table and at the end of the table.

The aquatic life toxic criteria in Tables 20, 33A, and 33B that are submitted for EQC adoption and Secretary of State filing must show complete strikethrough of the tables because the tables will be deleted from the Toxics Substances rule. Because Table 30 will be a completely new table, the Secretary of State requires that the entire table be in red/underline text. Therefore, the table below provides a crosswalk of what the EQC previously adopted and the revisions DEQ proposes to make. The redline version of Table 30 follows the crosswalk.

A recent change in the Secretary of State Bulletin now allows for criteria tables to be attached to the Oregon Administrative Rules; therefore, proposed changes found at the end of the Toxic Substances rule state that Tables 30, 31 (aquatic life guidance values), and 40 (human health toxics criteria) will be attached as PDF documents.

CROSSWALK

TABLE 30: Aquatic Life Water Quality Criteria for Toxic Pollutants

Effective April 18, 2014

Aquatic Life ~~Water Quality~~ Criteria Summary

The criteria ~~concentration~~ for each compound listed in Table 30~~3A is a criterion~~ must not ~~to~~ be exceeded in waters of the state in order to protect aquatic life. The aquatic life criteria apply to waterbodies where fish and aquatic life is a designated beneficial use. All values are expressed as micrograms per liter (µg/L) ~~except where noted.~~ . Compounds are listed in alphabetical order with the corresponding information: ~~EPA number (from National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047),~~ the Chemical Abstract Service (CAS) number, whether there is a human health criterion for the pollutant (i.e. "y"= yes, "n" = no), and the associated~~.~~ aquatic life freshwater and saltwater acute and chronic criteria~~, aquatic life saltwater acute and chronic criteria .~~ . Italicized pollutants are not identified as priority pollutants by EPA. Dashes in the table column indicate that there is no aquatic life criterion for that pollutant.

Unless otherwise noted in the table below, ~~T~~the acute criterion~~a~~ is~~to~~ the Criterion Maximum Concentration (CMC) ~~average concentration~~ applied as a~~for~~ one ~~(1)~~ hour average concentration, and the chronic criterion~~a~~ is~~to~~ the Criterion Continuous Concentration (CCC) ~~average~~applied as a ~~concentration for~~ 96 hour~~s~~ (4 day~~s~~) average concentration.~~, and that t~~These~~se~~ CMC and CCC criteria ~~should~~ may not be exceeded more than once every three ~~(3)~~ years~~.~~ . Footnote A, associated with eleven pesticide pollutants in Table 30, describes the exception to the frequency and duration of the toxics criteria stated in this paragraph.

Note on edits above: The paragraph above originated from the introductory language in Tables 33A and 33B. Redline text generally reflects DEQ's proposed clarifying language. The last sentence referencing Footnote A (previously Footnote O in Tables 33A and 33B) will address EPA's disapproval of 11 pesticides that have different frequencies and durations than the other toxic pollutants. EPA's disapproval of 11 pesticides related to the frequency and duration statements that DEQ added to the introductory language in Tables 33A and 33B in 2004. EPA's action letter indicated that when DEQ added the frequency and duration language to the introduction, it had the effect of changing the frequency and duration for the 11 pesticides. DEQ interpreted the introductory language in Table 33A with regards to the criteria frequency and duration as general in nature and that Footnote "O" for the pesticides superseded this general statement. It is DEQ's intention that by adding the last sentence to the introductory paragraph above that it will clarify for the 11 pesticide criteria that Footnote A (previously Footnote O) supersedes the default frequency and duration components associated with the other aquatic toxic pollutants. Although EPA did not disapprove Footnote O, DEQ proposes to provide further clarification. See those revisions in Table 30 as re-named Footnote A.

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
1	Aldrin	309002	y	3 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval.	--	1.3 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	--
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*						
2	*Alkalinity*		n	--	20,000 [B] [From Table 33A] no change in criterion	--	--
	[B] *Criterion shown is the minimum (i.e. CCC in water ~~should~~ may not be below this value in order to protect aquatic life).*						
~~3~~	~~*Aluminum(pH 6.5 – 9.0)*~~	~~7429905~~		~~W~~ [From Table	~~W~~ [From Table	--	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				33B] DEQ proposing to delete criterion from table. EPA disapproved criterion and there is no replacement criterion in Table 20. DEQ will propose remedies to address disapproval in a subsequent rulemaking	33B] DEQ proposing to delete criterion from table. EPA disapproved criterion and there is no replacement criterion in Table 20. DEQ will propose remedies to address disapproval in a subsequent rulemaking		
	~~W~~ ~~The acute and chronic criteria for aluminum are 750 ug/L and 87 ug/L, respectively. These values for aluminum are expressed in terms of "total recoverable" concentration of metal in the water column.~~ ~~The criterion applies at pH<6.6 and hardness<12 mg/L (as $CaCO_3$).~~						
3	*Ammonia*	7664417	n	*Criteria are pH, ~~and~~ temperature, and salmonid or sensitive coldwater species dependent-- See document USEPA January 1985 (Fresh Water).* M [From Table 20]		*Ammonia criteria for saltwater may depend on pH and temperature~~.~~. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in Ambient Water Quality Criteria for Ammonia (Saltwater)--1989*	

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				EPA disapproved Table 33B criteria—revert back to Table 20 criteria. Criteria do not need EQC adoption or EPA approval. DEQ will propose remedies to address disapproval in a subsequent rulemaking		*(EPA 440/5-88-004;* *http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm* ~~*http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf.*~~ [From Table 33A] EPA approved non-substantive changes to footnote. No change to criterion. DEQ proposing to update footnote with corrected website.	
	M See expanded endnote M equations at bottom of Table 30 to calculate freshwater ammonia criteria [DEQ is proposing to add the freshwater equations from the 1985 EPA criteria document for easier reference]						
4	Arsenic ~~(tri)~~	7440382	y	~~360~~340 C, D [From 2004 Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently removed	~~190~~150 C, D [From 2004 Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently	~~69~~69 C, D [From 2004 Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently removed	~~36~~36 C, D [From 2004 Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				during the 2007 rule adoptions. Strikethrough reflects currently effective criterion in Table 20. EPA did not take action on this criterion.	removed during the 2007 rule adoptions. Strikethrough reflects currently effective criterion in Table 20. EPA did not take action on this criterion.	during the 2007 rule adoptions. EPA did not take action on this criterion.	removed during the 2007 rule adoptions. EPA did not take action on this criterion.
	[C] ~~Freshwater and saltwater criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ *[Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* [D] Criterion is applied as total inorganic arsenic (i.e. arsenic (III) + arsenic (V)). *[Footnote originated in Table 33B and re-proposed here. Added "inorganic" for better clarity]*						
5	BHC Gamma (Lindane)	58899	y	0.95 [From Table 33A] approved and effective	0.08 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and	0.16 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote.	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
					footnote. Addresses EPA disapproval.	Addresses EPA disapproval.	
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
6	Cadmium	7440439	n	*See* **E** [from Table 20] EPA disapproved Table 33B criterion—revert back to Table 20 criterion. Criterion does not need EQC adoption or EPA approval. DEQ will propose remedies to address disapproval in a subsequent rulemaking.	*See* **C, F** [from Table 33B] approved and effective	40 C [From Table 33B] approved and effective	8.8 C [From Table 33B] approved and effective

C ~~*Freshwater and saltwater criteria*~~ *Criterion* ~~*for metals are*~~ *is expressed in terms of "dissolved" concentrations in the water column.*~~*, except where otherwise noted (e.g. aluminum).*~~ *.[Changed footnote from Table 33B footnote to account for a few*

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
	exceptions and because there will no longer be criteria for aluminum.]						
	E *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 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 formula under expanded endnote F at bottom of Table 30.*						
7	Chlordane	57749	y	2.4 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval.	0.0043 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval.	0.09 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval.	0.004 [A] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval.
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*						
8	*Chloride*	16887006	n	860,000 [From Table 33A] no change in	230,000 [From Table 33A] no change in	--	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				criterion	criterion		
9	*Chlorine*	7782505	n	19 [From Table 33A] no change in criterion	11 [From Table 33A] no change in criterion	13 [From Table 33A] no change in criterion	7.5 [From Table 33A] no change in criterion
10	*Chlorpyrifos*	2921882	n	0.083 [From Table 33A] no change in criterion	0.041 [From Table 33A] no change in criterion	0.011 [From Table 33A] no change in criterion	0.0056 [From Table 33A] no change in criterion
11	Chromium III ~~Tri~~	16065831	n	*See* **C, F** [From Table 33B] approved and effective	*See* **C, F** [From Table 33B] approved and effective	--	--
C *~~Freshwater and saltwater~~ ~~criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ [Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* **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.*								
12	Chromium VI ~~(Hex)~~	18540299	n	16 **C** [From Table	11 **C** [From Table	~~1100~~1100 **C** [From 2004	~~50~~50 **C** [From 2004

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				33B] approved and effective	33B] approved and effective	Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently removed during the 2007 rule adoptions. Strikethrough reflects currently effective criterion in Table 20 as total recoverable EPA did not take action on this criterion.	Table 33B] DEQ proposing to re-adopt this criterion which was previously adopted in 2004 from Table 33B, but was inadvertently removed during the 2007 rule adoptions. Strikethrough reflects currently effective criterion in Table 20 as total recoverable EPA did not take action on this criterion.
[C] ~~Freshwater and saltwater~~ ~~criteria~~ Criterion ~~for metals are~~ is *expressed in terms of "dissolved" concentrations in the water column.~~, ~~except where otherwise noted (e.g. aluminum).~~ *[Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]*							
13	Copper	7440508	y	*See* **E**	*See* **E** [from Table	4.8 [C] [From Table	3.1 [C] [From Table

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				[from Table 20] EPA disapproved Table 33B criterion—revert back to Table 20 criterion. Criterion does not need EQC adoption or EPA approval. DEQ will propose remedies to address disapproval in a subsequent rulemaking.	20] EPA disapproved Table 33B criterion—revert back to Table 20 criterion. Criterion does not need EQC adoption or EPA approval. DEQ will propose remedies to address disapproval in a subsequent rulemaking.	33B] approved and effective	33B] approved and effective
C ~~Freshwater and saltwater criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ *[Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* **E** *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 E at bottom of Table 30.*								
14	Cyanide	57125	y	22 [J] [From Table 33A] no change in	5.2 [J] [From Table 33A] no change in	1 [J] [From Table 33A] no change in	1 [J] [From Table 33A] no change in

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				criterion	criterion	criterion	criterion
[J] This criterion is expressed as µg free cyanide (CN)/L.							
15	DDT 4,4'	50293	y	1.1 [A, G] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	0.001 [A, G] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	0.13 [A, G] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	0.001 [A, G] [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.* [G] *This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).*							
16	*Demeton*	8065483	n	--	0.1 [From Table 33A] no change in criterion	--	0.1 [From Table 33A] no change in criterion

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
17	Dieldrin	60571	y	0.24 [From Table 33A] approved and effective	0.056 [From Table 33B] approved and effective	0.71 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	0.0019 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
18	Endosulfan	115297	n	0.22 A, H ~~P~~ [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote.	0.056 A, H ~~P~~ [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and	0.034 A, H ~~P~~ [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and footnote.	0.0087 A, H ~~P~~ [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency,

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				Addresses EPA disapproval	footnote. Addresses EPA disapproval	Addresses EPA disapproval	duration and footnote. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion. H *This value is based on the criterion published in Ambient Water Quality Criteria for Endosulfan (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.* P ~~*Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).*~~ *[Incorrect footnote per EPA*--associated w/alkalinity criterion. Replace with Footnote A above*]*						
19	Endosulfan Alpha	959988	y	0.22 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses	0.056 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses	0.034 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses	0.0087 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				EPA disapproval	EPA disapproval	EPA disapproval	EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
20	Endosulfan Beta	33213659	y	0.22 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.056 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.034 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.0087 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
21	Endrin	72208	y	0.086 [From Table 33A] approved and	0.036 [From Table 33B] approved and	0.037 A [From Table 20] DEQ	0.0023 A [From Table 20] DEQ

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				effective	effective	proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval	proposing to retain currently effective magnitude and clarify frequency, duration and footnote. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
22	*Guthion*	86500	n	--	0.01 [From Table 33A] no change in criterion	--	0.01 [From Table 33A] no change in criterion
23	Heptachlor	76448	y	0.52 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and	0.0038 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency,	0.053 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency, duration and	0.0036 A [From Table 20] DEQ proposing to retain currently effective magnitude and clarify frequency,

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				footnote. Addresses EPA disapproval	duration and footnote. Addresses EPA disapproval	footnote. Addresses EPA disapproval	duration and footnote. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
24	Heptachlor Epoxide	1024573	y	0.52 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.0038 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.053 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval	0.0036 A [From Table 33A] DEQ proposing to retain magnitude originally submitted in 2004 and clarify frequency, duration and footnote. No replacement criterion in Table 20. Addresses EPA disapproval
	A See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
25	*Iron (total)*	7439896	n	--	1000	--	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
					[From Table 33A] no change in criterion		
26	Lead	7439921	n	*See* **C , F** [From Table 33B] approved and effective	*See* **C , F** [From Table 33B] approved and effective	210 **C** [From Table 33B] approved and effective	8.1 **C** [From Table 33B] approved and effective
C ~~*Freshwater and saltwater criteria*~~ *Criterion* ~~*for metals are*~~ *is expressed in terms of "dissolved" concentrations in the water column.*~~*, except where otherwise noted (e.g. aluminum)*~~ *[Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* **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.*							
27	*Malathion*	121755	n	--	0.1 [From Table 33A] no change in criterion	--	0.1 [From Table 33A] no change in criterion
28	Mercury (total)	7439976	n	2.4 [From Table 33A] no change in criterion	0.012 [From Table 33A] no change in criterion	2.1 [From Table 33A] no change in criterion	0.025 [From Table 33A] no change in criterion

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
29	*Methoxychlor*	72435	y	--	0.03 [From Table 33A] no change in criterion	--	0.03 [From Table 33A] no change in criterion
30	*Mirex*	2385855	n	--	0.001 [From Table 33A] no change in criterion	--	0.001 [From Table 33A] no change in criterion
31	Nickel	7440020	y	*See* **C , F** [From Table 33B] approved and effective	*See* **C , F** [From Table 33B] approved and effective	74 **C** [From Table 33B] approved and effective	8.2 **C** [From Table 33B] approved and effective
C ~~*Freshwater and saltwater criteria*~~ *Criterion* ~~*for metals are*~~ *is expressed in terms of "dissolved" concentrations in the water column.*~~*, except where otherwise noted (e.g. aluminum)*~~ *[Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* **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.*							
32	*Parathion*	56382	n	0.065 [From Table 33A] no change in	0.013 [From Table 33A] no change in	--	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				criterion	criterion		
33	Pentachlorophenol	87865	y	*See* **H** [From Table 33A] approved and effective	*See* **H** [From Table 33B] approved and effective	13 [From Table 33A] no change in criterion	7.9 [From Table 33A] approved and effective
H *Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869); CCC=exp(1.005(pH)-5.134).*							
34	*Phosphorus Elemental*	7723140	n	--	--	--	0.1 [From Table 33A] no change in criterion
35	Polychlorinated Biphenyls (PCBs)	NA	y	2 **K** [From Table 33A] no change in criterion	0.014 **K** [From Table 33A] no change in criterion	10 **K** [From Table 33A] no change in criterion	0.03 **K** [From Table 33A] no change in criterion
K *This criterion applies to total PCBs (e.g.* determined as Aroclors or congeners~~the sum of all congener or all isomer or homolog or Arochlor analyses~~ *[Note: Propose to revise footnote parenthetical to align with PCB footnote for human health criteria]*							
36	Selenium	7782492	y	~~260~~*See* **C** , **L** [From Table	~~35~~ 4.6 **C** [From Table 33B-	290 **C** [From Table	71 **C** [From Table

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
				33B] DEQ proposing to correct magnitude originally submitted in 2004 by expressing the criterion as dissolved (i.e. by adding conversion factor to equation). Strikethrough reflects currently effective criterion in Table 20. Addresses EPA disapproval	corrected] DEQ proposing to correct magnitude originally submitted in 2004 (i.e. 5.0 ug/L) by expressing the criterion as dissolved (i.e. by multiplying the criterion of 5.0 by the conversion factor of 0.922). Strikethrough reflects currently effective criterion in Table 20. Addresses EPA disapproval	33B] approved and effective	33B] approved and effective

C *~~Freshwater and saltwater~~ ~~criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ [Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]*

L *The CMC=(1/[(f1/CMC1)+(f2/CMC2)]µg/L) * CF where f1 and f2 are the fractions of total selenium that are treated as selenite*

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
and selenate, respectively,and CMC1 and CMC2 are 185.9 µg/L and 12.82 µg/L, respectively. See expanded endnote F for the Conversion Factor (CF) for selenium. *[Note: Added CF (conversion factor) to freshwater acute equation to express the criterion as dissolved]*							
37	Silver	7440224	n	*See* **C** , **F** P [From Table 33B] approved and effective	0.10 C [From Table 33B] approved and effective	1.9 C P [From Table 33B] approved and effective	--
C *~~Freshwater and saltwater~~ ~~criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ [Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]* F *The freshwater acute 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.* P ~~*Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).*~~ [Propose to remove Footnote P per EPA disapproval action. Footnote is associated w/alkalinity criterion]							
38	*Sulfide Hydrogen Sulfide*	7783064	n	--	2 [From Table 33A] no change in criterion	--	2 [From Table 33A] no change in criterion
39	Toxaphene	8001352	y	0.73 [From Table 33A] no change in	0.0002 [From Table 33A] no change in	0.21 [From Table 33A] no change in	0.0002 [From Table 33A] no change in

Table 30 **Aquatic Life Water Quality Criteria for Toxic Pollutants**							
	Pollutant	**CAS No.**	**Human Health Criterion**	**Freshwater (µg/L)**		**Saltwater (µg/L)**	
				Acute Criterion (CMC)	**Chronic Criterion (CCC)**	**Acute Criterion (CMC)**	**Chronic Criterion (CCC)**
				criterion	criterion	criterion	criterion
40	*Tributyltin (TBT)*	688733	n	0.46 [From Table 33B] approved and effective	0.063 [From Table 33B] approved and effective	0.37 [From Table 33B] approved and effective	0.01 [From Table 33B] approved and effective
41	Zinc	7440666	y	*See* **C , F** [From Table 33B] approved and effective	*See* **C , F** [From Table 33B] approved and effective	90 **C** [From Table 33B] approved and effective	81 **C** [From Table 33B] approved and effective

C *~~Freshwater and saltwater~~ ~~criteria~~ Criterion ~~for metals are~~ is expressed in terms of "dissolved" concentrations in the water column.~~, except where otherwise noted (e.g. aluminum)~~ [Changed footnote from Table 33B footnote to account for a few exceptions and because there will no longer be criteria for aluminum.]*

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.*

Expanded Endnotes A, E, F, M

Endnote A: Alternate Frequency and Duration for Certain Pesticides

This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines which update ~~for~~ minimum data requirements and derivation procedures~~. .~~ . ~~For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum~~. The CMC may not be

exceeded at any time and the CCC may not be exceeded based on a 24-hour average. The CMC may be applied ~~If assessment is to be done~~ using a~~n~~one hour averaging period ~~for a CMC (i.e., a one hour average~~ not to be exceeded more than once every three years, if the CMC values given in Table 30 are~~should be~~ divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

Endnote E: Equations for Hardness-Dependent Freshwater Metals Criteria for Cadmium Acute and Copper Acute and Chronic Criteria

~~+ = Hardness Dependent Criteria (100 mg/L used).~~

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 for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

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

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))$$

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.128	-3.828	N/A	N/A
Copper	0.9422	-1.464	0.8545	-1.465

[Proposed strikethrough to original footnote in Table 20: EPA disapproved the freshwater acute criterion for cadmium and the freshwater acute and chronic criteria for copper. The criteria were expressed as dissolved. Therefore, the criteria revert back to Table 20 criteria based on total recoverable (i.e. conversion factors should not be used) and utilize the hardness factors applicable at that time.]

Endnote F: Equations for Hardness-Dependent Freshwater Metals Criteria and Conversion Factor Table

The freshwater criterion for this metal is expressed as dissolved with two significant figures, and is a function of hardness (mg/L) in the water column~~.~~. Criteria values for hardness ~~may be~~ are calculated using ~~from~~ the following formula~~se~~ (CMC refers to the a~~A~~cute c~~C~~riteriona~~;~~ CCC refers to the c~~C~~hronic c~~C~~riteriona~~)~~:

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

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))*CF$$

~~where~~ ~~"~~CF~~"~~ is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.

Chemical	m_A	b_A	m_C	b_C
Cadmium	~~1.0166~~ N/A	~~-3.924~~ N/A	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
~~Copper~~	~~0.9422~~	~~-1.700~~	~~0.8545~~	~~-1.702~~
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59	--	--
Zinc	0.8473	0.884	0.8473	0.884

~~Conversion factors (CF) for dissolved metals (The values for total recoverable metals criteria were multiplied by the appropriate conversion factors shown below to calculate the dissolved metals criteria.):~~ The conversion factors (CF) below must be used in the equations above for the hardness-dependent metals in order to convert total recoverable metals criteria to dissolved metals criteria. For metals that are not hardness-dependent (i.e. arsenic, chromium VI, selenium, and silver (chronic)), or are saltwater criteria, the criterion value associated with the metal in Table 30 already reflects a dissolved criterion based on its conversion factor below.

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
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	~~0.960~~ N/A	~~0.960~~ N/A	0.83	0.83
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]	0.951	0.951
Nickel	0.998	0.997	0.990	0.990
Selenium	0.996	0.922	0.998	0.998
Silver	0.85	0.85	0.85	--
Zinc	0.978	0.986	0.946	0.946

[Proposed strikethrough to original footnote in Table 33B: Propose to remove hardness factors for acute cadmium and acute and chronic copper values in the table, since criteria reverted back to Table 20 and to the factors applied to the equations that were effective at that time (some of these factors have since been updated). Also propose to remove CFs for cadmium acute and copper acute and chronic criteria because the criteria reverted back to total, rather than dissolved.]

Endnote M: Equations for Freshwater Ammonia Calculations

Acute Criterion

The 1-hour average concentration of un-ionized ammonia (mg/L NH3) may not exceed more often than once every three years on average, the numerical value given by:

CMC_{NH3} = 0.52/FT/FPH/2 where:

FT = temperature adjustment factor
FPH = pH adjustment factor

TCAP = temperature cap

$FT = 10^{0.03(20-TCAP)}$; $TCAP \leq T \leq 30$ C
$FT = 10^{0.03(20-T)}$; $0 \leq T \leq TCAP$

$FPH = 1$ $8 \leq pH \leq 9$
$FPH = \frac{1 + 10^{7.4-pH}}{1.25}$ $6.5 \leq 8$

TCAP = 20 ˚C; Salmonids and other sensitive coldwater species present
TCAP = 25 ˚C; Salmonids and other sensitive coldwater species absent

Chronic Criterion

The 4-day average concentration of un-ionized ammonia (mg/L NH3) may not exceed more often than once every three years on average, the average numerical value given by:

$CCC_{NH3} = 0.80/FT/FPH/RATIO$

where FT and FPH are as above for acute criterion and:

$RATIO = 16$ $7.7 \leq pH \leq 9$
$RATIO = 24 \times (10^{7.7 - pH}/1 + 10^{7.4-pH})$ $6.5 \leq pH \leq 7.7$

TCAP = 15 ˚C; Salmonids and other sensitive coldwater species present
TCAP = 20 ˚C; Salmonids and other sensitive coldwater species absent

TABLE 30: Aquatic Life Water Quality Criteria for Toxic Pollutants

Effective April 18, 2014

Aquatic Life Criteria Summary

The criteria for each compound listed in Table 30 must not be exceeded in waters of the state in order to protect aquatic life. The aquatic life criteria apply to waterbodies where fish and aquatic life is a designated beneficial use. All values are expressed as micrograms per liter (µg/L). Compounds are listed in alphabetical order with the corresponding information: the Chemical Abstract Service (CAS) number, whether there is a human health criterion for the pollutant (i.e. "y"= yes, "n" = no), and the associated aquatic life freshwater and saltwater acute and chronic criteria. Italicized pollutants are not identified as priority pollutants by EPA. Dashes in the table column indicate that there is no aquatic life criterion for that pollutant.

Unless otherwise noted in the table below, the acute criterion is the Criterion Maximum Concentration (CMC) applied as a one hour average concentration, and the chronic criterion is the Criterion Continuous Concentration (CCC) applied as a 96 hour (4 day) average concentration. The CMC and CCC criteria may not be exceeded more than once every three years. Footnote A, associated with eleven pesticide pollutants in Table 30, describes the exception to the frequency and duration of the toxics criteria stated in this paragraph.

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
1	Aldrin	309002	y	3 [A]	--	1.3 [A]	--
[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.							
2	*Alkalinity*		n	--	20,000 [B]	--	--
[B] Criterion shown is the minimum (i.e. CCC in water may not be below this value in order to protect aquatic life).							

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
3	*Ammonia*	7664417	n	*Criteria are pH, temperature, and salmonid or sensitive coldwater species dependent--See document USEPA January 1985 (Fresh Water).* [M]		*Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in Ambient Water Quality Criteria for Ammonia (Saltwater)--1989 (EPA 440/5-88-004; http://water.epa.gov/scitech/swguidance/standards/criteria/current/index.cfm)*	
[M] *See expanded endnote M equations at bottom of Table 30 to calculate freshwater ammonia criteria*							
4	Arsenic	7440382	y	340 [C, D]	150 [C, D]	69 [C, D]	36 [C, D]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [D] *Criterion is applied as total inorganic arsenic (i.e. arsenic (III) + arsenic (V)).*							
5	BHC Gamma (Lindane)	58899	y	0.95	0.08 [A]	0.16 [A]	--
[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*							
6	Cadmium	7440439	n	*See* **E**	*See* **C, F**	40 [C]	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 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 formula under expanded endnote F at bottom of Table 30.*							
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

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
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.*						
12	Chromium VI	18540299	n	16 [C]	11 [C]	1100 [C]	50 [C]
	[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.*						
13	Copper	7440508	y	*See* **E**	*See* **E**	4.8 [C]	3.1 [C]
	[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [E] *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 E at bottom of Table 30.*						
14	Cyanide	57125	y	22 [J]	5.2 [J]	1 [J]	1 [J]
	[J] *This criterion is expressed as µg free cyanide (CN)/L.*						
15	DDT 4,4'	50293	y	1.1 [A, G]	0.001 [A, G]	0.13 [A, G]	0.001 [A, G]
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.* [G] *This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).*						
16	*Demeton*	8065483	n	--	0.1	--	0.1
17	Dieldrin	60571	y	0.24	0.056	0.71 [A]	0.0019 [A]
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.*						
18	Endosulfan	115297	n	0.22 [A, H]	0.056 [A, H]	0.034 [A, H]	0.0087 [A, H]
	[A] *See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.* [H] *This value is based on the criterion published in Ambient Water Quality Criteria for Endosulfan (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.*						
19	Endosulfan Alpha	959988	y	0.22 [A]	0.056 [A]	0.034 [A]	0.0087 [A]

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
	[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
20	Endosulfan Beta	33213659	y	0.22 [A]	0.056 [A]	0.034 [A]	0.0087 [A]
	[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
21	Endrin	72208	y	0.086	0.036	0.037 [A]	0.0023 [A]
	[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
22	*Guthion*	86500	n	--	0.01	--	0.01
23	Heptachlor	76448	y	0.52 [A]	0.0038 [A]	0.053 [A]	0.0036 [A]
	[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
24	Heptachlor Epoxide	1024573	y	0.52 [A]	0.0038 [A]	0.053 [A]	0.0036 [A]
	[A] See expanded endnote A at bottom of Table 30 for alternate frequency and duration of this criterion.						
25	*Iron (total)*	7439896	n	--	1000	--	--
26	Lead	7439921	n	*See* **C , F**	*See* **C , F**	210 [C]	8.1 [C]
	[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.						
27	*Malathion*	121755	n	--	0.1	--	0.1
28	Mercury (total)	7439976	n	2.4	0.012	2.1	0.025
29	*Methoxychlor*	72435	y	--	0.03	--	0.03
30	*Mirex*	2385855	n	--	0.001	--	0.001
31	Nickel	7440020	y	*See* **C , F**	*See* **C , F**	74 [C]	8.2 [C]
	[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.						
32	*Parathion*	56382	n	0.065	0.013	--	--

Table 30

Aquatic Life Water Quality Criteria for Toxic Pollutants

	Pollutant	CAS No.	Human Health Criterion	Freshwater (µg/L)		Saltwater (µg/L)	
				Acute Criterion (CMC)	Chronic Criterion (CCC)	Acute Criterion (CMC)	Chronic Criterion (CCC)
33	Pentachlorophenol	87865	y	*See* **H**	*See* **H**	13	7.9
[H] *Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869); CCC=exp(1.005(pH)-5.134).*							
34	*Phosphorus Elemental*	7723140	n	--	--	--	0.1
35	Polychlorinated Biphenyls (PCBs)	NA	y	2 [K]	0.014 [K]	10 [K]	0.03 [K]
[K] *This criterion applies to total PCBs (e.g.* determined as Aroclors or congeners)							
36	Selenium	7782492	y	*See* **C , L**	4.6 [C]	290 [C]	71 [C]
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [L] *The CMC=(1/[(f1/CMC1)+(f2/CMC2)]µg/L) * CF where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively,and CMC1 and CMC2 are 185.9 µg/L and 12.82 µg/L, respectively. See expanded endnote F for the Conversion Factor (CF) for selenium.*							
37	Silver	7440224	n	*See* **C , F**	0.10 [C]	1.9 [C]	--
[C] *Criterion is expressed in terms of "dissolved" concentrations in the water column.* [F] *The freshwater acute 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.*							
38	*Sulfide Hydrogen Sulfide*	7783064	n	--	2	--	2
39	Toxaphene	8001352	y	0.73	0.0002	0.21	0.0002
40	*Tributyltin (TBT)*	688733	n	0.46	0.063	0.37	0.01
41	Zinc	7440666	y	*See* **C , F**	*See* **C , F**	90 [C]	81 [C]
[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.*							

Expanded Endnotes A, E, F, M

Endnote A: Alternate Frequency and Duration for Certain Pesticides

This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines which update minimum data requirements and derivation procedures. The CMC may not be exceeded at any time and the CCC may not be exceeded based on a 24-hour average. The CMC may be applied using a one hour averaging period not to be exceeded more than once every three years, if the CMC values given in Table 30 are divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

Endnote E: Equations for Hardness-Dependent Freshwater Metals Criteria for Cadmium Acute and Copper Acute and Chronic 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 for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

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

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))$$

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.128	-3.828	N/A	N/A
Copper	0.9422	-1.464	0.8545	-1.465

Endnote F: Equations for Hardness-Dependent Freshwater Metals Criteria and Conversion Factor Table

The freshwater criterion for this metal is expressed as dissolved with two significant figures, and is a function of hardness (mg/L) in the water column. Criteria values for hardness are calculated using the following formulas (CMC refers to the acute criterion; CCC refers to the chronic criterion):

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

$$\textbf{CCC} = (\exp(m_C*[\ln(\text{hardness})] + b_C))*CF$$

"CF" is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.

Chemical	m_A	b_A	m_C	b_C
Cadmium	N/A	N/A	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59	--	--
Zinc	0.8473	0.884	0.8473	0.884

The conversion factors (CF) below must be used in the equations above for the hardness-dependent metals in order to convert total recoverable metals criteria to dissolved metals criteria. For metals that are not hardness-dependent (i.e. arsenic, chromium VI, selenium, and silver (chronic)), or are saltwater criteria, the criterion value associated with the metal in Table 30 already reflects a dissolved criterion based on its conversion factor below.

Conversion Factor (CF) Table for Dissolved Metals

Chemical	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Arsenic	1.000	1.000	1.000	1.000
Cadmium	N/A	1.101672-[(ln hardness)(0.041838)]	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	N/A	N/A	0.83	0.83
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]	0.951	0.951
Nickel	0.998	0.997	0.990	0.990
Selenium	0.996	0.922	0.998	0.998
Silver	0.85	0.85	0.85	--
Zinc	0.978	0.986	0.946	0.946

Endnote M: Equations for Freshwater Ammonia Calculations

Acute Criterion

The 1-hour average concentration of un-ionized ammonia (mg/L NH3) may not exceed more often than once every three years on average, the numerical value given by:

CMC_{NH3} = 0.52/FT/FPH/2 where:

FT = temperature adjustment factor
FPH = pH adjustment factor
TCAP = temperature cap

$FT = 10^{0.03(20-TCAP)}$; TCAP ≤ T ≤ 30 C
$FT = 10^{0.03(20-T)}$; 0 ≤ T ≤ TCAP

FPH = 1 8≤ pH ≤ 9
$FPH = \frac{1 + 10^{7.4-pH}}{1.25}$ 6.5 ≤ 8

TCAP = 20 ˚C; Salmonids and other sensitive coldwater species present
TCAP = 25 ˚C; Salmonids and other sensitive coldwater species absent

Chronic Criterion

The 4-day average concentration of un-ionized ammonia (mg/L NH3) may not exceed more often than once every three years on average, the average numerical value given by:

CCC_{NH3} = 0.80/FT/FPH/RATIO

where FT and FPH are as above for acute criterion and:

RATIO = 16 7.7 ≤ pH ≤ 9
$RATIO = 24 \times (10^{7.7 - pH}/1 + 10^{7.4-pH})$ 6.5≤ pH ≤ 7.7

TCAP = 15 ˚C; Salmonids and other sensitive coldwater species present
TCAP = 20 ˚C; Salmonids and other sensitive coldwater species absent

Note to Readers:

DEQ proposes to make revisions to Table 33C (in redlined font) to be consistent with Agency table formatting guidelines. Other revisions would rename Table 33C as Table 31 and remove arsenic guidance values which are unnecessary because Oregon has aquatic life criteria for arsenic. In addition, DEQ is correcting a reference to Oregon's Toxic Substances Narrative. The correct reference is OAR 340-041-0033(2).

TABLE ~~Table~~ 31~~3C~~: Aquatic Life Water Quality Guidance Values for Toxic Pollutants

Effective April 18, 2014

~~WATER QUALITY GUIDANCE VALUES SUMMARY~~ Water Quality Guidance Values Summary [A]

The concentration for each compound listed in Table 31~~3c~~ is a guidance value that can be used in application of Oregon's ~~Narrative~~ Toxic~~s~~ Substances Narrative ~~Criteria~~ (340-041-0033(2~~1~~)) 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.

Table 31

Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant~~Compound~~	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
56	Acenaphthene	83329	1,700	520	970	710
17	Acrolein	107028	68	21	55	

Table 31

Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant~~Compound~~	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
18	Acrylonitrile	107131	7,550	2,600		
1	Antimony	7440360	9,000	1,600		
~~2~~	~~Arsenic~~	~~7440382~~	~~850~~	~~48~~	~~2,310~~	~~13~~
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	
	Chlorinated Benzenes		250	50	160	129
	Chlorinated naphthalenes		1,600		7.5	
	Chloroalkyl Ethers		238,000			
26	Chloroform	67663	28,900	1,240		
45	Chlorophenol 2-	95578	4,380	2,000		
	Chlorophenol 4-	106489			29,700	
52	Methyl-4-chlorophenol 3-	59507	30			
5a	Chromium (III)	16065831			10,300	
109	DDE 4,4'-	72559	1,050		14	
110	DDD 4,4'-	72548	0.06		3.6	
	Diazinon	333415	0.08	0.05		
	Dichlorobenzenes		1,120	763	1,970	
29	Dichloroethane 1,2-	107062	118,000	20,000	113,000	
	Dichloroethylenes		11,600		224.000	
46	Dichlorophenol 2,4-	120832	2,020	365		
31	Dichloropropane 1,2-	78875	23,000	5,700	10,300	3,040
32	Dichloropropene 1,3-	542756	6,060	244	790	
47	Dimethylphenol 2,4-	105679	2,120			

Table 31

Aquatic Life Water Quality Guidance Values for Toxic Pollutants

EPA No.	Pollutant~~Compound~~	CAS Number	Freshwater		Saltwater	
			Acute	Chronic	Acute	Chronic
	Dinitrotoluene		330	230	590	370
16	Dioxin (2,3,7,8-TCDD)	1746016	0.01	38pg/L		
85	Diphenylhydrazine 1,2-	122667	270			
33	Ethylbenzene	100414	32,000		430	
86	Fluoranthene	206440	3,980		40	16
	Haloethers		360	122		
	Halomethanes		11,000		12,000	6,400
89	Hexachlorobutadiene	87683	90	9.3	32	
90	Hexachlorocyclopentadiene	77474	7	5.2	7	
91	Hexachloroethane	67721	980	540	940	
93	Isophorone	78591	117,000		12,900	
94	Naphthalene	91203	2,300	620	2,350	
95	Nitrobenzene	98953	27,000		6,680	
	Nitrophenols		230	150	4,850	
26 B	Nitrosamines	35576911	5,850		3,300,000	
	Pentachlorinated ethanes		7,240	1,100	390	281
54	Phenol	108952	10,200	2,560	5,800	
	Phthalate esters		940	3	2,944	3.4
	Polynuclear Aromatic Hydrocarbons				300	
	Tetrachlorinated Ethanes		9,320			
37	Tetrachloroethane 1,1,2,2-	79345		2,400	9,020	
	Tetrachloroethanes		9,320			
38	Tetrachloroethylene	127184	5,280	840	10,200	450
	Tetrachlorophenol 2,3,5,6					440
12	Thallium	7440280	1,400	40	2,130	
39	Toluene	108883	17,500		6,300	5,000

Table 31 **Aquatic Life Water Quality Guidance Values for Toxic Pollutants**						
EPA No.	**Pollutant~~Compound~~**	**CAS Number**	**Freshwater**		**Saltwater**	
			Acute	**Chronic**	**Acute**	**Chronic**
	Trichlorinated ethanes		18,000			
41	Trichloroethane 1,1,1-	71556			31,200	
42	Trichloroethane 1,1,2-	79005		9,400		
43	Trichloroethylene	79016	45,000	21,900	2,000	
55	Trichlorophenol 2,4,6-	88062		970		

The following chemicals/compounds/classes are of concern due to the potential for toxic effects to aquatic organisms; however, no guidance values are designated. If these compounds are identified in the waste stream, then a review of the scientific literature may be appropriate for deriving guidance values.

Polybrominated diphenyl ethers (PBDE)

Polybrominated biphenyls (PBB)

Pharmaceuticals

Personal care products

Alkyl Phenols

Other chemicals with Toxic effects

Footnotes:

A Values in Table 31~~3c~~ are applicable to all basins.

B This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).

Note to Readers:

Proposed changes associated with Table 40 (in redlined font): (1) Corrected several typos for arsenic criteria and revised the estimated cancer risk from 2 significant digits to 1 significant digit per EPA guidance; (2) Corrected bis 2 Chloroethyl Ether to reflect two significant digits to be consistent with the other human health criteria; (3) Corrected selenium typo; (4) Corrected nickel typo; (5) Corrected trichloroethane 1,1,2 typo; (6) Corrected zinc typo; and (7) Bolded and increased the font size of the footnote letters and reformatted table to new Agency guidelines.

TABLE 40: Human Health Water Quality Criteria for Toxic Pollutants

Effective April 18, 2014~~October 17, 2011~~

Human Health Criteria Summary

The concentration for each pollutant listed in Table 40 was derived to protect Oregonians from potential adverse health impacts associated with long-term exposure to toxic substances associated with consumption of fish, shellfish, and water. The "organism only" criteria are established to protect fish and shellfish consumption and apply to waters of the state designated for fishing. The "water + organism" criteria are established to protect the consumption of drinking water, fish, and shellfish, and apply where both fishing and domestic water supply (public and private) are designated uses. All criteria are expressed as micrograms per liter (µg/L), unless otherwise noted. Pollutants are listed in alphabetical order. Additional information includes the Chemical Abstract Service (CAS) number, whether the criterion is based on carcinogenic effects (can cause cancer in humans), and whether there is an aquatic life criterion for the pollutant (i.e. "y"= yes, "n" = no). All the human health criteria were calculated using a fish consumption rate of 175 grams per day unless otherwise noted. A fish consumption rate of 175 grams per day is approximately equal to 23 8-ounce fish meals per month. For pollutants categorized as carcinogens, values represent a cancer risk of one additional case of cancer in one million people (i.e. 10^{-6}), unless otherwise noted. All metals criteria are for total metal concentration, unless otherwise noted. Italicized pollutants represent non-priority pollutants. The human health criteria revisions established by OAR 340-041-0033 and shown in Table 40 do not become applicable for purposes of ORS chapter 468B or the federal Clean Water Act until approved by EPA pursuant to 40 CFR 131.21 (4/27/2000).

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	Organism Only (µg/L)
1	Acenaphthene	83329	n	n	95	99
2	Acrolein	107028	n	n	0.88	0.93
3	Acrylonitrile	107131	y	n	0.018	0.025
4	Aldrin	309002	y	y	0.0000050	0.0000050
5	Anthracene	120127	n	n	2900	4000
6	Antimony	7440360	n	n	5.1	64
7	Arsenic (inorganic) [A]	7440382	y	~~n~~ y	2.1	2.1(freshwater) 1.0 (saltwater)
	[A] *The arsenic criteria are expressed as total inorganic arsenic. The "organism only" freshwater criterion~~a~~ is~~are~~ based on a risk level of approximately ~~of~~ 1~~.1~~ x 10^{-5}, and the "water + organism" criterion is based on a risk level of 1 x 10^{-4}.*					
8	Asbestos [B]	1332214	y	n	7,000,000 fibers/L	--
	[B] *The human health risks from asbestos are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
9	*Barium* [C]	7440393	n	n	1000	--
	[C] *The human health criterion for barium is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
10	Benzene	71432	y	n	0.44	1.4
11	Benzidine	92875	y	n	0.000018	0.000020
12	Benz(a)anthracene	56553	y	n	0.0013	0.0018
13	Benzo(a)pyrene	50328	y	n	0.0013	0.0018
14	Benzo(b)fluoranthene 3,4	205992	y	n	0.0013	0.0018
15	Benzo(k)fluoranthene	207089	y	n	0.0013	0.0018
16	BHC Alpha	319846	y	n	0.00045	0.00049
17	BHC Beta	319857	y	n	0.0016	0.0017
18	BHC Gamma (Lindane)	58899	n	y	0.17	0.18
19	Bromoform	75252	y	n	3.3	14

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	Organism Only (µg/L)
20	Butylbenzyl Phthalate	85687	n	n	190	190
21	Carbon Tetrachloride	56235	y	n	0.10	0.16
22	Chlordane	57749	y	y	0.000081	0.000081
23	Chlorobenzene	108907	n	n	74	160
24	Chlorodibromomethane	124481	y	n	0.31	1.3
25	Chloroethyl Ether bis 2	111444	y	n	0.020	0.053 [should reflect 2 significant digits]
26	Chloroform	67663	n	n	260	1100
27	Chloroisopropyl Ether bis 2	108601	n	n	1200	6500
28	*Chloromethyl ether, bis*	542881	y	n	0.000024	0.000029
29	Chloronaphthalene 2	91587	n	n	150	160
30	Chlorophenol 2	95578	n	n	14	15
31	*Chlorophenoxy Herbicide (2,4,5,-TP)* [D]	93721	n	n	10	--
	[D] *The Chlorophenoxy Herbicide (2,4,5,-TP) criterion is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
32	*Chlorophenoxy Herbicide (2,4-D)* [E]	94757	n	n	100	--
	[E] *The Chlorophenoxy Herbicide (2,4-D) criterion is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
33	Chrysene	218019	y	n	0.0013	0.0018
34	Copper [F]	7440508	n	y	1300	--
	[F] *Human health risks from copper are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
35	Cyanide [G]	57125	n	y	130	130
	[G] *The cyanide criterion is expressed as total cyanide (CN)/L.*					

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	Organism Only (µg/L)
36	DDD 4,4'	72548	y	n	0.000031	0.000031
37	DDE 4,4'	72559	y	n	0.000022	0.000022
38	DDT 4,4'	50293	y	y	0.000022	0.000022
39	Dibenz(a,h)anthracene	53703	y	n	0.0013	0.0018
40	Dichlorobenzene(m) 1,3	541731	n	n	80	96
41	Dichlorobenzene(o) 1,2	95501	n	n	110	130
42	Dichlorobenzene(p) 1,4	106467	n	n	16	19
43	Dichlorobenzidine 3,3'	91941	y	n	0.0027	0.0028
44	Dichlorobromomethane	75274	y	n	0.42	1.7
45	Dichloroethane 1,2	107062	y	n	0.35	3.7
46	Dichloroethylene 1,1	75354	n	n	230	710
47	Dichloroethylene trans 1,2	156605	n	n	120	1000
48	Dichlorophenol 2,4	120832	n	n	23	29
49	Dichloropropane 1,2	78875	y	n	0.38	1.5
50	Dichloropropene 1,3	542756	y	n	0.30	2.1
51	Dieldrin	60571	y	y	0.0000053	0.0000054
52	Diethyl Phthalate	84662	n	n	3800	4400
53	Dimethyl Phthalate	131113	n	n	84000	110000
54	Dimethylphenol 2,4	105679	n	n	76	85
55	Di-n-butyl Phthalate	84742	n	n	400	450
56	Dinitrophenol 2,4	51285	n	n	62	530
57	*Dinitrophenols*	25550587	n	n	62	530
58	Dinitrotoluene 2,4	121142	y	n	0.084	0.34
59	Dioxin (2,3,7,8-TCDD)	1746016	y	n	0.00000000051	0.00000000051
60	Diphenylhydrazine 1,2	122667	y	n	0.014	0.020
61	Endosulfan Alpha	959988	n	y	8.5	8.9
62	Endosulfan Beta	33213659	n	y	8.5	8.9
63	Endosulfan Sulfate	1031078	n	n	8.5	8.9
64	Endrin	72208	n	y	0.024	0.024
65	Endrin Aldehyde	7421934	n	n	0.030	0.030
66	Ethylbenzene	100414	n	n	160	210

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	Organism Only (µg/L)
67	Ethylhexyl Phthalate bis 2	117817	y	n	0.20	0.22
68	Fluoranthene	206440	n	n	14	14
69	Fluorene	86737	n	n	390	530
70	Heptachlor	76448	y	y	0.0000079	0.0000079
71	Heptachlor Epoxide	1024573	y	y	0.0000039	0.0000039
72	Hexachlorobenzene	118741	y	n	0.000029	0.000029
73	Hexachlorobutadiene	87683	y	n	0.36	1.8
74	*Hexachlorocyclo-hexane-Technical*	608731	y	n	0.0014	0.0015
75	Hexachlorocyclopentadiene	77474	n	n	30	110
76	Hexachloroethane	67721	y	n	0.29	0.33
77	Indeno(1,2,3-cd)pyrene	193395	y	n	0.0013	0.0018
78	Isophorone	78591	y	n	27	96
79	*Manganese* [H]	7439965	n	n	--	100
	[H] *The "fish consumption only" criterion for manganese applies only to salt water and is for total manganese. This EPA recommended criterion predates the 1980 human health methodology and does not utilize the fish ingestion BCF calculation method or a fish consumption rate.*					
80	*Methoxychlor* [I]	72435	n	y	100	--
	[I] *The human health criterion for methoxychlor is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
81	Methyl Bromide	74839	n	n	37	150
82	Methyl-4,6-dinitrophenol 2	534521	n	n	9.2	28
83	Methylene Chloride	75092	y	n	4.3	59
84	Methylmercury (mg/kg) [J]	22967926	n	n	--	0.040 mg/kg
	[J] *This value is expressed as the fish tissue concentration of methylmercury. Contaminated fish and shellfish is the primary human route of exposure to methylmercury*					
85	Nickel	7440020	n	~~n~~ y	140	170
86	*Nitrates* [K]	14797558	n	n	10000	--

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	Human Health Criteria for the Consumption of:	
					Water + Organism (µg/L)	Organism Only (µg/L)
	K *The human health criterion for nitrates is the same as originally published in the 1976 EPA Red Book which predates the 1980 methodology and did not utilize the fish ingestion BCF approach. This same criterion value was also published in the 1986 EPA Gold Book. Human health risks are primarily from drinking water, therefore no "organism only" criterion was developed. The "water + organism" criterion is based on the Maximum Contaminant Level (MCL) established under the Safe Drinking Water Act.*					
87	Nitrobenzene	98953	n	n	14	69
88	*Nitrosamines*	35576911	y	n	0.00079	0.046
89	*Nitrosodibutylamine, N*	924163	y	n	0.0050	0.022
90	*Nitrosodiethylamine, N*	55185	y	n	0.00079	0.046
91	Nitrosodimethylamine, N	62759	y	n	0.00068	0.30
92	Nitrosodi-n-propylamine, N	621647	y	n	0.0046	0.051
93	Nitrosodiphenylamine, N	86306	y	n	0.55	0.60
94	*Nitrosopyrrolidine, N*	930552	y	n	0.016	3.4
95	*Pentachlorobenzene*	608935	n	n	0.15	0.15
96	Pentachlorophenol	87865	y	y	0.15	0.30
97	Phenol	108952	n	n	9400	86000
98	Polychlorinated Biphenyls (PCBs) L	NA	y	y	0.0000064	0.0000064
	L *This criterion applies to total PCBs (e.g. determined as Aroclors or congeners).*					
99	Pyrene	129000	n	n	290	400
100	Selenium	7782492	n	~~n~~ y	120	420
101	*Tetrachlorobenzene, 1,2,4,5-*	95943	n	n	0.11	0.11
102	Tetrachloroethane 1,1,2,2	79345	y	n	0.12	0.40
103	Tetrachloroethylene	127184	y	n	0.24	0.33
104	Thallium	7440280	n	n	0.043	0.047
105	Toluene	108883	n	n	720	1500
106	Toxaphene	8001352	y	y	0.000028	0.000028
107	Trichlorobenzene 1,2,4	120821	n	n	6.4	7.0
108	Trichloroethane 1,1,2	79005	y	~~y~~ n	0.44	1.6
109	Trichloroethylene	79016	y	n	1.4	3.0
110	Trichlorophenol 2,4,6	88062	y	n	0.23	0.24
111	*Trichlorophenol, 2, 4, 5-*	95954	n	n	330	360
112	Vinyl Chloride	75014	y	n	0.023	0.24

Table 40

Human Health Water Quality Criteria for Toxic Pollutants

No.	Pollutant	CAS No.	Carcinogen	Aquatic Life Criterion	*Human Health Criteria for the Consumption of:*	
					Water + Organism (µg/L)	Organism Only (µg/L)
113	Zinc	7440666	n	~~n~~ y	2100	2600

Note to Readers:

DEQ proposes to delete Tables 20, 33A, and 33B because new Table 30 will now contain all the effective aquatic life criteria.

~~TABLE 20~~

~~*AQUATIC LIFE WATER QUALITY CRITERIA SUMMARY*~~[1]

~~The concentration for each compound listed in Table 20 is a criterion not to be exceeded in 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 designations as to whether EPA has identified it as a priority pollutant and a carcinogen, aquatic life freshwater acute and chronic criteria, aquatic life marine acute and chronic criteria. The acute criteria refer to the average concentration for one (1) hour and the chronic criteria refer to the average concentration for 96 hours (4 days), and that these criteria should not be exceeded more than once every three (3) years.~~

~~Compound Name (or Class)~~	~~Priority Pollutant~~	~~Concentration in Micrograms Per Liter for Protection of Aquatic Life~~			
		~~Fresh Acute Criteria~~	~~Fresh Chronic Criteria~~	~~Marine Acute Criteria~~	~~Marine Chronic Criteria~~
~~Acenapthene~~	~~Y~~				
~~Acrolein~~	~~Y~~				
~~Acrylonitrile~~	~~Y~~				
~~Aldrin~~	~~Y~~	~~3~~		~~1.3~~	
~~Alkalinity~~	~~N~~		~~20,000~~		

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Ammonia	N	CRITERIA ARE pH AND TEMPERATURE DEPENDENT—SEE DOCUMENT USEPA JANUARY 1985 (Fresh Water) CRITERIA ARE pH AND TEMPERATURE DEPENDENT—SEE DOCUMENT USEPA APRIL 1989 (Marine Water)			
Antimony	Y				
Arsenic	Y				
Arsenic (Pent)	Y				
Arsenic (Tri)	Y	360	190	69	36
Asbestos	Y				
Barium	N				
Benzene	Y				
Benzidine	Y				
Beryllium	Y				
BHC	Y				
Cadmium	Y	3.9+	1.1+	43	9.3
Carbon Tetrachloride	Y				
Chlordane	Y	2.4	0.0043	0.09	0.004
Chloride	N	860 mg/L	230 mg/L		
Chlorinated Benzenes	Y				
Chlorinated Naphthalenes	Y				
Chlorine	N	19	11	13	7.5
Chloroalkyl Ethers	Y				

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Chloroethyl Ether (Bis-2)	Y				
Chloroform	Y				
Chloroisopropyl Ether (Bis-2)	Y				
Chloromethyl Ether (Bis)	N				
Chlorophenol 2	Y				
Chlorophenol 4	N				
Chlorophenoxy Herbicides (2,4,5,-Tp)	N				
Chlorophenoxy Herbicides (2,4-D)	N				
Chlorpyrifos	N	0.083	0.041	0.011	0.0056
Chloro-4 Methyl-3 Phenol	N				
Chromium (Hex)	Y	16	11	1,100	50
Chromium (Tri)	N	1,700.+	210.+		
Copper	Y	18.+	12.+	2.9	2.9
Cyanide	Y	22	5.2	1	1
DDT	Y	1.1	0.001	0.13	0.001
(TDE) DDT Metabolite	Y				
(DDE) DDT Metabolite	Y				
Demeton	Y		0.1		0.1
Dibutylphthalate	Y				
Dichlorobenzenes	Y				
Dichlorobenzidine	Y				

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Dichloroethane 1,2	Y				
Dichloroethylenes	Y				
Dichlorophenol 2,4	N				
Dichloropropane	Y				
Dichloropropene	Y				
Dieldrin	Y	2.5	0.0019	0.71	0.0019
Diethylphthalate	Y				
Dimethyl Phenol 2,4	Y				
Dimethyl Phthalate	Y				
Dinitrotoluene 2,4	N				
Dinitrotoluene	Y				
Dinitrotoluene	N				
Dinitro-o-Cresol 2,4	Y				
Dioxin (2,3,7,8-Tcdd)	Y				
Diphenylhydrazine	Y				
Diphenylhydrazine 1,2	Y				
Di-2-Ethylhexyl Phthalate	Y				
Endosulfan	Y	0.22	0.056	0.034	0.0087
Endrin	Y	0.18	0.0023	0.037	0.0023
Ethylbenzene	Y				
Fluoranthene	Y				

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Guthion	N		0.01		0.01
Haloethers	Y				
Halomethanes	Y				
Heptachlor	Y	0.52	0.0038	0.053	0.0036
Hexachloroethane	N				
Hexachlorobenzene	Y				
Hexachlorobutadiene	Y				
Hexachlorocyclohexane (Lindane)	Y	2	0.08	0.16	
Hexachlorocyclohexane-Alpha	Y				
Hexachlorocyclohexane-Beta	Y				
Hexachlorocyclohexane-Gama	Y				
Hexachlorocyclohexane-Technical	Y				
Hexachlorocyclopentadiene	Y				
Iron	N		1,000		
Isophorone	Y				
Lead	Y	82+	3.2+	140	5.6
Malathion	N		0.1		0.1
Manganese	N				
Mercury	Y	2.4	0.012	2.1	0.025
Methoxychlor	N		0.03		0.03
Mirex	N		0.001		0.001

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Monochlorobenzene	Y				
Naphthalene	Y				
Nickel	Y	1,400+	160+	75	8.3
Nitrates	N				
Nitrobenzene	Y				
Nitrophenols	Y				
Nitrosamines	Y				
Nitrosodibutylamine N	Y				
Nitrosodiethylamine N	Y				
Nitrosodimethylamine N	Y				
Nitrosodiphenylamine N	Y				
Nitrosopyrrolidine N	Y				
Parathion	N	0.065	0.013		
PCB's	Y	2	0.014	10	0.03
Pentachlorinated Ethanes	N				
Pentachlorobenzene	N				
Pentachlorophenol	Y	***20	***13	13	
Phenol	Y				
Phosphorus Elemental	N				0.1
Phthalate Esters	Y				
Polynuclear Aromatic Hydrocarbons	Y				

Compound Name (or Class)	Priority Pollutant	Concentration in Micrograms Per Liter for Protection of Aquatic Life			
		Fresh Acute Criteria	Fresh Chronic Criteria	Marine Acute Criteria	Marine Chronic Criteria
Selenium	Y	260	35	410	54
Silver	Y	4.1+	0.12	2.3	
Sulfide Hydrogen Sulfide	N		2		2
Tetrachlorinated Ethanes	Y				
Tetrachlorobenzene 1,2,4,5	Y				
Tetrachloroethane 1,1,2,2	Y				
Tetrachloroethanes	Y				
Tetrachloroethylene	Y				
Tetrachlorophenol 2,3,5,6	Y				
Thallium	Y				
Toluene	Y				
Toxaphene	Y	0.73	0.0002	0.21	0.0002
Trichlorinated Ethanes	Y				
Trichloroethane 1,1,1	Y				
Trichloroethane 1,1,2	Y				
Trichloroethylene	Y				
Trichlorophenol 2,4,5	N				
Trichlorophenol 2,4,6	Y				
Vinyl Chloride	Y				
Zinc	Y	120+	110+	95	86

MEANING OF SYMBOLS:

g = grams

mg = milligrams

+ = Hardness Dependent Criteria (100 mg/L used).

The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. Criteria values for hardness may be calculated from the following formulae (CMC refers to Acute Criteria; CCC refers to Chronic Criteria):

$CMC = (\exp(m_A*[\ln(hardness)] + b_A))*CF$

$CCC = (\exp(m_C*[\ln(hardness)] + b_C))*CF$

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.128	-3.828	0.7852	-3.49
Chromium III	0.819	3.688	0.819	1.561
Copper	0.9422	-1.464	0.8545	-1.465
Lead	1.273	-1.46	1.273	-4.705
Nickel	0.846	3.3612	0.846	1.1645
Silver	1.72	-6.52	-	-
Zinc	0.8473	0.8604	0.8473	0.7614

ug = micrograms

* = Insufficient data to develop criteria; value presented is the L.O.E.L – Lower Observed Effect Level.

ng = nanograms

pg = picograms

~~*** = pH Dependent Criteria (7.8 pH used).~~

~~Y = Yes~~

~~N = No~~

~~1 = Values in Table 20 are applicable to all basin~~

TABLE 33A

Note: The Environmental Quality Commission adopted the following criteria on May 20, 2004 to become effective February 15, 2005. However, EPA has not yet (as of June 2006) approved the criteria. Thus, Table 33A criteria may be used in NPDES permits, but not for the section 303(d) list of impaired waters.

AQUATIC LIFE WATER QUALITY CRITERIA SUMMARY[A]

The concentration for each compound listed in Table 33A is a criterion not to be exceeded in 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), the Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic criteria, aquatic life saltwater acute and chronic criteria. The acute criteria refer to the average concentration for one (1) hour and the chronic criteria refer to the average concentration for 96 hours (4 days), and that these criteria should not be exceeded more than once every three (3) years.

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
56	Acenaphthene	83329								
57	Acenaphthylene	208968								
17	Acrolein	107028								
18	Acrylonitrile	107131								
102	Aldrin	309002	3 O	X			1.3 O	X		
1 N	Alkalinity				20,000 P					
2 N	Aluminum (pH 6.5 - 9.0)	7429905								
3 N	Ammonia	7664417					D	X	D	X

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
58	Anthracene	120127								
1	Antimony	7440360								
2	Arsenic	7440382								
15	Asbestos	1332214								
6 N	Barium	7440393								
19	Benzene	71432								
59	Benzidine	92875								
60	Benzo(a)Anthracene	56553								
61	Benzo(a)Pyrene	50328								
62	Benzo(b)Fluoranthene	205992								
63	Benzo(g,h,i)Perylene	191242								
64	Benzo(k)Fluoranthene	207089								
3	Beryllium	7440417								
103	BHC alpha-	319846								
104	BHC beta-	319857								
106	BHC delta-	319868								
105	BHC gamma- (Lindane)	58899	0.95		0.08	X	0.16 O			
7 N	Boron	7440428								
20	Bromoform	75252								
69	Bromophenyl Phenyl Ether 4-									
70	Butylbenzyl Phthalate	85687								
4	Cadmium	7440439								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
21	Carbon Tetrachloride	56235								
107	Chlordane	57749	2.4 O	X	0.0043 O	X	0.09 O	X	0.004 O	X
8 N	Chloride	16887006	860000		230000					
9 N	Chlorine	7782505	19	X	11	X	13	X	7.5	X
22	Chlorobenzene	108907								
23	Chlorodibromomethane	124481								
24	Chloroethane	75003								
65	ChloroethoxyMethane Bis2-	111911								
66	ChloroethylEther Bis2-	111444								
25	Chloroethylvinyl Ether 2-	110758								
26	Chloroform	67663								
67	ChloroisopropylEther Bis2-	108601								
15 N	ChloromethylEther, Bis	542881								
71	Chloronaphthalene 2-	91587								
45	Chlorophenol 2-	95578								
10 N	Chlorophenoxy Herbicide (2,4,5, TP)	93721								
11 N	Chlorophenoxy Herbicide (2,4-D)	94757								
72	Chlorophenyl Phenyl Ether 4-	7005723								
12 N	Chloropyrifos	2921882	0.083	X	0.041	X	0.011	X	0.0056	X
5a	Chromium (III)									
5b	Chromium (VI)	18540299								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
73	Chrysene	218019								
6	Copper	7440508								
14	Cyanide	57125	22 S	X	5.2 S	X	1 S	X	1 S	X
108	DDT 4,4'-	50293	1.1 O,T	X	0.001 O,T	X	0.13 O,T	X	0.001 O,T	X
109	DDE 4,4'-	72559								
110	DDD 4,4'-	72548								
14 N	Demeton	8065483			0.1	X			0.1	X
74	Dibenzo(a,h)Anthracene	53703								
75	Dichlorobenzene 1,2-	95501								
76	Dichlorobenzene 1,3-	541731								
77	Dichlorobenzene 1,4-	106467								
78	Dichlorobenzidine 3,3'-	91941								
27	Dichlorobromomethane	75274								
28	Dichloroethane 1,1-	75343								
29	Dichloroethane 1,2-	107062								
30	Dichloroethylene 1,1-	75354								
46	Dichlorophenol 2,4-	120832								
31	Dichloropropane 1,2-	78875								
32	Dichloropropene 1,3-	542756								
111	Dieldrin	60571	0.24				0.71 O	X	0.0019 O	X
79	DiethylPhthalate	84662								
47	Dimethylphenol 2,4-	105679								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
80	DimethylPhthalate	131113								
81	Di-n-Butyl Phthalate	84742								
49	Dinitrophenol 2,4-	51285								
27 N	Dinitrophenols	25550587								
82	Dinitrotoluene 2,4-	121142								
83	Dinitrotoluene 2,6-	606202								
84	Di-n-Octyl Phthalate	117840								
16	Dioxin (2,3,7,8-TCDD)	1746016								
85	Diphenylhydrazine 1,2-	122667								
68	EthylhexylPhthalate Bis2-	117817								
	Endosulfan		0.22 I,P	X	0.056 I,P	X	0.034 I,P	X	0.0087 I,P	X
112	Endosulfan alpha-	959988	0.22 O		0.056 O		0.034 O		0.0087 O	
113	Endosulfan beta-	33213659	0.22 O		0.056 O		0.034 O		0.0087 O	
114	Endosulfan Sulfate	1031078								
115	Endrin	72208	0.086				0.037 O		0.0023 O	
116	Endrin Aldehyde	7421934								
33	Ethylbenzene	100414								
86	Fluoranthene	206440								
87	Fluorene	86737								
17 N	Guthion	86500			0.01	X			0.01	X
117	Heptachlor	76448	0.52 O	X	0.0038 O	X	0.053 O	X	0.0036 O	X
118	Heptachlor Epoxide	1024573	0.52 O		0.0038 O		0.053 O		0.0036 O	

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
88	Hexachlorobenzene	118741								
89	Hexachlorobutadiene	87683								
91	Hexachloroethane	67721								
19 N	Hexachlorocyclo-hexane-Technical	319868								
90	Hexachlorocyclopentadiene	77474								
92	Ideno1,2,3-(cd)Pyrene	193395								
20 N	Iron	7439896			1,000	X				
93	Isophorone	78591								
7	Lead	7439921								
21 N	Malathion	121755			0.1	X			0.1	X
22 N	Manganese	7439965								
8a	Mercury	7439976	2.4	X	0.012	X	2.1	X	0.025	X
23 N	Methoxychlor	72435			0.03	X			0.03	X
34	Methyl Bromide	74839								
35	Methyl Chloride	74873								
48	Methyl-4,6-Dinitrophenol 2-	534521								
52	Methyl-4-Chlorophenol 3-	59507								
36	Methylene Chloride	75092								
8b	Methylmercury	22967926								
24 N	Mirex	2385855			0.001	X			0.001	X
94	Naphthalene	91203								
9	Nickel	7440020								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
25 N	Nitrates	14797558								
95	Nitrobenzene	98953								
50	Nitrophenol 2-	88755								
51	Nitrophenol 4-	100027								
26 N	Nitrosamines	35576911								
28 N	Nitrosodibutylamine,N	924163								
29 N	Nitrosodiethylamine,N	55185								
96	N-Nitrosodimethylamine	62759								
98	N-Nitrosodiphenylamine	86306								
30 N	Nitrosopyrrolidine,N	930552								
97	N-Nitrosodi-n-Propylamine	621647								
32 N	Oxygen, Dissolved	7782447								
33 N	Parathion	56382	0.065	X	0.013	X				
119	Polychlorinated Biphenyls PCBs:	1336363	2 U	X	0.014 U	X	10 U	X	0.03 U	X
34 N	Pentachlorobenzene	608935								
53	Pentachlorophenol	87865	M				13		7.9	
99	Phenanthrene	85018								
54	Phenol	108952								
36 N	Phosphorus Elemental	7723140							0.1	
100	Pyrene	129000								
10	Selenium	7782492								
11	Silver	7440224								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
40 N	Sulfide-Hydrogen Sulfide	7783064			2	X			2	X
43 N	Tetrachlorobenzene,1,2,4,5	95943								
37	Tetrachloroethane 1,1,2,2-	79345								
38	Tetrachloroethylene	127184								
12	Thallium	7440280								
39	Toluene	108883								
120	Toxaphene	8001352	0.73	X	0.0002	X	0.21	X	0.0002	X
40	Trans-Dichloroethylene 1,2-	156605								
44 N	Tributyltin (TBT)	688733								
101	Trichlorobenzene 1,2,4-	120821								
41	Trichloroethane 1,1,1-	71556								
42	Trichloroethane 1,1,2-	79005								
43	Trichloroethylene	79016								
45 N	Trichlorophenol 2,4,5	95954								
55	Trichlorophenol 2,4,6-	88062								
44	Vinyl Chloride	75014								
13	Zinc	7440666								

Footnotes for Tables 33A and 33B:

A Values in Table 20 are applicable to all basins.

C Ammonia criteria for freshwater may depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Values for freshwater criteria (of total ammonia

nitrogen in mg N/L) can be calculated using the formulae specified in *1999 Update of Ambient Water Quality Criteria for Ammonia* (EPA-822-R-99-014; http://www.epa.gov/ost/standards/ammonia/99update.pdf):

Freshwater Acute:

salmonids present…CMC = $\frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$

salmonids not present…CMC= $\frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$

Freshwater Chronic:

fish early life stages present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN(2.85, 1.45*10^{0.028*(25-T)})$$

fish early life stages not present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45*10^{0.028*(25-MAX(T,7))}$$

Note: these chronic criteria formulae would be applied to calculate the 30-day average concentration limit; in addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

D Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in *Ambient Water Quality Criteria for Ammonia (Saltwater) -1989* (EPA 440/5-88-004; http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf).

E Freshwater and saltwater criteria for metals are expressed in terms of "dissolved" concentrations in the water column, except where otherwise noted (e.g. aluminum).

F The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. Criteria values for hardness may be calculated from the following formulae (CMC refers to Acute Criteria; CCC refers to Chronic Criteria):

$CMC = (\exp(m_A*[\ln(hardness)] + b_A))*CF$

$CCC = (\exp(m_C*[\ln(hardness)] + b_C))*CF$

~~where CF is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.~~

~~Chemical~~	~~m_A~~	~~b_A~~	~~m_C~~	~~b_C~~
~~Cadmium~~	~~1.0166~~	~~-3.924~~	~~0.7409~~	~~-4.719~~
~~Chromium III~~	~~0.8190~~	~~3.7256~~	~~0.8190~~	~~0.6848~~
~~Copper~~	~~0.9422~~	~~-1.700~~	~~0.8545~~	~~-1.702~~
~~Lead~~	~~1.273~~	~~-1.460~~	~~1.273~~	~~-4.705~~
~~Nickel~~	~~0.8460~~	~~2.255~~	~~0.8460~~	~~0.0584~~
~~Silver~~	~~1.72~~	~~-6.59~~		
~~Zinc~~	~~0.8473~~	~~0.884~~	~~0.8473~~	~~0.884~~

~~Conversion factors (CF) for dissolved metals (the values for total recoverable metals criteria were multiplied by the appropriate conversion factors shown below to calculate the dissolved metals criteria):~~

~~Chemical~~	~~Freshwater~~		~~Saltwater~~	
	~~Acute~~	~~Chronic~~	~~Acute~~	~~Chronic~~
~~Arsenic~~	~~1.000~~	~~1.000~~	~~1.000~~	~~1.000~~
~~Cadmium~~	~~1.136672 [(ln hardness)(0.041838)]~~	~~1.101672 [(ln hardness)(0.041838)]~~	~~0.994~~	~~0.994~~
~~Chromium III~~	~~0.316~~	~~0.860~~	~~--~~	~~--~~
~~Chromium VI~~	~~0.982~~	~~0.962~~	~~0.993~~	~~0.993~~
~~Copper~~	~~0.960~~	~~0.960~~	~~0.83~~	~~0.83~~
~~Lead~~	~~1.46203 [(ln hardness)(0.145712)]~~	~~1.46203 [(ln hardness)(0.145712)]~~	~~0.951~~	~~0.951~~
~~Nickel~~	~~0.998~~	~~0.997~~	~~0.990~~	~~0.990~~
~~Selenium~~	~~0.996~~	~~0.922~~	~~0.998~~	~~0.998~~
~~Silver~~	~~0.85~~	~~0.85~~	~~0.85~~	~~--~~
~~Zinc~~	~~0.978~~	~~0.986~~	~~0.946~~	~~0.946~~

~~I This value is based on criterion published in Ambient Water Quality Criteria for Endosulfan (EPA 440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.~~

~~M Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869); CCC=exp(1.005(pH)-5.134).~~

~~N This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).~~

~~O This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines for minimum data requirements and derivation procedures. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an~~

instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

P Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).

Q Criterion is applied as total arsenic (i.e. arsenic (III) + arsenic (V)).

S This criterion is expressed as µg free cyanide (CN)/L.

T This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).

U This criterion applies to total PCBs (e.g. the sum of all congener or all isomer or homolog or Arochlor analyses).

V The CMC=1/[(f1/CMC1)+(f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/L and 12.82 µg/L, respectively.

W The acute and chronic criteria for aluminum are 750 µg/L and 87 µg/L, respectively. These values for aluminum are expressed in terms of "total recoverable" concentration of metal in the water column. The criterion applies at pH<6.6 and hardness<12 mg/L (as $CaCO_3$).

X The effective date for the criterion in the column immediately to the left is 1991.

Y No criterion.

TABLE 33B

Note: The Environmental Quality Commission adopted the following criteria on May 20, 2004 to become effective on EPA approval. EPA has not yet (as of June 2006) approved these criteria. The Table 33B criteria may not be used until they are approved by EPA.

AQUATIC LIFE WATER QUALITY CRITERIA SUMMARY [A]

The concentration for each compound listed in Table 33A is a criterion not to be exceeded in 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), the Chemical Abstract Service (CAS) number, aquatic life freshwater acute and chronic criteria, aquatic life saltwater acute and chronic criteria. The acute criteria refer to the average concentration for one (1) hour and the chronic criteria refer to the average concentration for 96 hours (4 days), and that these criteria should not be exceeded more than once every three (3) years.

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
2 N	Aluminum (pH 6.5 - 9.0)	7429905	W		W					
3 N	Ammonia	7664417	C		C					
2	Arsenic	7440382								
15	Asbestos	1332214								
19	Benzene	71432								
3	Beryllium	7440417								
105	BHC gamma- (Lindane)	58899								
4	Cadmium	7440439	E,F		E,F		40 E		8.8 E	
107	Chlordane	57749								
	CHLORINATED BENZENES									
26	Chloroform	67663								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
67	ChloroisopropylEther Bis2-	108601								
15 N	ChloromethylEther, Bis	542881								
5a	Chromium (III)		E,F		E,F					
5b	Chromium (VI)	18540299	16 E		11 E					
6	Copper	7440508	E,F		E,F		4.8 E		3.1 E	
108	DDT 4,4'-	50293								
	DIBUTYLPHTHALATE									
	DICHLOROBENZENES									
	DICHLOROBENZIDINE									
	DICHLOROETHYLENES									
	DICHLOROPROPENE									
111	Dieldrin	60571			0.056					
	DINITROTOLUENE									
	DIPHENYLHYDRAZINE									
115	Endrin	72208			0.036					
86	Fluoranthene	206440								
	HALOMETHANES									
20 N	Iron	7439896								
7	Lead	7439921	E,F		E,F		210 E		8.1 E	
22 N	Manganese	7439965								
8a	Mercury	7439976								

EPA No.	Compound	CAS Number	Freshwater				Saltwater			
			Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date	Acute (CMC)	Effective Date	Chronic (CCC)	Effective Date
	MONOCHLOROBENZENE									
9	Nickel	7440020	E,F		E,F		74 E		8.2 E	
53	Pentachlorophenol	87865			M					
54	Phenol	108952								
	POLYNUCLEAR AROMATIC HYRDOCARBONS									
10	Selenium	7782492	E,V		5 E		290 E		71 E	
11	Silver	7440224	E,F,P		0.10 E		1.9 E,P			
44 N	Tributyltin (TBT)	688733	0.46		0.063		0.37		0.01	
41	Trichloroethane 1,1,1-	71556								
55	Trichlorophenol 2,4,6-	88062								
13	Zinc	7440666	E,F		E,F		90 E		81 E	

Footnotes for Tables 33A and 33B:

A Values in Table 20 are applicable to all basins.

C Ammonia criteria for freshwater may depend on pH, temperature, and the presence of salmonids or other fish with ammonia-sensitive early life stages. Values for freshwater criteria (of total ammonia nitrogen in mg N/L) can be calculated using the formulae specified in *1999 Update of Ambient Water Quality Criteria for Ammonia* (EPA-822-R-99-014; http://www.epa.gov/ost/standards/ammonia/99update.pdf):

Freshwater Acute:

salmonids present…CMC = $\frac{0.275}{1+10^{7.204-pH}}+\frac{39.0}{1+10^{pH-7.204}}$

salmonids not present…CMC= $\frac{0.411}{1+10^{7.204-pH}}+\frac{58.4}{1+10^{pH-7.204}}$

Freshwater Chronic:

fish early life stages present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN(2.85, 1.45*10^{0.028*(25-T)})$$

fish early life stages not present

$$CCC = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45*10^{0.028*(25-MAX(T,7))}$$

Note: these chronic criteria formulae would be applied to calculate the 30-day average concentration limit; in addition, the highest 4-day average within the 30-day period should not exceed 2.5 times the CCC.

D Ammonia criteria for saltwater may depend on pH and temperature. Values for saltwater criteria (total ammonia) can be calculated from the tables specified in *Ambient Water Quality Criteria for Ammonia (Saltwater) -1989* (EPA 440/5-88-004; http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf).

E Freshwater and saltwater criteria for metals are expressed in terms of "dissolved" concentrations in the water column, except where otherwise noted (e.g. aluminum).

F The freshwater criterion for this metal is expressed as a function of hardness (mg/L) in the water column. Criteria values for hardness may be calculated from the following formulae (CMC refers to Acute Criteria; CCC refers to Chronic Criteria):

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

$$CCC = (\exp(m_C*[\ln(\text{hardness})] + b_C))*CF$$

where CF is the conversion factor used for converting a metal criterion expressed as the total recoverable fraction in the water column to a criterion expressed as the dissolved fraction in the water column.

Chemical	m_A	b_A	m_C	b_C
Cadmium	1.0166	-3.924	0.7409	-4.719
Chromium III	0.8190	3.7256	0.8190	0.6848
Copper	0.9422	-1.700	0.8545	-1.702
Lead	1.273	-1.460	1.273	-4.705
Nickel	0.8460	2.255	0.8460	0.0584
Silver	1.72	-6.59		
Zinc	0.8473	0.884	0.8473	0.884

Conversion factors (CF) for dissolved metals (the values for total recoverable metals criteria were multiplied by the appropriate conversion factors shown below to calculate the dissolved metals criteria):

Chemical	Freshwater		Saltwater	
	Acute	Chronic	Acute	Chronic
Arsenic	1.000	1.000	1.000	1.000
Cadmium	1.136672-[(ln hardness)(0.041838)]	1.101672-[(ln hardness)(0.041838)]	0.994	0.994
Chromium III	0.316	0.860	--	--
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	1.46203-[(ln hardness)(0.145712)]	1.46203-[(ln hardness)(0.145712)]	0.951	0.951
Nickel	0.998	0.997	0.990	0.990
Selenium	0.996	0.922	0.998	0.998
Silver	0.85	0.85	0.85	--
Zinc	0.978	0.986	0.946	0.946

I This value is based on criterion published in Ambient Water Quality Criteria for Endosulfan (EPA-440/5-80-046) and should be applied as the sum of alpha- and beta-endosulfan.

M Freshwater aquatic life values for pentachlorophenol are expressed as a function of pH, and are calculated as follows: CMC=(exp(1.005(pH)-4.869); CCC=exp(1.005(pH)-5.134).

N This number was assigned to the list of non-priority pollutants in National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047).

O This criterion is based on EPA recommendations issued in 1980 that were derived using guidelines that differed from EPA's 1985 Guidelines for minimum data requirements and derivation procedures. For example, a "CMC" derived using the 1980 Guidelines was derived to be used as an instantaneous maximum. If assessment is to be done using an averaging period, the values given should be divided by 2 to obtain a value that is more comparable to a CMC derived using the 1985 Guidelines.

P Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).

~~R Arsenic criterion refers to the inorganic form only.~~

~~S This criterion is expressed as µg free cyanide (CN)/L.~~

~~T This criterion applies to DDT and its metabolites (i.e. the total concentration of DDT and its metabolites should not exceed this value).~~

~~U This criterion applies to total PCBs (e.g. the sum of all congener or all isomer or homolog or Arochlor analyses).~~

~~V The CMC=1/[(f1/CMC1)+(f2/CMC2)] where f1 and f2 are the fractions of total selenium that are treated as selenite and selenate, respectively, and CMC1 and CMC2 are 185.9 µg/L and 12.82 µg/L, respectively.~~

~~W The acute and chronic criteria for aluminum are 750 µg/L and 87 µg/L, respectively. These values for aluminum are expressed in terms of "total recoverable" concentration of metal in the water column. The criterion applies at pH<6.6 and hardness<12 mg/L (as $CaCO_3$).~~

~~X The effective date for the criterion in the column immediately to the left is 1991.~~

~~Y No criterion.~~

Oregon Department of Environmental Quality

SEPT. 1, 2013
Notice of Proposed Rulemaking

Corrections and Clarifications to Toxics Water Quality Standards

Overview

Short summary

DEQ proposes revisions to the water quality standards rules for toxic substances to correct and clarify the standards. Revisions to water quality standards require EPA approval before the revisions become effective for Clean Water Act programs. The proposed rules correct several toxic pollutant criteria that EPA recently disapproved and address other minor revisions to the Toxic Substances rule. EPA disapproved criteria for 11 pesticides based on potentially conflicting information in regards to how the frequency and duration components of these criteria are expressed. DEQ expects that clarifying this aspect of the criteria will lead to EPA approval of 36 pesticide criteria values associated with 11 pesticides. DEQ also proposes to correct an error in the expression of freshwater selenium criteria and is re-proposing freshwater and saltwater arsenic criteria and chromium VI saltwater criteria that were inadvertently left off the criteria table during a 2007 rulemaking. DEQ is also correcting typographical errors made during the 2011 Human Health Toxics Rulemaking.

In addition, DEQ proposes to move all effective aquatic life criteria from Tables 20, 33A, and 33B into a new aquatic life criteria table, Table 30, and to refer to the new table in the Toxic Substances rule language. As a result, Tables 20, 33A, and 33B are no longer needed and would be repealed under this proposal. DEQ also proposes to delete aluminum from Table 30 to reflect EPA's disapproval of the freshwater criteria for aluminum because the disapproval renders the criteria ineffective and there are no other criteria for aluminum. DEQ anticipates adopting revised freshwater criteria for aluminum in a future rulemaking process.

DEQ anticipates that EPA will take action on the following water quality standard revisions proposed in this rulemaking before they become effective under the Clean Water Act: (1) revisions to pesticides and selenium criteria; (2) reinstatement of arsenic and chromium VI criteria and the associated conversion factors; (3) deletion of aluminum criteria; and (4) revisions to the Toxic Substances rule in OAR 340-041-0033. EPA will likely take an action on the editorial and formatting changes in this proposal, but not on the underlying criteria that were previously approved. Ultimately, EPA will determine which water quality standards it must formally approve or disapprove.

Brief history

On Jan. 31, 2013, EPA took action on Oregon's aquatic life toxics criteria that the Oregon Environmental Quality Commission adopted and submitted to EPA in 2004. DEQ proposed these water quality criteria, which EPA recommended, to protect aquatic organisms such as fish, shellfish, and aquatic insects. The aquatic life toxics criteria for each pollutant typically have four values: acute (short-term) and chronic (long-term) values for freshwater protection, and acute and chronic values for saltwater protection. EPA approved 38 criteria values associated with 14 toxic pollutants and disapproved 45 criteria values associated with 16 toxic pollutants. EPA disapproved the freshwater acute criterion for cadmium based on findings in the National Marine Fisheries Service's August 2012 Biological Opinion. EPA disapproved the ammonia criteria because new toxicity data showed that the criteria were not protective of mollusks. EPA also disapproved criteria associated with 14 other pollutants, including 11 pesticides, copper, selenium and aluminum, due to inconsistencies associated with EPA's nationally recommended criteria. The Clean Water Act requires Oregon to fix the deficiencies identified in EPA's disapproval action. If Oregon does not make these revisions, EPA is required to put in place its own regulations addressing the deficiencies. This rulemaking does not address the disapproval of the freshwater criteria for aluminum, ammonia, copper, and cadmium (acute criterion only). DEQ expects to address the more substantive issues for these pollutants in a future rulemaking.

Regulated parties

Regulated parties possibly affected by this rulemaking include industrial and municipal dischargers to waters of the state. Specifically, regulated parties include those industrial dischargers categorized as "primary dischargers" by the federal permitting regulations and required to monitor for toxic pollutants, and generally major municipal dischargers, those with an average dry weather design flow of more than one million gallons per day.

Agricultural and forest activities are subject to Agricultural Water Quality Management Area Plans and Rules and the Forest Practices Act, respectively. Those laws require these nonpoint sources to meet all water quality standards.

Statement of need

Proposed Rule or Topic	Discussion
340-041-0033(1-5): Toxic Substances Rule	
What problem is DEQ trying to solve?	Currently, Oregon's water quality criteria for the protection of aquatic life reside in three tables: Table 20, Table 33A, and Table 33B. In 2004, the EQC adopted Tables 33A and 33B: • Table 33A contains criteria more stringent or remained the same as previous criteria and became effective for NPDES permitting Feb. 15, 2005. • Table 33B contains criteria less stringent than previous criteria and therefore, would only be effective after EPA approval. Table 20 contains criteria effective before the 2004 rulemaking and remained effective for all CWA programs, such as reporting to EPA on the condition of Oregon's waters (i.e. sections 303(d) and 305(b)). On Jan. 31, 2013, EPA took action on the 2004 criteria, thereby determining which new or revised criteria in Tables 33A and 33B are now effective under CWA authorities. Criteria that EPA disapproved automatically reverted back to any previously effective criteria contained in Table 20. Now that EPA has acted and it is clear which criteria are effective, there is no longer a need to have multiple tables showing different effective dates for the criteria. DEQ proposes combining these effective aquatic life criteria into one table—Table 30—and delete Tables 20, 33A, and 33B. Proposed revisions to the Toxic Substances rule replace references to Tables 20, 33A, and 33B with references to Table 30. Other proposed changes to the Toxic Substance Rule are for clarification purposes. In addition, the proposed Table 30 contains changes to correct problems that EPA identified in its January 2013 disapproval of 11 pesticides and the freshwater criteria for selenium. Specifically, DEQ proposes adding introductory text to Table 30 to more clearly state the alternate frequency and duration components of the pesticide aquatic life criteria (the basis for EPA's disapproval) for 11 pesticides. DEQ proposes additional edits to the footnote associated with the pesticides for better clarity. To address EPA's disapproval of the freshwater criteria for selenium, DEQ applied the conversion factors to convert selenium criteria expressed as total recoverable to a dissolved expression as intended in the 2004 rulemaking. DEQ also proposes reinstating freshwater and saltwater criteria for arsenic and saltwater criteria for chromium VI. In a 2007 rulemaking, the Environmental Quality Commission adopted revisions to Tables 33A and 33B that included information showing which of the toxic pollutants criteria could be used for NPDES permitting and which criteria could not be used until EPA approval. DEQ inadvertently omitted the freshwater and saltwater aquatic life criteria for arsenic and the saltwater criteria

Proposed Rule or Topic	Discussion
	for chromium VI from Table 33B. The arsenic and chromium VI criteria re-proposed here as part of this rulemaking are the same criteria that the EQC adopted in 2004. These criteria underwent Endangered Species Act consultation by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service and were not found to create jeopardy for any ESA-listed species. EPA did not take action on these criteria as part of its Jan. 31, 2013 action, but noted that the omitted criteria are consistent with EPA's 304(a) recommendations and recommended that Oregon re-adopt these criteria. The proposed footnotes and introductory language to Table 30 provide additional clarification to the criteria and definitions. There are additional proposed minor clarifications to Table 40, which contains toxics criteria for the protection of human health. DEQ proposes revisions to Table 33C,which contains water quality guidance values for toxic pollutants, to be consistent with Agency table formatting guidelines. Other revisions would rename Table 33C as Table 31 and remove arsenic guidance values which are unnecessary because Oregon has aquatic life criteria for arsenic. In addition, DEQ proposes a correction in a reference made in the table to Oregon's Narrative Toxic Substances Standard. The correct reference is OAR 340-041-0033(2). The Secretary of State Bulletin now allows tables to be attached to the Oregon Administrative Rules. Therefore, proposed changes located at the end of the Toxic Substances rule state that Tables 30, 31, and 40 will be attached as PDF documents. These proposed changes do not become effective until after EQC adoption and EPA approval. Upon EPA approval, the amendments become applicable for Clean Water Act purposes on April 18, 2014.
How would the proposed rule solve the problem?	Combining the aquatic life toxics criteria into one table will make it easier for DEQ staff, the public, and the regulated community to determine which criteria are effective. In addition, the proposed changes to Table 30 reinstate the erroneously omitted arsenic and chromium VI criteria and respond to EPA's disapproval of 11 pesticides and the freshwater criteria for selenium. Upon EQC adoption of the proposed revisions, DEQ anticipates that EPA will be able to promptly approve these criteria.
How will DEQ know the problem has been solved?	DEQ will know if the problems described above have been solved based on outcomes such as: the rules clearly identify and define Oregon's aquatic life toxics criteria; there are fewer inquiries to DEQ staff to determine which aquatic life toxics criteria are effective or how to interpret the criteria; and EPA promptly approves the rule revisions it identifies as water quality standards.
340-041-0033(7) Arsenic Reduction Policy Rule	
What problem is DEQ trying	The Arsenic Reduction Policy rule adopted by the EQC in June 2011 has several

Proposed Rule or Topic	Discussion
to solve?	reference errors. The rule incorrectly references the Arsenic Reduction Policy as section 4, rather than section 7. This error occurred during preparation of the final rule when the Arsenic Reduction Policy was moved from section 4 in the proposed rule to section 7 in the final toxics rule. DEQ also corrected another reference error in 340-041-0033(7)(f).
How would the proposed rule solve the problem?	This proposal would correct references and provide clarification to the public and DEQ.
How will DEQ know the problem has been solved?	Not applicable. The proposed changes only correct or clarify reference errors.
340-041-0009 Bacteria Rule	
What problem is DEQ trying to solve?	The Bacteria Rule references Table 20. This proposal would delete references to Table 20 because DEQ proposes to remove Table 20 from the Toxic Substances rule.
How would the proposed rule solve the problem?	This proposal would reference the Toxic Substances rule in general to reduce future citation corrections if the table name changes again.
How will DEQ know the problem has been solved?	Not applicable. The proposed changes only correct or clarify reference errors.
340-040-0020 Groundwater Quality Protection	
What problem is DEQ trying to solve?	The Groundwater Quality Protection rules reference Table 20. This proposal would delete references to Table 20 because DEQ proposes to remove Table 20 from the Toxic Substances rule. Additionally, there is a citation to Division 41 that no longer exists. The correct reference is to the same antidegradation policy described and referenced in OAR 340-040-0020; therefore DEQ proposes to delete the citation.
How would the proposed rule solve the problem?	This proposal would reference the Toxic Substances rule in general to reduce future citation corrections if the table name changes again. This proposal would also correct the citation error and provide clarification to the public and DEQ.
How will DEQ know the problem has been solved?	Not applicable. The proposed changes only correct or clarify reference errors.
340-040-0080 Numerical Groundwater Quality Reference Levels and Guidance Levels	
What problem is DEQ trying to solve?	The Numerical Groundwater Quality Reference Levels and Guidance Levels rules reference Table 20. This proposal would delete references to Table 20 because DEQ proposes to remove Table 20 from the Toxic Substances rule.
How would the proposed rule solve the problem?	This proposal would reference the Toxic Substances rule in general to reduce future citation corrections if the table name changes again.

Proposed Rule or Topic	Discussion
How will DEQ know the problem has been solved?	Not applicable. The proposed changes only correct or clarify reference errors.

Request for other options

During the public comment period, DEQ requests public comment on whether to consider other options for achieving the rule's substantive goals while reducing negative economic impact of the rule on business.

Federal relationship

"It is the policy of this state that agencies shall seek to retain and promote the unique identity of Oregon by considering local conditions when an agency adopts policies and rules. However, since there are many federal laws and regulations that apply to activities that are also regulated by the state, it is also the policy of this state that agencies attempt to adopt rules that correspond with equivalent federal laws and rules..."

Relationship to federal requirements

The proposed rules are not "different from or in addition to federal requirements" and impose stringency equivalent to federal requirements.

The proposed rules would implement a federal requirement. The federal Clean Water Act requires states to adopt water quality standards to protect beneficial uses of the nation's waters. The standards must be based on substantial evidence. DEQ must submit the proposed standards to EPA for approval after they are adopted by the EQC. DEQ has concluded that the proposed standards revisions meet federal requirements. DEQ has worked with EPA through the development of the proposed rules and we expect that EPA will approve the new and revised rules. Other revisions propose to correct errors or provide additional clarifications to the Toxic Substances Rule.

What alternatives did DEQ consider, if any?

The alternative to not pursuing these proposed amendments is that EPA would be required to put in place its own regulations addressing the deficiencies related to its Jan. 31, 2013 action on Oregon's aquatic life toxics criteria submitted to EPA in 2004. In addition, the errors from past rulemakings would continue to persist in DEQ rules and complicate implementation of the toxics criteria.

DEQ considered addressing EPA's disapproval of the aquatic life toxics criteria associated with aluminum, ammonia, cadmium and copper as part of this rulemaking. However, the potential remedies to address EPA's disapproval are more complex and will involve in-depth conversations with EPA, the National Marine Fisheries Service, interested stakeholders, and DEQ staff. DEQ did not want to delay and potentially confuse these complex issues with the straightforward corrections proposed in this rulemaking.

Rules affected, authorities, supporting documents

Lead division	Program or activity
Water Quality Division	Water Quality Standards and Assessment

Chapter 340 action

Recommendation	Division	Rule	Title	SIP/Land use*
amend	041	0033	Toxic Substances Rule	Land use
amend	041	0009	Bacteria Rule	Land use
amend	040	0020	Groundwater Quality Protection	Land use
amend	040	0080	Numerical Groundwater Quality	Land use

* SIP – This rule is part of the State Implementation Plan.
* Land use – DEQ State Agency Coordination Program considers this rule, program or activity a land use program.

Statutory authority

ORS 468.020, 468B.030, 468B.035 and 468B.048.

Other authority

No other authorities

Statute implemented	Legislation	Year
ORS 468B.030, 468B.035 & 468B.048.	N/A	N/A

Documents relied on for rulemaking ORS 183.335(2)(b)(C)

Document title	Document location
EPA Jan. 31, 2013 action letter on OR's 2004 aquatic life criteria and associated documents	Hardcopies may be found at: DEQ Headquarters Office, 811 SW Sixth Ave., Portland, OR 97204 Electronic versions may be found at: http://www.deq.state.or.us/wq/standards/toxics.htm#links
DEQ response letter to EPA's Jan. 31, 2013 action letter on OR's 2004 aquatic life criteria	Hardcopies may be found at: DEQ Headquarters Office, 811 SW Sixth Ave., Portland, OR 97204 Electronic versions may be found at: http://www.deq.state.or.us/wq/standards/docs/toxics/ResponseLetterEPA.pdf
OAR 340-041-0033 OAR 340-041-0009 OAR 340-040-0020 OAR 340-040-0080	Hardcopies may be found at: DEQ Headquarters Office, 811 SW Sixth Ave., Portland, OR 97204 Electronic versions may be found at: http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_tofc.html
Tables 20, 33A, 33B, 33C	Hardcopies may be found at: DEQ Headquarters Office, 811 SW Sixth Ave., Portland, OR 97204 Electronic versions may be found at: http://www.deq.state.or.us/wq/standards/toxics.htm

Statement of Cost of Compliance

Introduction

The revisions proposed in this rulemaking correct typographical errors associated with the aquatic life criteria and human health criteria that EQC adopted in 2004, 2007, and 2011, and are intended to address some of the issues identified by EPA in its Jan. 31, 2013 disapproval action. This proposal would also re-adopt freshwater and saltwater criteria for arsenic and saltwater criteria for chromium VI originally adopted by the EQC in 2004. DEQ inadvertently omitted these criteria in Table 33B during the 2007 water quality standards rulemaking. Despite this omission, these re-proposed criteria are not considered new water quality criteria for the protection of aquatic life and do not need to undergo an economic analysis because these criteria revisions were accounted for as part of the 2004 fiscal analysis. In addition, although the correction to the selenium criteria (i.e. expressed in the dissolved form) does result in slightly more stringent criteria, the expression of most metals to the dissolved form, including selenium, was accounted for as part of the 2004 rulemaking fiscal analysis. DEQ expects prompt EPA approval.

The 2004 rulemaking was comprised of a number of actions, including revising toxics criteria for aquatic life and human health. In 2007, DEQ proposed a number of corrections and clarifications, one which included revising Tables 33A and 33B to correctly show which of the toxic pollutants criteria could and could not be used for permitting until EPA approval. The 2011 rulemaking consisted of revising human health criteria based on a higher fish consumption rate, and also included the development of several permitting implementation tools.

DEQ determined that these clarifications and corrections are straight-forward and will result in minimal fiscal or economic impacts, if any. Any fiscal impacts related to changes to the aquatic life toxics criteria were accounted for as part of the 2004 DEQ rulemaking. For information on the fiscal and economic impact of revising toxics criteria in 2004, see Attachment F for Agenda Item B, Rule Adoption: Water Quality Standards, including Toxics Criteria May 20-21, 2004 EQC meeting at: http://www.deq.state.or.us/about/eqc/agendas/attachments/may2004/5.20.04.ItemB.AttchF.pdf.

DEQ anticipates these changes will provide a benefit to DEQ, the public, and to entities subject to toxics water quality criteria by reducing confusion over which criteria are effective and consolidating all effective aquatic life toxics criteria into one table (Table 30), rather than in the current three tables (Table 20, Table 33A, and Table 33B.). Correcting errors that occurred in 2004, 2007 and 2011 rulemakings will also provide greater clarification.

1. Impacts on general public

   DEQ does not expect that the general public will incur direct or indirect fiscal or economic impacts as a result of the proposed revisions to the toxics water quality standards rules.

2. Cost of compliance on small businesses (those with 50 or fewer employees). ORS 183.336

DEQ does not expect many small businesses to be affected by these rule revisions. Few small businesses are directly subject to toxics water quality criteria because most small businesses do not directly discharge wastewater to a waterbody. For those small businesses that do discharge to a waterbody and have toxics monitoring requirements (i.e. identified as "primary industries" by federal permitting regulations), or are subject to pretreatment requirements where the business discharges to a municipal wastewater facility, the proposed changes in this rulemaking do not impose new requirements.

Some small businesses may need to conduct minor recordkeeping activities to correctly reference the effective aquatic life toxics criteria (e.g. in discharge monitoring reports) if the EQC amends the proposed rules. DEQ expects the economic impact to be minimal.

Many farms, ranches, and small timber operations fall under the category of small businesses. Agricultural and forest activities are subject to Agricultural Water Quality Management (AgWQM) Area Plans and Rules and the Forest Practices Act, respectively, which require these nonpoint sources to meet water quality standards. These plans and rules already require and provide the mechanism for agriculture and small forest land owners to meet water quality standards and TMDL load allocations. This rulemaking does not change requirements in these plans and rules. Because this rulemaking only proposes clarifications and corrections to toxics regulations and tables, DEQ does not anticipate that this proposed rulemaking will have direct or indirect fiscal impacts or effects on small farms,ranches and small forest land owners.

a) Estimated number of small businesses and types of businesses and industries with small businesses subject to proposed rule.

As part of its recordkeeping, DEQ does not track whether any of the entities subject to the proposed rule revisions are small businesses, therefore it is difficult to estimate businesses potentially affected. The types of small businesses/industries holding wastewater permits and may be required to monitor for toxics include, but are not limited to: smelting/refining operations, timber processing, wood products manufacturing, pulp and paper, retail operations, circuit boards, and petroleum hydrocarbon clean-up operations.

The Oregon Farm Bureau estimates that 97% of Oregon farms and ranches fall under the category of small businesses based on the definition of small businesses being fifty or fewer employees. Other types of businesses that could be subject to this rulemaking include nurseries, dairy and beef producers, fruit growers, and other food producers, industrial, and small forest land owners.

b) Projected reporting, recordkeeping and other administrative activities, including costs of professional services, required for small businesses to comply with the proposed rule.	No additional activities are required for compliance with the proposed revisions; however, some small businesses may need to conduct minor recordkeeping activities to correctly reference the effective toxics criteria following this rulemaking.
c) Projected equipment, supplies, labor and increased administration required for small businesses to comply with the proposed rule.	No additional resources are required for compliance with the proposed rules.
d) Describe how DEQ involved small businesses in developing this proposed rule.	DEQ included the Association of Oregon Industries (AOI) as part of the advisory committee that advised DEQ on the cost of compliance for this rulemaking for small businesses. AOI's membership includes large and small companies from all business classifications in Oregon. In addition, the Oregon Farm Bureau was also part of the advisory committee and represents many farms and ranches that are considered small businesses. DEQ discussed this statement of fiscal and economic impact and solicited input from the Oregon Farm Bureau during one workgroup meeting on July 11, 2013. The representative from AOI did not attend. DEQ incorporated the input into this analysis.

3. Impact on large businesses (all businesses that are not small businesses under #2 above)

Large businesses that discharge to waterbodies are regulated under the Clean Water Act and are generally subject to toxics monitoring requirements. However, DEQ does not expect large businesses, such as pulp and paper or electronic processing types of industry, to incur measurable direct or indirect fiscal or economic impacts as a result of the proposed revisions to the toxics water quality standards rule.

Some large businesses may need to conduct minor recordkeeping activities to correctly reference the effective toxics criteria following this rulemaking. DEQ expects the economic impact to be minimal.

4. Impact on local government other than DEQ

Generally, DEQ does not expect local governments, such as wastewater treatment facilities to incur measurable direct or indirect fiscal or economic impacts as a result of the proposed revisions to the toxics water quality standards rule.

Most, if not all, major wastewater treatment facilities are subject to toxic pollutant monitoring requirements. Generally, minor wastewater treatment facilities (average dry weather design flow of

less than one million gallons per day (MGD)) have much reduced monitoring and permitting requirements than major domestic sources.

Some wastewater treatment facilities may need to conduct minor recordkeeping activities to correctly reference the effective toxics criteria following this rulemaking. DEQ expects the economic impact to be minimal.

5. Impact on DEQ

DEQ does not expect that DEQ will incur significant direct or indirect fiscal or economic impacts as a result of the proposed revisions to the toxics rule. Although many DEQ programs use water quality criteria for toxics in various water quality programs (e.g. water quality assessment, Total Maximum Daily Load program, NPDES permitting, groundwater rules, clean-up program, etc.), this rulemaking does not propose new water quality criteria for protection of aquatic life or human health.

DEQ programs may need to conduct minor recordkeeping activities to correctly reference effective toxics criteria following this rulemaking. DEQ expects the economic impact to be minimal.

Documents relied on for fiscal and economic impact

None.

Housing cost

To comply with ORS 183.534, DEQ determined the proposed rules would have no effect on the development cost of a 6,000-square-foot parcel and construction of a 1,200-square-foot detached single-family dwelling on that parcel.

Fees

Not applicable.

Land use

"It is the Commission's policy to coordinate the Department's programs, rules and actions that affect land use with local acknowledged plans to the fullest degree possible."
ORS 197.180, OAR 660-030

Land-use considerations

To determine whether the proposed rules involve programs or actions that are considered a *land use action*, DEQ considered:

- Statewide planning goals for specific references. Section III, subsection 2 of the DEQ State Agency Coordination Program document identifies the following statewide goal relating to DEQ's authority:

Goal	Title
5	Open Spaces, Scenic and Historic Areas, and Natural Resources
6	Air, Water and Land Resources Quality
11	Public Facilities and Services
16	Estuarial resources
19	Ocean Resources

- OAR 340-018-0030 for EQC rules on land-use coordination. Division 18 requires DEQ to determine whether proposed rules will significantly affect land use. If yes, how will DEQ:
  - Comply with statewide land-use goals, and
  - Ensure compatibility with acknowledged comprehensive plans, which DEQ most commonly achieves by requiring a Land Use Compatibility Statement.
- DEQ's mandate to protect public health and safety and the environment.
- Whether DEQ is the primary authority that is responsible for land-use programs or actions in the proposed rules.
- Present or future land uses identified in acknowledged comprehensive plans.

Determination

DEQ determined that the proposed rules identified under the 'Chapter 340 Action' section above **may affect** existing rules, programs or activities that are considered land-use programs and actions in OAR 340-018-0030 or in the DEQ State Agency Coordination Program. However, while the water quality standards program in general could affect land uses, the proposed rule amendments do not.

These rule amendments propose to correct or clarify errors associated with past rulemakings, or provide additional clarifications, but the beneficial uses of State waters will not be changed and the water quality standards will continue to protect those uses. The proposed changes are adequately covered by the existing statewide goals.

Advisory committee

DEQ established an advisory committee in January 2013 to provide input to DEQ on any potential fiscal impacts and benefits that may result from this rulemaking. The rulemaking was subsequently delayed and then re-initiated in May 2013. DEQ met with the advisory committee on June 25, 2013 and July 11, 2013. The committee includes eight members representing industrial, municipal, tribal and environmental organizations with an interest in actions related to developing or revising water quality standards for toxic pollutants. See the Advisory Committee Charter for more information.

DEQ sent the draft fiscal analysis to the committee on July 2, 2013 to prepare for the fiscal analysis discussion at the July 11, 2013 meeting. In compliance with ORS 183.333, DEQ asked for the committee's recommendations on:

- Whether the proposed rules would have a fiscal impact,
- The extent of the impact, and
- Whether the proposed rules would have a significant impact on small businesses and compliance with ORS 183.540.

DEQ considered the committee's comments on the fiscal and economic impact statement. The committee agreed that the fiscal and economic impact to the regulated community, including small businesses, was minimal, if any. This rulemaking focuses on addressing EPA disapproval of pesticide and freshwater selenium criteria, and other corrections and clarifications to the toxics rules. The remedy to address the pesticide disapprovals is the addition of clarifying language only. The underlying criteria do not change. To address EPA's disapproval of the freshwater criteria for selenium, DEQ applied the conversion factors to convert selenium criteria expressed as total recoverable to a dissolved expression as intended in the 2004 rulemaking. The 2004 fiscal analysis included any potential fiscal impacts from the change of total recoverable metals expression to a dissolved expression. This rulemaking does not propose new toxics criteria or other requirements. For more information about the advisory committee discussion, see the meeting minutes: http://www.deq.state.or.us/wq/standards/docs/Minutes071113.pdf.

Roster

Name	Representing	Contact Information
1. Curtis Barton	Clackamas Water Environment Services	curtisb@co.clackamas.or.us (503) 742-4615
2. Dianne Barton	Columbia River Inter-Tribal Fish Commission	bard@critfc.org (503) 731-1259
3. Kathleen Collins	U.S. Environmental Protection Agency	collins.kathleen@epa.gov (206) 553-2108
4. Heath Curtiss	Oregon Forest Industries Council	Heath@ofic.com

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5. Mike Freese	Oregon Farm Bureau	Mike@oregonfb.org (503) 399-1701 x308
6. John Ledger	Associated Oregon Industries	johnledger@aoi.org (503) 227-5636
7. Andrea Matzke	OR Dept. of Environmental Quality	matzke.andrea@deq.state.or.us (503) 229-5384
8. Kathryn VanNatta	NW Pulp and Paper Association	kathryn@nwpulpandpaper.org (503) 844-9540
9. Jennifer Wigal	OR Dept. of Environmental Quality	wigal.jennifer@deq.state.or.us (505) 229-5323
10. Travis Williams	Willamette Riverkeeper	travis@willametteriverkeeper.org (503) 223-6418

EQC prior involvement

DEQ shared information about this rulemaking through a Director's Dialogue at the EQC meeting June 19-20, 2013. EQC members did not ask to participate in this rulemaking.

Public notice

The Notice of Proposed Rulemaking with Hearing for this proposed rulemaking will publish in the Sept. 1, 2013 *Oregon Bulletin*. DEQ also:

- Posted notice on DEQ's webpage http://www.deq.state.or.us/regulations/proposedrules.htm on Aug. 14, 2013.
- E-mailed notice to:
  - 3,900 interested parties through GovDelivery on Aug. 19, 2013.
  - Key legislators required under ORS 183.335 on Aug. 19, 2013. Key legislators included:
    - Senator Dingfelder, Chair of the Senate Committee on Environment and Natural Resources
    - Representative Bailey, Chair of the House Committee on Energy and Environment
  - Members of the advisory committee on Aug. 19, 2013.
- Sent notice to EPA on Aug. 19, 2013.
- Other

Public hearings

DEQ plans to hold one public hearing. Before taking public comment, DEQ will describe the rule proposal. The following table lists the public hearing location:

Public Hearings			
Hearing Date	Time	Location	Hearings Officer
Sept. 18, 2013	6 p.m.	Portland, OR	DEQ Staff

Close of public comment period

The comment period will close on Sept. 30, 2013 at 5 p.m.