**Notes on Draft Table 30**: Table 30 represents OR’s anticipated effective aquatic life criteria following EPA action on OR’s aquatic life criteria submitted in 2004. Action is expected on Jan.31, 2013. Generally, this table combines OR’s Tables 33A and 33B and additionally accounts for EPA’s expected disapproval of several criteria. The proposed revisions are either non-substantive corrections or clarify the water quality standard consistent with the original intent. These edits should not present policy issues that need to be considered. Red underlined text represents revisions from the originally approved EQC Tables 33A or 33B. The language portrayed in **grey** is explanatory in nature, intended to help the reader understand any changes and which table the criteria originated from. Comments in **blue** also provide information to the reader. Because these edit are either non-substantive or could represent more stringent criteria (e.g. reverting back to Table 20 criteria in many cases, rather than the absence of criteria when disapproved), DEQ expects these criteria to be effective upon EPA action on DEQ’s 2004 aquatic life criteria. (true? Will send these revisions to EPA sometime soon to verify…)

**TABLE 30: Aquatic Life Criteria for Toxic Pollutants**

*Effective [EQC Adoption XXXXXX]*

**Aquatic Life Criteria Summary**

The concentration for each compound listed in Table 30~~3A~~ 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, 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~~ . 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. Footnote A associated with eleven pesticide pollutants in Table 30 describes the exception to the frequency and duration stated above. Italicized pollutants represent non-priority pollutants.

[Note on edits above: Paragraph above originated from Table 33A. Pesticides associated with Table 33A footnote “O”. Footnote “O” is associated with eleven pesticides. EPA had concerns that the frequency and duration associated with the acute and chronic criteria in the introductory language in Table 33A was contradictory to footnote “O”. DEQ believed the introductory language in Table 33A with regards to the frequency and duration of a criterion was general in nature and that Footnote “O” superceded this general statement where applicable. It has been DEQ’s intention to implement the pesticide criteria associated with this footnote in the same manner that EPA intended in the 1980 guidance referenced in the footnote. Therefore, the acute criteria values in Table 33A associated with this footnote have been applied as instantaneous maximums and are not to be exceeded. Thus, the acute criteria values in Table 33A should only be divided by two where there is sufficient data to conduct averaging over a one hour period. In addition, the chronic criteria represent values not to be exceeded based on a 24-hour average, rather than over a 96-hour period which generally applies to the other aquatic life criteria. DEQ added clarifying language to the introductory language above to strengthen correct implementation. This language, or similar, should address EPA’s disapproval of the eleven pesticides associated with Footnote A (i.e. Footnote O in Table 33A).]

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **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 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | -- | 1.3**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | -- |
| **A** *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.* |
| 2 | *Alkalinity* |  | n | -- | 20,000 **B**[From Table 33A] | -- | -- |
| **B** *Criterion shown is the minimum (i.e. CCC in water should not be below this value in order to protect aquatic life).* |
| ~~3~~ | *~~Aluminum~~*[will be deleted] | ~~7429905~~ |  | Table 33BEPA will disapprove—no Table 20 replacement criteria. Could rely on narrative in the interim. | Table 33BEPA will disapprove-- no Table 20 replacement criteria. Could rely on narrative in the interim. | -- | -- |
| 3 | Ammonia | 7664417 | n | [From Table 20]*Criteria are pH and temperature dependent-- See document USEPA January 1985 (Fresh Water).* EPA will disapprove Table 33Bcriteria—revert back to Table 20 criteria based on footnote above | [From Table 33A“D” Footnote]*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*](http://www.epa.gov/ost/pc/ambientwqc/ammoniasalt1989.pdf).  |
| 4 | Arsenic (tri) |  | n | 340 **C,****D**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here. [Revert back to Table 20 criterion of 360 total recov. until EQC re-adopts 340 criterion] | 150 **C**, **D**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here[Revert back to Table 20 criterion of 190 total recov. until EQC re-adopts 150 criterion] | 69 **C**, **D**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here[Revert back to Table 20 criterion of 69 total recov. until EQC re-adopts 69 criterion] | 36 **C**, **D**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here[Revert back to Table 20 criterion of 36 total recov. until EQC re-adopts 36 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 arsenic (i.e. arsenic (III) + arsenic (V)).* |
| 5 | BHC Gamma (Lindane) | 58899 | y | 0.95[from Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.08[from Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.16**A**[from Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | -- |
| **A** *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.* |
| 6 | Cadmium | 7440439 | n | 3.9 **E**[from Table 20]EPA will disapprove Table 33B criterion—revert back to Table 20 criterion (i.e. still hardness dependent, but expressed as total) | 1.1 **E**[from Table 20]EPA will disapprove Table 33B criterion—revert back to Table 20 criteria(i.e. still hardness dependent, but expressed as total) | 40 **C**[From Table 33B] | 8.8 **C**[From Table 33B] |
| **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** *Hardness Dependent Criteria (100 mg/L used): See Hardness Dependent Formula at bottom of table*  |
| 7 | Chlordane | 57749 | n | 2.4**A**[From 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0043**A**[From 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.09**A**[From 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.004**A**[From 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.* |
| 8 | *Chloride* | 16887006 | n | 860,000[From Table 33A] | 230,000[From Table 33A] | -- | -- |
| 9 | *Chlorine* | 7782505 | n | 19[From Table 33A] | 11[From Table 33A] | 13[From Table 33A] | 7.5[From Table 33A] |
| 10 | *Chlorpyrifos* | 2921882 | n | 0.083[From Table 33A] | 0.041[From Table 33A] | 0.011[From Table 33A] | 0.0056[From Table 33A] |
| 11 | Chromium (Hex) | 18540299 | n | 16 **C**[From Table 33B] | 11 **C**[From Table 33B] | 1100 **C**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here[Revert back to Table 20 criterion of 1100 total recov. until EQC re-adopts 1100 dissolved criterion] | 50 **C**[From 2004 Table 33B]Criterion inadvertently removed from subsequent adoptions of Table 33B, therefore values from 2004 EQC adopted Table 33B reinstated here[Revert back to Table 20 criterion of 50 total recov. until EQC re-adopts 50 dissolved 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.* *Note: See Conversion Table chromium VI factors under Footnote F at bottom of table to convert total recoverable results to dissolved results.*  |
| 12 | Chromium (Tri) |  | n | **C,** **F**[From Table 33B] | **C,** **F**[From Table 33B] | -- | -- |
| **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. For more information, see expanded Footnote F at bottom of Table 30.*  |
| 13 | Copper | 7440508 | n | 18 **E**[from Table 20]EPA will disapprove Table 33B criterion—revert back to Table 20 criterion (i.e. still hardness dependent, but expressed as total) | 12 **E**[from Table 20]EPA will disapprove Table 33B criterion—revert back to Table 20 criterion (i.e. still hardness dependent, but expressed as total) | 4.8 **C**[From Table 33B] | 3.1 **C**[From Table 33B] |
| **E** *Hardness Dependent Criteria (100 mg/L used): See Hardness Dependent Formula at bottom of table***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.]* |
| 14 | Cyanide | 57125 | y | 22 **J**[From Table 33A] | 5.2 **J**[From Table 33A] | 1 **J**[From Table 33A] | 1 **J**[From Table 33A] |
| **J** This criterion is expressed as µg free cyanide (CN)/L. |
| 15 | DDT 4,4' | 50293 | y | 1.1**A ,****G**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.001**A ,****G**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.13**A ,****G**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.001**A ,****G**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.***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 33B] | -- | 0.1[From Table 33B] |
| 17 | Dieldrin | 60571 | y | 0.24[From Table 33A]EPA disapprove? Not associated w/ Footnote A  | 0.056[From Table 33B]EPA disapprove? Not associated w/ Footnote A | 0.71**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0019**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.* |
| 18 | Endosulfan | 115297 | n | 0.22 **A , H**  ~~P~~ [From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.056 **A , H**  ~~P~~ [From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.034 **A , H**  ~~P~~ [From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0087 **A, H** ~~P~~ [From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.***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]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.056**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.034**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.0087**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption |
| **A** *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.* |
| 20 | Endosulfan Beta | 33213659 | y | 0.22**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.056**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.034**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.0087**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption |
| **A** *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.* |
| 21 | Endrin | 72208 | y | 0.086[From Table 33A]EPA disapprove? Not associated w/ Footnote A | 0.036[From Table 33B]EPA disapprove? Not associated w/ Footnote A | 0.037**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0023**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.* |
| 22 | *Guthion* | 86500 | n | -- | 0.01[From Table 33A] | -- | 0.01[From Table 33A] |
| 23 | Heptachlor | 76448 | y | 0.52**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0038**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.053**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy | 0.0036**A**[From Table 33A]EPA will disapprove Table 33Acriterion—Revert back to Table 20 which is reflected above (and is the same as 33A). Footnote A clarifying lang. in intro to Table 30 will provide remedy |
| **A** *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.* |
| 24 | Heptachlor Epoxide | 1024573 | y | 0.52**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.0038**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.053**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption | 0.0036**A**[From Table 33A]EPA will disapprove Table 33Acriterion—No Table 20 replacement criterion, but could rely on narrative until EQC adoption |
| **A** *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.* |
| 25 | *Iron* | 7439896 | n | -- | 1000[From Table 33A] | -- | -- |
| 26 | Lead | 7439921 | n | **C , F**[From Table 33B] | **C , F**[From Table 33B] | 210 **C**[From Table 33B] | 8.1 **C**[From Table 33B] |
| **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. For more information, see expanded Footnote F at bottom of Table 30.* |
| 27 | *Malathion* | 121755 | n | -- | 0.1[From Table 33A] | -- | 0.1[From Table 33A] |
| 28 | Mercury | 7439976 | n | 2.4[From Table 33A] | 0.012[From Table 33A] | 2.1[From Table 33A] | 0.025[From Table 33A] |
| 29 | *Methoxychlor* | 72435 | y | -- | 0.03[From Table 33A] | -- | 0.03[From Table 33A] |
| 30 | *Mirex* | 2385855 | n | -- | 0.001[From Table 33A] | -- | 0.001[From Table 33A] |
| 31 | Nickel | 7440020 | y | **C , F**[From Table 33B] | **C , F**[From Table 33B] | 74 **C**[From Table 33B] | 8.2 **C**[From Table 33B] |
| **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. For more information, see expanded Footnote F at bottom of Table 30.* |
| 32 | *Parathion* | 56382 | n | 0.065[From Table 33A] | 0.013[From Table 33A] | -- | -- |
| 33 | Pentachlorophenol | 87865 | y | **H**[From Table 33A] | **H**[From Table 33B] | 13[From Table 33A] | 7.9[From Table 33A] |
| **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] |
| 35 | Polychlorinated Biphenyls (PCBs) | NA  | y | 2 **K**[From Table 33A] | 0.014 **K**[From Table 33A] | 10 **K**[From Table 33A] | 0.03 **K**[From Table 33A] |
| **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 | **C** , **L**[From Table 33B]EPA will disapprove Table 33B criterion— Need to add the Conversion Factor to equation to convert total recoverable results to dissolved results[Revert back to Table 20 criterion of 260 total recov. until EQC re-adopts 33B criterion]  | ~~5~~ 4.6 **C**[From Table 33B]EPA will disapprove Table 33B criterion— Criterion is not expressed as dissolved. [Revert back to Table 20 criterion of 35 total recov. until EQC re-adopts 33B criterion]  | 290 **C**[From Table 33B] | 71 **C**[From Table 33B] |
| **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.**Note: See Conversion Table selenium factors under Footnote F at bottom of table to convert total recoverable results to dissolved results.* **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.**[Note: Added CF (conversion factor) to FW acute footnote to clarify the criterion is expressed as dissolved, although the dissolved footnote would direct the user to convert to dissolved regardless. Note added as well to direct user where to access the Se CFs.]* |
| 37 | Silver | 7440224 | n | **C** , **F** ~~P~~[From Table 33B] | 0.10 **C**[From Table 33B] | 1.9 **C**  ~~P~~[From Table 33B] | -- |
| **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. For more information, see expanded Footnote 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).~~*[Remove Footnote P per EPA which is associated w/alkalinity criterion] |
| 38 | *Sulfide Hydrogen Sulfide* | 7783064 | n | -- | 2[From Table 33A] | -- | 2[From Table 33A] |
| 39 | Toxaphene | 8001352 | y | 0.73[From Table 33A] | 0.0002[From Table 33A] | 0.21[From Table 33A] | 0.0002[From Table 33A] |
| 40 | *Tributyltin (TBT)* | 688733 | n | 0.46[From Table 33B] | 0.063[From Table 33B] | 0.37[From Table 33B] | 0.01[From Table 33B] |
| 41 | Zinc | 7440666 | y | **C , F**[From Table 33B] | **C , F**[From Table 33B] | 90 **C**[From Table 33B] | 81 **C**[From Table 33B] |
| **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. For more information, see expanded Footnote F at bottom of Table 30.* |

**Footnote E: Hardness Equations for Cadmium and Copper Freshwater Criteria**

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(mA\*[ln(hardness)] + bA)) \* CF

**CCC** = (exp(mC\*[ln(hardness)] + bC)) \* CF

Note that the “CF” conversion factors in the equations above are used to convert total recoverable metal results to dissolved metal results. However, the pollutants to which this footnote applies (i.e. cadmium and copper freshwater criteria) are expressed as total recoverable, rather than dissolved. Therefore, the CF conversion factor should not be used to calculate criteria.

[Note added here to original footnote in Table 20. Cadmium and copper freshwater dissolved criteria will be disapproved by EPA, so criteria revert back to Table 20 criteria based on total recoverable. Propose that we also remove the pollutants below from this chart to avoid confusion, since the other metals listed below are more accurately associated with footnote F below and some of the hardness factor values have been updated since Table 20 was approved. Alternatively, we can just strikethrough the CF factor in the equations above and indicate that cadmium and copper are expressed as total recoverable rather than the language currently proposed above—probably cleaner]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Chemical** | **mA** | **bA** | **mC** | **bC** |
| 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~~ |

**Footnote F: Hardness Equations for Freshwater Criteria and Conversion Factor Table**

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(mA\*[ln(hardness)] + bA))\*CF

 **CCC** = (exp(mC\*[ln(hardness)] + bC))\*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** | **mA** | **bA** | **mC** | **bC** |
| ~~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~~ ~~(t~~ The values for total recoverable metals criteria ~~were~~ must be (?) multiplied by the appropriate conversion factors shown below, where needed, to calculate the dissolved metals criteria~~)~~: [Revising to indicate that in many cases, the metals criteria in Table 30 were not calculated using default values, so conversion factors must be applied if results are in total recoverable form]

**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)]~~ | ~~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 |

[Note: Although Arsenic is footnoted as “dissolved”, the conversion factors of “1” above essentially assume 100% of total recoverable results are dissolved. Also footnote indicates the criteria are applied as total As—i.e. the sum of As III and V.]