Minnesota Pollution Control Agency

Proposed Permanent Rules Relating to Standards for Water Quality

7050.0219 HUMAN HEALTH-BASED CRITERIA AND STANDARDS.

[For text of subparts 1 to 11, see Minnesota Rules]

Subp. 12. **Final state or site BAF by trophic level.** Calculate final state or site BAF for TL_3 where applicable and TL_4 for use in developing human health-based chronic criteria or standards.

A. For nonionic organic chemicals and ionic organic chemicals with no or negligible ionization as defined under subpart 7, for each TL_3 and TL_4, calculate a state or site BAF using the following equation:

$$\text{state or site BAF}_{(TL\ n)} = \left[\left(\text{final baseline BAF}_l^{fd}\right)_{TL\ n} \times (f_l)_{TL\ n} + 1\right] \times (f_{fd})$$

where: $\left(\text{final baseline BAF}_l^{fd}\right)_{TL\ n}$ = final trophic-level-mean baseline BAF expressed on a freely dissolved and lipid-normalized basis for trophic level "n" (L/kg)

$(f_l)_{TL\ n}$ = lipid fraction of aquatic species consumed at trophic level "n" by class 2 subclass: class 2A = 0.06; class ~~2Bd/2B/2C/2D~~ 2Bd/2B/2D = 0.02 for TL_3 and 0.015 for TL_4

f_{fd} = fraction of the total chemical in water that is freely dissolved in ambient waters

The default DOC and POC values for the state ambient class 2 surface waters are 7.5×10^{-6} kg/L (7.5 mg/L) and 5×10^{-7} kg/L (0.5 mg/L), respectively. For a site BAF for use in site-specific criteria development, the DOC and POC values are from the site monitoring data, if available; in all other cases, the state defaults are used.

B. For inorganic and organometallic chemicals and ionic organic chemicals with ionization in natural waters, the baseline BAF^t_T using total chemical concentrations or bioavailable forms are directly applied as the state or site BAF:

$$\text{state BAF}_{(TL\ n)} \text{ or site BAF} = \text{final baseline BAF}_{(TL\ n)}$$

[For text of subpart 13, see Minnesota Rules]

Subp. 14. **Algorithm for class 2B~~, 2C,~~ or 2D surface waters.** This subpart describes human health-based criteria or standards for classes of surface waters designated for fish consumption and recreational use (nondrinking water use). To develop a final chronic criteria (CC_{fr}) or standard (CS_{fr}) applicable to surface waters designated class 2B~~, 2C,~~ or 2D, items A to C must be evaluated for use based on the pollutant's toxicological profile: noncarcinogen or nonlinear carcinogen (NLC) or linear carcinogen (C).

A. Algorithm for noncarcinogenic or NLC chemicals applicable to class 2B~~, 2C,~~ or 2D surface waters to calculate: CC_{fr} or CS_{fr} =

$$\frac{RfD_{chronic}\ (mg/kg\text{-}d) \times RSC\ (no\ units) \times 1{,}000\ \mu g/mg}{\{IWR_{chronic}\ (L/kg\text{-}d) + FCR_{adult}\ (kg/kg\text{-}d)[(0.24 \times BAF_{TL3}\ (L/kg)) + (0.76 \times BAF_{TL4}\ (L/kg)]\}}$$

where: CC_{fr} or CS_{fr} = fish consumption and recreation chronic criterion or standard in µg/L

$IWR_{chronic}$ = 0.0013 L/kg-d; assumed incidental water intake rate based on minimum chronic duration

Other variables as defined under subpart 13

B. Algorithm for linear carcinogenic chemicals with lifetime adjustment factors ($AF_{lifetime}$) applicable to surface waters designated class 2B~~, 2C,~~ or 2D to calculate: CC_{fr}or CS_{fr} =

$$\frac{CR\ (1 \times 10^{-5})}{CSF(mg/kg\text{-}d)^{-1} \times AF_{Lifetime}} \times \frac{1000\ \mu g/mg}{\{IWR_{chronic}\ (L/kg\text{-}d) + FCR_{Adult}\ (kg/kg\text{-}d)\ [(0.24 \times BAF_{TL3}\ (L/kg)) + (0.76 \times BAF_{TL4}(L/kg))]\}}$$

where: CC_{fr} or CS_{fr} = fish consumption and recreation chronic criterion or standard in µg/L

Other variables as defined under item A and subpart 13

C. Algorithm for linear carcinogenic chemicals with age-dependent adjustment factors (ADAF) applicable to surface waters designated class 2B~~, 2C,~~ or 2D to calculate: CC_{fr} or CS_{fr} =

$$\frac{CR\ (1 \times 10^{-5}) \times 1000}{\left(\begin{array}{l} \left\{ CSF \times ADAF_{<2} \times D_{<2} \times [IWR + FCR_{<2} \times (0.24BAF_{TL3} + 0.76BAF_{TL4})] \right\} + \\ \left\{ CSF \times ADAF_{2\ to\ <16} \times D_{2\ to\ <16} \times [IWR + FCR_{2\ to\ <16} \times (0.24BAF_{TL3} + 0.76BAF_{TL4})] \right\} + \\ \left\{ CSF \times ADAF_{16\ to\ 70} \times D_{16\ to\ 70} \times [IWR + FCR_{Adult} \times (0.24BAF_{TL3} + 0.76BAF_{TL4})] \right\} \end{array} \right) / 70yrs}$$

where: CC_{fr} or CS_{fr} = fish consumption and recreation chronic criterion or standard in µg/L

Other variables as defined under item A and subpart 13

[For text of subpart 15, see Minnesota Rules]

7050.0420 ~~TROUT~~ COLD WATER HABITAT WATERS.

A. ~~Trout lakes identified in part 6264.0050, subpart 2, as amended through June 14, 2004, are classified as trout waters and~~ Cold water habitat waters are listed under part 7050.0470. ~~Trout streams and their tributaries within the sections specified that are identified in part 6264.0050, subpart 4, as amended through June 14, 2004, are classified as trout waters. Trout streams are listed in part 7050.0470. Other lakes that are classified as trout waters are listed in part 7050.0470.~~

B. Cold water habitat waters identified as class 2A, 2Ae, or 2Ag in part 7050.0470 must reflect an existing beneficial use that permits propagating and maintaining a healthy community of cold water aquatic biota and their habitats.

C. The commissioner must propose changes to part 7050.0470 when reliable scientific evidence supports adding or removing a water listed as class 2A, 2Ae, or 2Ag.

Changes must be supported by data relevant to the biological community, habitat, thermal regime, or other features of a class 2A, 2Ae, or 2Ag habitat.

D. ~~All waters~~ Unless otherwise listed in part 7050.0470 ~~as~~, all class ~~1B,~~ 2A, ~~and 3B~~ 2Ae, or 2Ag waters listed in part 7050.0470 are also classified as class 1B, 3B, 4A, 4B, 5, and 6 waters.

7050.0470 CLASSIFICATIONS FOR SURFACE WATERS IN MAJOR DRAINAGE BASINS.

Subpart 1. **Lake Superior basin.** The water-use classifications for the stream reaches within each of the major watersheds in the Lake Superior basin listed in item A are found in tables entitled "Beneficial Use Designations for Stream Reaches" published on the website of the Minnesota Pollution Control Agency at www.pca.state.mn.us/regulations/minnesota-rulemaking. The tables are incorporated by reference and are not subject to frequent change. The date after each watershed listed in item A is the publication date of the applicable table. The water-use classifications for the other listed waters in the Lake Superior basin are as identified in items B to D. See parts 7050.0425 and 7050.0430 for the classifications of waters not listed. Designated use information for water bodies can also be accessed through the agency's Environmental Data Access (http://www.pca.state.mn.us/quick-links/eda-surface-water-data).

[For text of item A, see Minnesota Rules]

B. Lakes:

[For text of subitems (1) to (24), see Minnesota Rules]

(25) Cedar Lake, 69-0431-00, (T.58, R.15W, S.20): 1B, ~~2A~~ 2Bd, 3B;

[For text of subitems (26) to (140), see Minnesota Rules]

(141) Twin Lake, ~~69-1345-00~~ lower, 69-0967-00, (T.50, R.14W, S.28, 33): 1B, 2A, 3B;

(142) Twin Lake, upper, 69-0967-01, (T.50, R.14W, S.28, 33): 1B, 2A, 3B;

~~(142)~~ (143) *Twin Lake, upper (Bear Lake), 38-0408-00, [3/7/88R] (T.56, R.8, S.25): 1B, 2A, 3B;

~~(143)~~ (144) unnamed lake, 16-0903-00, (T.63, R.3E, S.20, 21, 28, 29): 1B, 2A, 3B;

~~(144)~~ (145) unnamed lake, 16-0908-00, (T.63, R.1W, S.31): 1B, 2A, 3B;

~~(145)~~ (146) *unnamed lake, 16-0237-00, [11/5/84P] (T.63, R.1, S.19, 30; T.63, R.2, S.24, 25): 1B, 2Bd, 3B;

~~(146)~~ (147) *Vale Lake, 16-0061-00, [11/5/84P] (T.64, R.2E, S.3): 1B, 2A, 3B;

~~(147)~~ (148) Vaseux Lake (East Lily), see Lily Lakes;

~~(148)~~ (149) *Vista Lake, 16-0224-00, [11/5/84P] (T.64, R.1): 1B, 2A, 3B;

~~(149)~~ (150) *Wanihigan Lake (Trap Lake), 16-0349-00, [11/5/84P] (T.63, 64, R.2, 3): 1B, 2A, 3B;

~~(150)~~ (151) *Wee Lake, 16-0183-00, [11/5/84P] (T.62, R.4W, S.13): 1B, 2A, 3B;

~~(151)~~ (152) *Wench Lake, 16-0398-00, [11/5/84P] (T.63, R.3W, S.7, 18): 1B, 2A, 3B;

~~(152)~~ (153) White Pine Lake, 16-0369-00, [WR] (T.61, R.3W, S.19, 20, 29, 30): 2B, 3B; and

~~(153)~~ (154) *Winchell Lake, 16-0354-00, [11/5/84P] (T.64, R.2, 3): 1B, 2A, 3B.

[For text of items C and D, see Minnesota Rules]

[For text of subparts 2 to 9, see Minnesota Rules]