

R 11-18 (13)

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

- 1) Heading of the Part: Water Quality Standards
- 2) Code Citation: 35 Ill. Adm. Code 302
- 3) Section Number: 302.208 Proposed Action: Amend
- 4) Statutory Authority: Implementing Sections 22.12 and 57 - 57.19 and authorized by Sections 27 and 28 of the Environmental Protection Act [415 ILCS 5/22.12, 27, 28, and 57 - 57.19.]
- 5) A Complete Description of the Subjects and Issues Involved: This subdocket proposes technical corrections to recently-adopted amendments to 35 Ill. Adm. Code 302.208, published in the *Illinois Register* at 36 Ill. Reg. 18871 (Dec. 28, 2012). See In the Matter of: Triennial Review of Water Quality Standards for Boron, Fluoride and Manganese: Amendments to 35 Ill. Adm. Code 301.106, 302.Subparts B, C, E, F and 303, R11-18 (Nov. 15, 2012). The unintended errors appear to have occurred between the first notice and final rule adoption publications.

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FEB 22 2013
STATE OF ILLINOIS
Pollution Control Board

A more detailed description of this rulemaking is contained in the Board's first notice opinion and order in this Technical Corrections to Triennial Review of Water Quality Standards Amendments for Fluoride and Manganese: Amendments to 35 Ill. Adm. Code 302.208(b) and (e), R11-18(B) (Feb. 7, 2012). In summary, this subdocket is opened for the limited purpose of making two changes to Section 302.208 (b) and (e), to correct scrivener's errors that occurred during the rulemaking process. The errors occur in the reporting requirements for the water quality standards fluoride (errant appearance of the word "metals" which should have been stricken throughout the section) and manganese (omission of the word "dissolved"). The Board believes that failure to promptly propose corrections to the standards could result in unintended problems for dischargers in monitoring, reporting, and demonstrating compliance with rules that are arguably ambiguous.

The Board has already held the hearings required under Section 27 of the Environmental Protection Act [5 ILCS 5/100 et al. seq.]. The sole purpose of this subdocket B is to have the adopted amendments comport with the rulemaking record on which they are based. The Board does not believe that additional hearings are necessary and, accordingly, does not intend to hold additional hearings, unless they are specifically requested during the first notice comment period as provided by the Administrative Procedure Act (IAPA) [5 ILCS 100/1-1].

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- 6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: None
- 7) Will this rulemaking replace any emergency rulemaking currently in effect? No
- 8) Does this rulemaking contain an automatic repeal date? No
- 9) Does this rulemaking contain incorporations by reference? No
- 10) Are there any proposed rulemakings pending on this Part? No
- 11) Statement of Statewide Policy Objective: This proposed rule does not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act. [30 ILCS 805/3(b) (2010)].
- 12) Time, Place and Manner in which interested persons may comment on this proposed rulemaking:

Interested persons may download copies of the Board's opinion and order in R11-18(b) from the Board's Web site at www.ipcb.state.il.us and may also request copies by calling the Clerk's office at 312-814-3620.

The Board will accept written public comment on this proposal for 45 days after the date of publication in the *Illinois Register*. Comments should refer to Docket R11-18B(b) and be addressed to:

Clerk's Office
Illinois Pollution Control Board
100 W. Randolph St., Suite 11-500
Chicago, IL 60601

- 13) Initial Regulatory Flexibility Analysis:
 - A) Types of small businesses, small municipalities and not for profit corporations affected: Any small businesses, small municipalities and not for profit corporations that discharge wastewaters into "waters of the State" (usually under their National Pollutant Discharge and Elimination System (NPDES) permits).
 - B) Reporting, bookkeeping or other procedures required for compliance: Those needed to comply with current permit requirements.

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- C) Types of Professional skills necessary for compliance: Wastewater treatment plant staff, possibly an environmental engineer.
- 14) Regulatory Agenda on which this rulemaking was summarized: July 2011

The full text of the Proposed Amendment begins on the next page:

JCAR350302-1302436r01

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2 SUBTITLE C: WATER POLLUTION
3 CHAPTER I: POLLUTION CONTROL BOARD
4

5 PART 302
6 WATER QUALITY STANDARDS
7

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56 302.407 Chemical Constituents

57 302.408 Temperature

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59 302.410 Substances Toxic to Aquatic Life

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61 SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

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66 302.503 pH

67 302.504 Chemical Constituents

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70 302.507 Thermal Standards for Existing Sources on January 1, 1971

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75 302.515 Offensive Conditions

76 302.520 Regulation and Designation of Bioaccumulative Chemicals of Concern (BCCs)

77 302.521 Supplemental Antidegradation Provisions for Bioaccumulative Chemicals of
78 Concern (BCCs)

79 302.525 Radioactivity

80 302.530 Supplemental Mixing Provisions for Bioaccumulative Chemicals of Concern
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82 302.535 Ammonia Nitrogen

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97	302.570	Procedures for Deriving Bioaccumulation Factors for the Lake Michigan Basin
98	302.575	Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife
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 142 302.APPENDIX A References to Previous Rules
 143 302.APPENDIX B Sources of Codified Sections
 144 302.APPENDIX C Maximum total ammonia nitrogen concentrations allowable for certain
 145 combinations of pH and temperature
 146 302.TABLE A pH-Dependent Values of the AS (Acute Standard)
 147 302.TABLE B Temperature and pH-Dependent Values of the CS (Chronic Standard) for
 148 Fish Early Life Stages Absent
 149 302.TABLE C Temperature and pH-Dependent Values of the CS (Chronic Standard) for
 150 Fish Early Life Stages Present
 151 302.APPENDIX D Section 302.206(d): Stream Segments for Enhanced Dissolved Oxygen
 152 Protection
 153

154 AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the
 155 Environmental Protection Act [415 ILCS 5/13, 11(b), and 27].
 156

157 SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 44, p. 151,
 158 effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended
 159 at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 6 Ill.
 160 Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26,
 161 1982; amended at 8 Ill. Reg. 1629, effective January 18, 1984; peremptory amendments at 10 Ill.
 162 Reg. 461, effective December 23, 1985; amended at R87-27 at 12 Ill. Reg. 9911, effective May
 163 27, 1988; amended at R85-29 at 12 Ill. Reg. 12082, effective July 11, 1988; amended in R88-1 at
 164 13 Ill. Reg. 5998, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2899, effective
 165 February 13, 1990; amended in R88-21(B) at 14 Ill. Reg. 11974, effective July 9, 1990; amended
 166 in R94-1(A) at 20 Ill. Reg. 7682, effective May 24, 1996; amended in R94-1(B) at 21 Ill. Reg.
 167 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December
 168 23, 1996; amended in R97-25 at 22 Ill. Reg. 1356, effective December 24, 1997; amended in
 169 R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in R01-13 at 26 Ill. Reg. 3505,
 170 effective February 22, 2002; amended in R02-19 at 26 Ill. Reg. 16931, effective November 8,
 171 2002; amended in R02-11 at 27 Ill. Reg. 166, effective December 20, 2002; amended in R04-21
 172 at 30 Ill. Reg. 4919, effective March 1, 2006; amended in R04-25 at 32 Ill. Reg. 2254, effective

173 January 28, 2008; amended in R07-9 at 32 Ill. Reg. 14978, effective September 8, 2008;
174 amended in R11-18 at 36 Ill. Reg. 18871, effective December 12, 2012; amended in R11-18(b)
175 at 37 Ill. Reg. _____, effective _____.

176
177 SUBPART B: GENERAL USE WATER QUALITY STANDARDS

178
179 **Section 302.208 Numeric Standards for Chemical Constituents**

- 180
- 181 a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall
182 not be exceeded at any time except for those waters for which a zone of initial
183 dilution (ZID) has been approved by the Agency pursuant to Section 302.102.
184
 - 185 b) The chronic standard (CS) for the chemical constituents listed in subsection (e)
186 shall not be exceeded by the arithmetic average of at least four consecutive
187 samples collected over any period of at least four days, except for those waters in
188 which the Agency has approved a mixing zone or in which mixing is allowed
189 pursuant to Section 302.102. The samples used to demonstrate attainment or lack
190 of attainment with a CS must be collected in a manner that assures an average
191 representative of the sampling period. For the chemical constituents that have
192 water quality based standards dependent upon hardness, the chronic water quality
193 standard will be calculated according to subsection (e) using the hardness of the
194 water body at the time the sample was collected. To calculate attainment status of
195 chronic metals-standards, the concentration of the chemical constituent in each
196 sample is divided by the calculated water quality standard for the sample to
197 determine a quotient. The water quality standard is attained if the mean of the
198 sample quotients is less than or equal to one for the duration of the averaging
199 period.
200
 - 201 c) The human health standard (HHS) for the chemical constituents listed in
202 subsection (f) shall not be exceeded when the stream flow is at or above the
203 harmonic mean flow pursuant to Section 302.658 nor shall an annual average,
204 based on at least eight samples, collected in a manner representative of the
205 sampling period, exceed the HHS except for those waters in which the Agency
206 has approved a mixing zone or in which mixing is allowed pursuant to Section
207 302.102.
208
 - 209 d) The standard for the chemical constituents of subsections (g) and (h) shall not be
210 exceeded at any time except for those waters in which the Agency has approved a
211 mixing zone or in which mixing is allowed pursuant to Section 302.102.
212
 - 213 e) Numeric Water Quality Standards for the Protection of Aquatic Organisms
214
215

Constituent	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	360 x 1.0* = 360	190 x 1.0* = 190
Boron (total)	40,100	7,600
Cadmium (dissolved)	$e^{A+B\ln(H)} \times \left\{ \frac{1.138672 -}{[(\ln(H))(0.041838)]} \right\}^*$	$e^{A+B\ln(H)} \times \left\{ \frac{1.101672 -}{[(\ln(H))(0.041838)]} \right\}^*$
	where A = -2.918 and B = 1.128	where A = -3.490 and B = 0.7852
Chromium (hexavalent, total)	16	11
Chromium (trivalent, dissolved)	$e^{A+B\ln(H)} \times 0.316^*$	$e^{A+B\ln(H)} \times 0.860^*$
	where A = 3.688 and B = 0.8190	where A = 1.561 and B = 0.8190
Copper (dissolved)	$e^{A+B\ln(H)} \times 0.960^*$	$e^{A+B\ln(H)} \times 0.960^*$
	where A = -1.464 and B = 0.9422	where A = -1.465 and B = 0.8545
Cyanide**	22	5.2
Fluoride (total)	$e^{A+B\ln(H)}$	$e^{A+B\ln(H)}$, but shall not exceed 4.0 mg/L
	where A = 6.7319 and B = 0.5394	where A = 6.0445 and B = 0.5394
Lead (dissolved)	$e^{A+B\ln(H)} \times \left\{ \frac{1.46203 -}{[(\ln H)(0.1457/2)]} \right\}^*$	$e^{A+B\ln(H)} \times \left\{ \frac{1.46203 -}{[(\ln H)(0.145712)]} \right\}^*$

	where $A = -1.301$ and $B = 1.273$	where $A = -2.863$ and $B = 1.273$
Manganese (dissolved)	$e^{A+B\ln(H)} \times 0.9812^*$	$e^{A+B\ln(H)} \times 0.9812^*$
	where $A = 4.9187$ and $B = 0.7467$	where $A = 4.0635$ and $B = 0.7467$
Mercury (dissolved)	$2.6 \times 0.85^* = 2.2$	$1.3 \times 0.85^* = 1.1$
Nickel (dissolved)	$e^{A+B\ln(H)} \times 0.998^*$	$e^{A+B\ln(H)} \times 0.997^*$
	where $A = 0.5173$ and $B = 0.8460$	where $A = -2.286$ and $B = 0.8460$
TRC	19	11
Zinc (dissolved)	$e^{A+B\ln(H)} \times 0.978^*$	$e^{A+B\ln(H)} \times 0.986^*$
	where $A = 0.9035$ and $B = 0.8473$	where $A = -0.4456$ and $B = 0.8473$
Benzene	4200	860
Ethylbenzene	150	14
Toluene	2000	600
Xylene(s)	920	360

where:

- $\mu\text{g/L}$ = microgram per liter
- e^x = base of natural logarithms raised to the x-power
- $\ln(H)$ = natural logarithm of Hardness
- * = conversion factor multiplier for dissolved metals
- ** = standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 301.106:
Method OIA-1677, DW: Available Cyanide by

Flow Injection, Ligand Exchange, and
 Amperometry, January 2004, Document Number
 EPA-821-R-04-001 or Cyanide Amenable to
 Chlorination, Standard Methods 4500-CN-G (40
 CFR 136.3)

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 218
 219

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	(µg/L)
Mercury (total)	0.012
Benzene	310

220

where:

µg/L = micrograms per liter

221
 222
 223

g) Single-value standards apply at the following concentrations for these substances:

Constituent	Unit		Standard
Barium (total)	mg/L		5.0
Chloride (total)	mg/L		500
Iron (dissolved)	mg/L	01046	1.0
Phenols	mg/L		0.1
Selenium (total)	mg/L		1.0
Silver (total)	µg/L		5.0

224

where:

mg/L = milligram per liter and

µg/L = microgram per liter

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h) Water quality standards for sulfate are as follows:

- 1) At any point where water is withdrawn or accessed for purposes of livestock watering, the average of sulfate concentrations must not exceed 2,000 mg/L when measured at a representative frequency over a 30 day period.

233 2) The results of the following equations provide sulfate water quality
234 standards in mg/L for the specified ranges of hardness (in mg/L as CaCO₃)
235 and chloride (in mg/L) and must be met at all times:
236

237 A) If the hardness concentration of receiving waters is greater than or
238 equal to 100 mg/L but less than or equal to 500 mg/L, and if the
239 chloride concentration of waters is greater than or equal to 25
240 mg/L but less than or equal to 500 mg/L, then:
241

$$242 C = [1276.7 + 5.508 (\text{hardness}) - 1.457 (\text{chloride})] * 0.65$$

243 where:
244

245 C = sulfate concentration
246

247 B) If the hardness concentration of waters is greater than or equal to
248 100 mg/L but less than or equal to 500 mg/L, and if the chloride
249 concentration of waters is greater than or equal to 5 mg/L but less
250 than 25 mg/L, then:
251

$$252 C = [-57.478 + 5.79 (\text{hardness}) + 54.163 (\text{chloride})] * 0.65$$

253 where:
254

255 C = sulfate concentration
256

257 3) The following sulfate standards must be met at all times when hardness (in
258 mg/L as CaCO₃) and chloride (in mg/L) concentrations other than
259 specified in (h)(2) are present:
260

261 A) If the hardness concentration of waters is less than 100 mg/L or
262 chloride concentration of waters is less than 5 mg/L, the sulfate
263 standard is 500 mg/L.
264

265 B) If the hardness concentration of waters is greater than 500 mg/L
266 and the chloride concentration of waters is 5 mg/L or greater, the
267 sulfate standard is 2,000 mg/L.
268

269 C) If the combination of hardness and chloride concentrations of
270 existing waters are not reflected in subsection (h)(3)(A) or (B), the
271 sulfate standard may be determined in a site-specific rulemaking
272 pursuant to section 303(c) of the Federal Water Pollution Control
273 Act.
274

275 Act of 1972 (Clean Water Act), 33 USC 1313, and Federal
276 Regulations at 40 CFR 131.10(j)(2).

277

278 (Source: Amended at 37 Ill. Reg. _____, effective _____)

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TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

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SUBPART B: GENERAL USE WATER QUALITY STANDARDS

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302.208	Numeric Standards for Chemical Constituents
302.209	Fecal Coliform
302.210	Other Toxic Substances
302.211	Temperature
302.212	Total Ammonia Nitrogen
302.213	Effluent Modified Waters (Ammonia) (Repealed)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

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302.301	Scope and Applicability
302.302	Algicide Permits

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- 302.304 Chemical Constituents
- 302.305 Other Contaminants
- 302.306 Fecal Coliform
- 302.307 Radium 226 and 228

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INDIGENOUS AQUATIC LIFE STANDARDS

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- 302.402 Purpose
- 302.403 Unnatural Sludge
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- 302.407 Chemical Constituents
- 302.408 Temperature
- 302.409 Cyanide
- 302.410 Substances Toxic to Aquatic Life

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

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- 302.501 Scope, Applicability, and Definitions
- 302.502 Dissolved Oxygen
- 302.503 pH
- 302.504 Chemical Constituents
- 302.505 Fecal Coliform
- 302.506 Temperature
- 302.507 Thermal Standards for Existing Sources on January 1, 1971
- 302.508 Thermal Standards for Sources Under Construction But Not In Operation on
January 1, 1971
- 302.509 Other Sources
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- 302.515 Offensive Conditions
- 302.520 Regulation and Designation of Bioaccumulative Chemicals of Concern (BCCs)
- 302.521 Supplemental Antidegradation Provisions for Bioaccumulative Chemicals of
Concern (BCCs)

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- 302.525 Radioactivity
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- 302.540 Other Toxic Substances
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- 302.550 Analytical Testing
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- 302.555 Determining the Tier I Lake Michigan Acute Aquatic Toxicity Criterion (LMAATC): Independent of Water Chemistry
- 302.560 Determining the Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC): Dependent on Water Chemistry
- 302.563 Determining the Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV)
- 302.565 Determining the Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or the Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV)
- 302.570 Procedures for Deriving Bioaccumulation Factors for the Lake Michigan Basin
- 302.575 Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife
- 302.580 Procedures for Deriving Water Quality Criteria and Values in the Lake Michigan Basin to Protect Human Health – General
- 302.585 Procedures for Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) and the Lake Michigan Basin Human Health Threshold Value (LMHHTV)
- 302.590 Procedures for Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV)
- 302.595 Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

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- 302.603 Definitions
- 302.604 Mathematical Abbreviations
- 302.606 Data Requirements
- 302.612 Determining the Acute Aquatic Toxicity Criterion for an Individual Substance –

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302.615	Determining the Acute Aquatic Toxicity Criterion – Toxicity Independent of Water Chemistry
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302.TABLE C	Temperature and pH-Dependent Values of the CS (Chronic Standard) for Fish Early Life Stages Present
302.APPENDIX D	Section 302.206(d): Stream Segments for Enhanced Dissolved Oxygen Protection

AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the Environmental Protection Act [415 ILCS 5/13, 11(b), and 27].

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENT

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 44, p. 151, effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26, 1982; amended at 8 Ill. Reg. 1629, effective January 18, 1984; peremptory amendments at 10 Ill. Reg. 461, effective December 23, 1985; amended at R87-27 at 12 Ill. Reg. 9911, effective May 27, 1988; amended at R85-29 at 12 Ill. Reg. 12082, effective July 11, 1988; amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2899, effective February 13, 1990; amended in R88-21(B) at 14 Ill. Reg. 11974, effective July 9, 1990; amended in R94-1(A) at 20 Ill. Reg. 7682, effective May 24, 1996; amended in R94-1(B) at 21 Ill. Reg. 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 22 Ill. Reg. 1356, effective December 24, 1997; amended in R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in R01-13 at 26 Ill. Reg. 3505, effective February 22, 2002; amended in R02-19 at 26 Ill. Reg. 16931, effective November 8, 2002; amended in R02-11 at 27 Ill. Reg. 166, effective December 20, 2002; amended in R04-21 at 30 Ill. Reg. 4919, effective March 1, 2006; amended in R04-25 at 32 Ill. Reg. 2254, effective January 28, 2008; amended in R07-9 at 32 Ill. Reg. 14978, effective September 8, 2008; amended in R11-18 at 36 Ill. Reg. 18871, effective December ~~28, 12~~, 2012; amended in R11-18(b) at 37 Ill. Reg. _____, effective _____.

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.208 Numeric Standards for Chemical Constituents

- a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except for those waters for which a zone of initial dilution (ZID) has been approved by the Agency pursuant to Section 302.102.
- b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102. The samples used to demonstrate attainment or lack of attainment with a CS must be collected in a manner that assures an average representative of the sampling period. For the chemical constituents that have water quality based standards dependent upon hardness, the chronic water quality standard will be calculated according to subsection (e) using the hardness of the water body at the time the sample was collected. To calculate attainment status of chronic ~~metals~~ standards, the concentration of the chemical constituent in each

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sample is divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

- c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average, based on at least eight samples, collected in a manner representative of the sampling period, exceed the HHS except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102.
- d) The standard for the chemical constituents of subsections (g) and (h) shall not be exceeded at any time except for those waters in which the Agency has approved a mixing zone or in which mixing is allowed pursuant to Section 302.102.
- e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	360 \times 1.0* = 360	190 \times 1.0* = 190
Boron (total)	40,100	7,600
Cadmium (dissolved)	$e^{A+B\ln(H)} \times \left\{ \frac{1.138672 - \left[\frac{1.138672 - 1}{\ln(H)} \right]}{[(\ln(H))(0.041838)]} \right\}$	$e^{A+B\ln(H)} \times \left\{ \frac{1.101672 - \left[\frac{1.101672 - 1}{\ln(H)} \right]}{[(\ln(H))(0.041838)]} \right\}$
	*	*
	where A = -2.918 and B = 1.128	where A = -3.490 and B = 0.7852
Chromium	16	11

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(hexavalent, total)		
Chromium (trivalent, dissolved)	$e^{A+B\ln(H)} \times 0.316^*$ where $A = 3.688$ and $B = 0.8190$	$e^{A+B\ln(H)} \times 0.860^*$ where $A = 1.561$ and $B = 0.8190$
Copper (dissolved)	$e^{A+B\ln(H)} \times 0.960^*$ where $A = -1.464$ and $B = 0.9422$	$e^{A+B\ln(H)} \times 0.960^*$ where $A = -1.465$ and $B = 0.8545$
Cyanide**	22	5.2
Fluoride (total)	$e^{A+B\ln(H)}$ where $A = 6.7319$ and $B = 0.5394$	$e^{A+B\ln(H)}$, but shall not exceed 4.0 mg/L where $A = 6.0445$ and $B = 0.5394$
Lead (dissolved)	$e^{A=B\ln(H)} \times \left\{ \frac{1.46203 -}{[(\ln H)(0.1457/2)]} \right\}^*$ where $A = -1.301$ and $B = 1.273$	$e^{A=B\ln(H)} \times \left\{ \frac{1.46203 -}{[(\ln H)(0.145712)]} \right\}^*$ where $A = -2.863$ and $B = 1.273$
Manganese <u>(dissolved)</u> (dissolved)	$e^{A+B\ln(H)} \times 0.9812^*$ where $A = 4.9187$ and $B = 0.7467$	$e^{A+B\ln(H)} \times 0.9812^*$ where $A = 4.0635$ and $B = 0.7467$
Mercury	2.6 X 0.85* = 2.2	1.3 X 0.85* = 1.1

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(dissolved)		
Nickel (dissolved)	$e^{A+B\ln(H)} \times 0.998 *$	$e^{A+B\ln(H)} \times 0.997 *$
	where $A = 0.5173$ and $B = 0.8460$	where $A = -2.286$ and $B = 0.8460$
TRC	19	11
Zinc (dissolved)	$e^{A+B\ln(H)} \times 0.978 *$	$e^{A+B\ln(H)} \times 0.986 *$
	where $A = 0.9035$ and $B = 0.8473$	where $A = -0.4456$ and $B = 0.8473$
Benzene	4200	860
Ethylbenzene	150	14
Toluene	2000	600
Xylene(s)	920	360

where:

- $\mu\text{g/L}$ = microgram per liter
- e^x = base of natural logarithms raised to the x-power
- $\ln(H)$ = natural logarithm of Hardness
- *
- ** = conversion factor multiplier for dissolved metals
- ** = standard to be evaluated using either of the following USEPA approved methods, incorporated by reference at 35 Ill. Adm. Code 301.106:
Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001 or Cyanide Amenable to Chlorination, Standard Methods 4500-CN-G (40 CFR 136.3)

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f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	($\mu\text{g/L}$)
Mercury (total)	0.012
Benzene	310

where:

$\mu\text{g/L}$ = micrograms per liter

g) Single-value standards apply at the following concentrations for these substances:

Constituent	Unit	Standard
Barium (total)	mg/L	5.0
Chloride (total)	mg/L	500
Iron (dissolved)	mg/L	01046 1.0
Phenols	mg/L	0.1
Selenium (total)	mg/L	1.0
Silver (total)	$\mu\text{g/L}$	5.0

where:

mg/L = milligram per liter and

$\mu\text{g/L}$ = microgram per liter

h) Water quality standards for sulfate are as follows:

- 1) At any point where water is withdrawn or accessed for purposes of livestock watering, the average of sulfate concentrations must not exceed

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2,000 mg/L when measured at a representative frequency over a 30 day period.

- 2) The results of the following equations provide sulfate water quality standards in mg/L for the specified ranges of hardness (in mg/L as CaCO₃) and chloride (in mg/L) and must be met at all times:

- A) If the hardness concentration of receiving waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 25 mg/L but less than or equal to 500 mg/L, then:

$$C = [1276.7 + 5.508 (\text{hardness}) - 1.457 (\text{chloride})] * 0.65$$

where:

C = sulfate concentration

- B) If the hardness concentration of waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 5 mg/L but less than 25 mg/L, then:

$$C = [-57.478 + 5.79 (\text{hardness}) + 54.163 (\text{chloride})] * 0.65$$

where:

C = sulfate concentration

- 3) The following sulfate standards must be met at all times when hardness (in mg/L as CaCO₃) and chloride (in mg/L) concentrations other than specified in (h)(2) are present:

- A) If the hardness concentration of waters is less than 100 mg/L or chloride concentration of waters is less than 5 mg/L, the sulfate standard is 500 mg/L.

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- B) If the hardness concentration of waters is greater than 500 mg/L and the chloride concentration of waters is 5 mg/L or greater, the sulfate standard is 2,000 mg/L.
- C) If the combination of hardness and chloride concentrations of existing waters are not reflected in subsection (h)(3)(A) or (B), the sulfate standard may be determined in a site-specific rulemaking pursuant to section 303(c) of the Federal Water Pollution Control Act of 1972 (Clean Water Act), 33 USC 1313, and Federal Regulations at 40 CFR 131.10(j)(2).

(Source: Amended at 37 Ill. Reg. _____, effective _____)

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