JOINT COMMITTEE ON ADMINISTRATIVE RULES
ILLINOIS GENERAL ASSEMBLY

700 STRATTON BUILDING
SPRINGFIELD, ILLINOIS 62706
217/785-2254

November 13, 2012

R11-18

Kathleen M. Crowley
Illinois Pollution Control Board
100 W. Randolph Street
Suite 11-500
Chicago IL 60601

Re: Water Quality Standards (35 Ill. Adm. Code 302; 36 Ill Reg. 5721 - 4/13/12)

Dear Ms Crowley:

The enclosed are the Register version and the Code copy of the above-cited rules as those rules are to be inserted in the Administrative Code database. You can use these copies when filing the rulemaking with the Secretary of State.

Please have someone on your staff peruse the enclosed copies to be sure that they reflect the language of the rule as you now understand it to exist; i.e., the original draft with any First Notice changes, technical corrections and Agreements included.

If you notice any errors or discrepancies in the enclosed versions, please notify us as quickly as possible and we will provide a corrected version you can certify to the Code Division. This material will be integrated into the Code database when adoption of the rule appears in the Illinois Register.

Thank you for your cooperation and assistance.

Sincerely,

Vicki Thomas
Executive Director

VT:DC:rm
Enc.

November 13, 2012

Thomas Holbrook, Chairman
Pollution Control Board
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601

Dear Director Holbrook:

This is to notify you that JCAR considered the following proposed rulemakings at its 11/13/12 meeting:

Introduction (35 Ill. Adm. Code 301)
36 Ill. Reg. 5713 - 4/13/12

Water Quality Standards (35 Ill. Adm. Code 302)
36 Ill Reg. 5721 - 4/13/12

Water Use Designations and Site-Specific Water Quality Standards (35 Ill. Adm. Code 303)
36 Ill. Reg. 5756 - 4/13/12

If your agency has agreed to any substantive modifications during its discussions with JCAR, they are described in the Agreements attached to the certification. Based on these agreements, as well as the other responses you have provided the Committee during the review of these rulemakings, JCAR has determined that No Objection will be issued. Enclosed you will find formal certification of this action.

These rulemakings may now be adopted upon filing with the Office of the Secretary of State.

Please note that the fact that the Committee has not objected to these rulemakings does not necessarily constitute approval, expressed or implied, of the substance of the rulemakings.

Thank you for the cooperation your agency has shown during our review of these issues.

Sincerely,

Senator Maggie Crotty
Co-Chairman

Representative Angelo "Skip" Saviano
Co-Chairman

SMC:RBH:DC:rm
cc: Kathleen Crowley
John Therriault
Enc.

SECOND NOTICE CHANGES

Agency: Pollution Control Board

Rulemaking: Water Quality Standards (35 Ill. Adm. Code 302; 36 Ill. Reg. 5721)

Changes:

1. In lines 370-371, delete "800 I Street, N.W., Washington, D.C. 20001-3710,".

2. In line 374, after "3710" add a comma.

3. In line 389, after "20402" add a comma.

4. In lines 501 and 542, strike the commas.

10/30/12

JOINT COMMITTEE ON ADMINISTRATIVE RULES
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JOINT COMMITTEE ON ADMINISTRATIVE RULES

CERTIFICATION OF NO OBJECTION TO PROPOSED RULEMAKING

This is to certify that the Joint Committee on Administrative Rules, at its 11/13/12 meeting, considered Water Quality Standards (35 Ill. Adm. Code 302; 36 Ill Reg. 5721), proposed by the Pollution Control Board and published in the 4/13/12 issue of the Illinois Register. After consideration, and based upon the Agreements, if any, for modification of the rulemaking made by the agency and attached to this document, the Committee determined that no Objection will be issued to the above-mentioned rulemaking.

November 13, 2012

Vicki Thomas
Executive Director

Attachments: Agreements

POLLUTION CONTROL BOARD

NOTICE OF ADOPTED AMENDMENTS

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

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section

SUBPART D: SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

302.618	Determining the Acute Aquatic Toxicity Criterion – Toxicity Dependent on Water Chemistry
302.621	Determining the Acute Aquatic Toxicity Criterion – Procedure for Combinations of Substances
302.627	Determining the Chronic Aquatic Toxicity Criterion for an Individual Substance – General Procedures
302.630	Determining the Chronic Aquatic Toxicity Criterion – Procedure for Combinations of Substances
302.633	The Wild and Domestic Animal Protection Criterion
302.642	The Human Threshold Criterion
302.645	Determining the Acceptable Daily Intake
302.648	Determining the Human Threshold Criterion
302.651	The Human Nonthreshold Criterion
302.654	Determining the Risk Associated Intake
302.657	Determining the Human Nonthreshold Criterion
302.658	Stream Flow for Application of Human Nonthreshold Criterion
302.660	Bioconcentration Factor
302.663	Determination of Bioconcentration Factor
302.666	Utilizing the Bioconcentration Factor
302.669	Listing of Derived Criteria

302.APPENDIX A	References to Previous Rules
302.APPENDIX B	Sources of Codified Sections
302.APPENDIX C	Maximum total ammonia nitrogen concentrations allowable for certain combinations of pH and temperature
302.TABLE A	pH-Dependent Values of the AS (Acute Standard)
302.TABLE B	Temperature and pH-Dependent Values of the CS (Chronic Standard) for Fish Early Life Stages Absent
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].

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. _____, 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~~as provided in subsection (d)~~.

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~~as provided in subsection (d)~~. 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 ~~metals~~ 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 ~~metals~~ sample was collected. To calculate attainment status of chronic metals standards, the concentration of the chemical constituent~~metal~~ in each 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~~as provided in subsection (d)~~.

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.~~In waters where mixing is allowed pursuant to Section 302.102, the following apply:~~

~~1)~~ ~~The AS shall not be exceeded in any waters except for those waters for which the Agency has approved a zone of initial dilutions (ZID) pursuant to Section 302.102.~~

~~2)~~ ~~The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.~~

~~3)~~ ~~The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.~~

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	~~STORET Number~~	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	~~22680~~	360 X 1.0* = 360	190 X 1.0* = 190
Boron (total)		40,100	7,600
Cadmium (dissolved)	~~01025~~	$e^{A+B\ln(H)} \times \left\{1.138672 - [(\ln(H))(0.041838)]\right\}$ *; where A = -2.918 and B = 1.128	$e^{A+B\ln(H)} \times \left\{1.101672 - [(\ln(H))(0.041838)]\right\}$ *; where A = -3.490 and B = 0.7852

Chromium (hexavalent, total)	~~01032~~	16	11
Chromium (trivalent, dissolved)	~~80357~~	$e^{A+B\ln(H)} \times 0.316$ *; 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)	~~01040~~	$e^{A+B\ln(H)} \times 0.960$ *; 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**	~~00718~~	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)	~~01049~~	$e^{A=B\ln(H)} \times \left\{1.46203 - [(\ln H)(0.1457/2)]\right\}$ *; where $A = -1.301$ and $B = 1.273$	$e^{A=B\ln(H)} \times \left\{1.46203 - [(\ln H)(0.145712)]\right\}$ *; where $A = -2.863$ and $B = 1.273$
Manganese		$e^{A+B\ln(H)} \times 0.9812$* 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 (dissolved)	~~71890~~	2.6 X 0.85* = 2.2	1.3 X 0.85* = 1.1

Nickel (dissolved)	~~01065~~	$e^{A+B\ln(H)} \times 0.998$ *; where $A = 0.5173$ and $B = 0.8460$	$e^{A+B\ln(H)} \times 0.997$ *; where $A = -2.286$ and $B = 0.8460$
TRC	~~500600~~	19	11
Zinc (dissolved)	~~01090~~	$e^{A+B\ln(H)} \times 0.978$ *; where $A = 0.9035$ and $B = 0.8473$	$e^{A+B\ln(H)} \times 0.986$ *; where $A = -0.4456$~~$A = -0.8165$~~ and $B = 0.8473$
Benzene	~~78124~~	4200	860
Ethylbenzene	~~78113~~	150	14
Toluene	~~78131~~	2000	600
Xylene(s)	~~81551~~	920	360

where:

µg/L = microgram per liter
e^x = base of natural logarithms raised to the x-power
ln(H) = natural logarithm of Hardness ~~(STORET 00900)~~
* = 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)

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

Constituent	~~STORET~~	(µg/L)

	~~Number~~	
Mercury (total)	~~71900~~	0.012
Benzene	~~78124~~	310

where:
µg/L = micrograms per liter

g) Single-value standards apply at the following concentrations for these substances:~~Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.~~

Constituent	Unit	~~STORET Number~~	Standard
Barium (total)	mg/L	~~01007~~	5.0
~~Boron (total)~~	~~mg/L~~	~~01022~~	~~1.0~~
Chloride (total)	mg/L	~~00940~~	500
~~Fluoride~~	~~mg/L~~	~~00951~~	~~1.4~~
Iron (dissolved)	mg/L	01046	1.0
~~Manganese (total)~~	~~mg/L~~	~~01055~~	~~1.0~~
Phenols	mg/L	~~32730~~	0.1
Selenium (total)	mg/L	~~01147~~	1.0
Silver (total)	µg/L	~~01077~~	5.0

where:
mg/L = milligram per liter and
µg/L = microgram per liter

h) Water quality standards for sulfate are as follows~~The following concentrations for sulfate must not be exceeded except in receiving waters for which mixing is allowed pursuant to Section 302.102~~:

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.

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 $CaCO_3$) 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:~~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:~~Where~~

      C = sulfate concentration

3) The following sulfate standards must be met at all times when hardness (in mg/L as $CaCO_3$) 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.

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 36 Ill. Reg. _____, effective _____)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section 302.303 Finished Water Standards

Water shall be of such quality that with treatment consisting of coagulation, sedimentation, filtration, storage and chlorination, or other equivalent treatment processes, the treated water shall meet in all respects the requirements of Part 611~~604~~.
(Note: Prior to codification, Table I, Rule 304 of Ch 6: Public Water Supplies)

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.304 Chemical Constituents

The following levels of chemical constituents shall not be exceeded:

CONSTITUENT	~~STORET NUMBER~~	CONCENTRATION (mg/1)
Arsenic (total)	~~01002~~	0.05
Barium (total)	~~01007~~	1.0
Boron (total)		1.0
Cadmium (total)	~~01027~~	0.010
Chloride (total)	~~00940~~	250~~.~~
Chromium	~~01034~~	0.05
Fluoride (total)		1.4
Iron (dissolved)	~~01046~~	0.3

Lead (total)	~~01051~~	0.05
Manganese (total)	~~01055~~	1.0~~0.15~~
Nitrate-Nitrogen	~~00620~~	10~~.~~
Oil (hexane-solubles or equivalent)	~~00550, 00556 or~~ ~~00560~~	0.1
Organics		
Pesticides		
Chlorinated Hydro-carbon Insecticides		
Aldrin	~~39330~~	0.001
Chlordane	~~39350~~	0.003
DDT	~~39370~~	0.05
Dieldrin	~~39380~~	0.001
Endrin	~~39390~~	0.0002
Heptachlor	~~39410~~	0.0001
Heptachlor Expoxide	~~39420~~	0.0001
Lindane	~~39782~~	0.004
Methoxychlor	~~39480~~	0.1
Toxaphene	~~39400~~	0.0005
Organophosphate Insecticides		
Parathion	~~39540~~	0.1
Chlorophenoxy Herbicides		
2,4-Dichlorophenoxy-acetic acid (2,4-D)	~~39730~~	0.1
2-(2,4,5-Trichloro-phenoxy)-propionic acid (2,4,5-TP or Silvex)	~~39760~~	0.01
Phenols	~~32730~~	0.001
Selenuim (total)	~~01147~~	0.01
Sulphates	~~00945~~	250~~.~~
Total Dissolved Solids	~~70300~~	500~~.~~

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.504 Chemical Constituents

The following concentrations of chemical constituents must not be exceeded, except as provided in Sections 302.102 and 302.530:

a) The following standards must be met in all waters of the Lake Michigan Basin. Acute aquatic life standards (AS) must not be exceeded at any time except for those waters for which the Agency has approved a zone of initial dilution (ZID) pursuant to Sections 302.102 and 302.530. Chronic aquatic life standards (CS) and human health standards (HHS) must not be exceeded outside of waters in which mixing is allowed pursuant to Sections 302.102 and 302.530 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the CS or HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	~~STORET~~ ~~Number~~	Unit	AS	CS	HHS
Arsenic (Trivalent, dissolved)	~~22680~~	µg/L	$340 \times 1.0^* = 340$	$340 \times 1.0^* = 148$	NA
Boron (total)		mg/L	40.1	7.6	NA
Cadmium (dissolved)	~~01025~~	µg/L	$\exp[A + B\ln(H)] \times \{1.138672 - [(\ln H)(0.041838)]\}^*$; where A = -3.6867 and B = 1.128	$\exp[A + B\ln(H)] \times \{1.101672 - [(\ln H)(0.041838)]\}^*$; where A = -2.715 and B = 0.7852	NA
Chromium (Hexavalent, total)	~~01032~~	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	~~80357~~	µg/L	$\exp[A + B\ln(H)] \times 0.316^*$; where A = 3.7256 and B = 0.819	$\exp[A + B\ln(H)] \times 0.860^*$; where A = 0.6848 and B = 0.819	NA
Copper (dissolved)	~~01040~~	µg/L	$\exp[A + B\ln(H)] \times 0.960^*$;	$\exp[A + B\ln(H)] \times 0.960^*$;	NA

			where A = -1.700 and B = 0.9422	where A = -1.702 and B = 0.8545	
Cyanide**~~(Weak acid dissociable)~~	~~00718~~	µg/L	22	5.2	NA
Fluoride (total)		µg/L	$\exp[A+B\ln(H)]$ where A = 6.7319 and B = 0.5394	$\exp[A+B\ln(H)]$, but shall not exceed 4.0 mg/L where A = 6.0445 and B = 0.5394	NA
Lead (dissolved)	~~01049~~	µg/L	$\exp[A+B\ln(H)]\times$ $\{1.46203-[(\ln H)(0.145712)]\}$*~~;~~ where A = -1.055 and B =1.273	$\exp[A+B\ln(H)]\times$ $\{1.46203-[(\ln H)(0.145712)]\}$*~~;~~ where A = -4.003 and B = 1.273	NA
Manganese (dissolved)		µg/L	$\exp[A+B\ln(H)]\times$ 0.9812* where A = 4.9187 and B = 0.7467	$\exp[A+B\ln(H)]\times$ 0.9812* where A = 4.0635 and B = 0.7467	NA
Nickel (dissolved)	~~01065~~	µg/L	$\exp[A+B\ln(H)]\times$ 0.998*~~;~~ where A = 2.255 and B = 0.846	$\exp[A+B\ln(H)]\times$ 0.997*~~;~~ where A = 0.0584 and B = 0.846	NA
Selenium (dissolved)	~~01145~~	µg/L	NA	5.0	NA
TRC	~~50060~~	µg/L	19	11	NA
Zinc (dissolved)	~~01090~~	µg/L	$\exp[A+B\ln(H)]\times$	$\exp[A+B\ln(H)]\times$	NA

			0.978*~~;~~ where A = 0.884 and B = 0.8473	0.986*~~;~~ where A = 0.884 and B = 0.8473	
Benzene	~~78124~~	µg/L	3900	800	310
Chlorobenzene	~~34301~~	mg/L	NA	NA	3.2
2.4-Dimethylphenol	~~34606~~	mg/L	NA	NA	8.7
2,4-Dinitrophenol	~~03756~~	mg/L	NA	NA	2.8
Endrin	~~39390~~	µg/L	0.086	0.036	NA
Ethylbenzene	~~78113~~	µg/L	150	14	NA
Hexachloroethane	~~34396~~	µg/L	NA	NA	6.7
Methylene chloride	~~34423~~	mg/L	NA	NA	2.6
Parathion	~~39540~~	µg/L	0.065	0.013	NA
Pentachlorophenol	~~03761~~	µg/L	$\exp B([pH]+A)$~~;~~ where A = -4.869 and B = 1.005	$\exp B([pH]+A)$~~;~~ where A = -5.134 and B = 1.005	NA
Toluene	~~78131~~	µg/L ~~mg/L~~	2000	610	51.0
Trichloroethylene	~~39180~~	µg/L	NA	NA	370
Xylene(s)	~~81551~~	µg/L	1200	490	NA

where~~Where~~:

NA = Not Applied

Exp[x] = base of natural logarithms raised to the x-power

ln(H) = natural logarithm of Hardness ~~(STORET 00900)~~

* = 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 302.510: 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).

b) The following water quality standards must not be exceeded at any time in any waters of the Lake Michigan Basin, unless a different standard is specified under subsection (c) of this Section.

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Barium (total)	01007	mg/L	5.0
~~Boron (total)~~	~~01022~~	~~mg/L~~	~~1.0~~
Chloride (total)	~~00940~~	mg/L	500
~~Fluoride~~	~~00951~~	~~mg/L~~	~~1.4~~
Iron (dissolved)	~~01046~~	mg/L	1.0
~~Manganese (total)~~	~~01055~~	~~mg/L~~	~~1.0~~
Phenols	~~32730~~	mg/L	0.1
Sulfate	~~00945~~	mg/L	500
Total Dissolved Solids	~~70300~~	mg/L	1000

c) In addition to the standards specified in subsections (a) and (b) of this Section, the following standards must not be exceeded at any time in the Open Waters of Lake Michigan as defined in Section 302.501.

Constituent	~~STORET Number~~	Unit	Water Quality Standard

Arsenic (total)	~~01002~~	µg/L	50.0
Boron (total)		mg/L	1.0
Barium (total)	~~01007~~	mg/L	1.0
Chloride (total)	~~00940~~	mg/L	12.0
Fluoride (total)		mg/L	1.4
Iron (dissolved)	~~01046~~	mg/L	0.30
Lead (total)	~~01051~~	µg/L	50.0
Manganese (total)	~~01055~~	mg/L	0.15
Nitrate-Nitrogen	~~00620~~	mg/L	10.0
Phosphorus	~~00665~~	µg/L	7.0
Selenium (total)	~~01147~~	µg/L	10.0
Sulfate	~~00945~~	mg/L	24.0
Total Dissolved Solids	~~70300~~	mg/L	180.0
Oil (hexane solubles or equivalent)	~~00550, 00556 or 00560~~	mg/L	0.10
Phenols	~~32730~~	µg/L	1.0

d) In addition to the standards specified in subsections (a), (b) and (c) of this Section, the following human health standards (HHS) must not be exceeded in the Open Waters of Lake Michigan as defined in Section 302.501 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Benzene	~~34030~~	µg/L	12.0
Chlorobenzene	~~34301~~	µg/L	470.0

2,4-Dimethylphenol	~~34606~~	µg/L	450.0
2,4-Dinitrophenol	~~03757~~	µg/L	55.0
Hexachloroethane (total)	~~34396~~	µg/L	5.30
Lindane	~~39782~~	µg/L	0.47
Methylene chloride	~~34423~~	µg/L	47.0
~~Toluene~~	~~78131~~	~~mg/L~~	~~5.60~~
Trichloroethylene	~~39180~~	µg/L	29.0

e) For the following bioaccumulative chemicals of concern (BCCs), acute aquatic life standards (AS) must not be exceeded at any time in any waters of the Lake Michigan Basin and chronic aquatic life standards (CS), human health standards (HHS), and wildlife standards (WS) must not be exceeded in any waters of the Lake Michigan Basin by the arithmetic average of at least four consecutive samples collected over a period of at least four days subject to the limitations of Sections 302.520 and 302.530. The samples used to demonstrate compliance with the HHS and WS must be collected in a manner that assures an average representation of the sampling period.

Constituent	~~STORET Number~~	Unit	AS	CS	HHS	WS
Mercury (total)	~~71900~~	ng/L	1,700	910	3.1	1.3
Chlordane	~~39350~~	ng/L	NA	NA	0.25	NA
DDT and metabolites	~~39370~~	pg/L	NA	NA	150	11.0
Dieldrin	~~39380~~	ng/L	240	56	0.0065	NA
Hexachlorobenzene	~~39700~~	ng/L	NA	NA	0.45	NA
Lindane	~~39782~~	µg/L	0.95	NA	0.5	NA
PCBs (class)	~~79819~~	pg/L	NA	NA	26	120
2,3,7,8-TCDD	~~03556~~	fg/L	NA	NA	8.6	3.1
Toxaphene	~~39400~~	pg/L	NA	NA	68	NA

where~~Where~~:

mg/L = milligrams per liter (10^{-3} grams per liter)

µg/L = micrograms per liter (10^{-6} grams per liter)

ng/L = nanograms per liter (10^{-9} grams per liter)

pg/L = picograms per liter (10^{-12} grams per liter)

fg/L = femtograms per liter (10^{-15} grams per liter)

NA = Not Applied

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.510 Incorporations by Reference

a) The Board incorporates the following publications by reference:

American Public Health Association et al., Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005. Available from the American Public Health Association, 800 I Street, NW, Washington, D.C. 20001-3710, (202)777-2742.

~~American Public Health Association et al., 1015 Fifteenth Street, N.W., Washington, D.C. 20005, Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1996. Available from the American Public Health Association, 1015 Fifteenth St., NW, Washington, D.C. 20005 (202)789-5600.~~

USEPA. United States Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C. 20460, Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001.

b) The Board incorporates the following federal regulations by reference. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238:

40 CFR 136 (1996)

POLLUTION CONTROL BOARD

NOTICE OF ADOPTED AMENDMENTS

40 CFR 141 (1988)

40 CFR 302.4 (1988)

The Sections of 40 CFR 132 (1996) listed below:

Appendix A

Section I A

Section II

Section III C

Section IV D, E, F, G, H, and I

Section V C

Section VI A, B, C, D, E, and F

Section VIII

Section XI

Section XVII

Appendix B

Section III

Section VII B and C

Section VIII

Appendix C

Section II

Section III A (1 through 6 and 8), B (1 and 2)

Appendix D

Section III C, D, and E

Section IV

c~~d~~) This Section incorporates no future editions or amendments.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.553 Determining the Lake Michigan Aquatic Toxicity Criteria or Values – General Procedures

The Lake Michigan Aquatic Life Criteria and Values are those concentrations or levels of a substance at which aquatic life is protected from adverse effects resulting from short or long term exposure in water.

a) Tier I criteria and Tier II values to protect against acute effects in aquatic organisms will be calculated according to procedures listed at Sections 302.555, 302.560 and 302.563. The procedures of Section 302.560 shall be used as necessary to allow for interactions with other water quality characteristics such as hardness, pH, temperature, etc. Tier I criteria and Tier II values to protect against chronic effects in aquatic organisms shall be calculated according to the procedures listed at Section 302.565.

b) Minimum data requirements. In order to derive a Tier I acute or chronic criterion, data must be available for at least one species of freshwater animal in at least eight different families such that the following taxa are included:

1) The family Salmonidae in the class Osteichthyes;

2) One other family in the class Osteichthyes;

3) A third family in the phylum Chordata;

4) A planktonic crustacean;

5) A benthic crustacean;

6) An insect;

7) A family in a phylum other than Arthropoda or Chordata; and

8) A family from any order of insect or any phylum not already represented.

c) Data for tests with plants, if available, must be included in the data set.

d) If data for acute effects are not available for all the eight families listed above, but are available for the family Daphnidae, a Tier II value shall be derived according to procedures in Section 302.563. If data for chronic effects are not available for all the eight families, but there are acute and chronic data available according to Section 302.565(b) so that three acute to chronic ratios (ACRs) can be calculated, then a Tier I chronic criterion can be derived according to procedures in Section 302.565. If three ACRs are not available, then a Tier II chronic value can be derived according to procedures in Section 302.565(be).

e) Data must be obtained from species that have reproducing wild populations in North America except that data from salt water species can be used in the derivation of an ACR.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.595 Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

a) The Agency shall maintain a listing of toxicity criteria and values derived pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion or value is derived~~periodically but no less frequently than quarterly,~~ and shall be published when updated in the Illinois Register.

b) A criterion or value published pursuant to subsection (a) of this Section may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion or value listed pursuant to subsection (a) of this Section until adopted by the Board as a numeric water quality standard.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section 302.648 Determining the Human Threshold Criterion

The HTC is calculated according to the equation:

HTC = ADI/[W + (F x BCF)]

where~~Where~~:

HTC = Human health protection criterion in milligrams per liter (mg/L);

ADI = Acceptable daily intake of substance in milligrams per day (mg/d) as specified in Section 302.645;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102 ~~302.201~~(b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic organism Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Sections 302.660 through 302.666.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.657 Determining the Human Nonthreshold Criterion

The HNC is calculated according to the equation:

HNC = RAI/[W + (F x BCF)]

where~~Where~~:

HNC = Human Nonthreshold Protection Criterion in milligrams per liter (mg/L);

RAI = Risk Associated Intake of a substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 1,000,000 as derived in Section 302.654;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102~~302.201~~(b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic Life Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Section 302.663.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.669 Listing of Derived Criteria

a) The Agency shall develop and maintain a listing of toxicity criteria pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion is derived~~periodically but no less frequently than quarterly,~~ and shall be published when updated in the Illinois Register.

b) A criterion published pursuant to subsection (a) may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion listed pursuant to subsection (a) until adopted by the Board as a water quality standard.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

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

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

SUBPART D: SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

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].

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. _____, effective _____.

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 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 X 1.0* = 360	190 X 1.0* = 190
Boron (total)	40,100	7,600
Cadmium (dissolved)	$e^{A+B\ln(H)} \times \left\{1.138672 - [(\ln(H))(0.041838)]\right\}$*	$e^{A+B\ln(H)} \times \left\{1.101672 - [(\ln(H))(0.041838)]\right\}$*
	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)	$e^{A=B1n(H)} \times \left\{1.46203 - [(\ln H)(0.1457/2)]\right\}$*	$e^{A=B1n(H)} \times \left\{1.46203 - [(\ln H)(0.145712)]\right\}$*
	where A = -1.301 and	where A = -2.863 and

	$B = 1.273$	$B = 1.273$
Manganese	$e^{A+B\ln(H)} \times 0.9812$*	$e^{A+B\ln(H)} \times 0.9812$*
	where $A = 4.9187$ and $B = 0.7467$	where $A = 4.0635$ and $B = 0.7467$
Mercury (dissolved)	2.6 X 0.85* = 2.2	1.3 X 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:

µg/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)

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

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

where:
µg/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)	µg/L		5.0

where:
mg/L = milligram per liter and
µg/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

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 $CaCO_3$) 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 $CaCO_3$) 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.

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 36 Ill. Reg. _____, effective _____)

Section 302.303 Finished Water Standards

Water shall be of such quality that with treatment consisting of coagulation, sedimentation, filtration, storage and chlorination, or other equivalent treatment processes, the treated water shall meet in all respects the requirements of Part 611.
(Note: Prior to codification, Table I, Rule 304 of Ch 6: Public Water Supplies)

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.304 Chemical Constituents

The following levels of chemical constituents shall not be exceeded:

CONSTITUENT	CONCENTRATION (mg/l)
Arsenic (total)	0.05
Barium (total)	1.0
Boron (total)	1.0
Cadmium (total)	0.010
Chloride (total)	250
Chromium	0.05
Fluoride (total)	1.4
Iron (dissolved)	0.3
Lead (total)	0.05
Manganese (total)	1.0
Nitrate-Nitrogen	10
Oil (hexane-solubles or equivalent)	0.1
Organics	
Pesticides	
Chlorinated Hydro-carbon Insecticides	
Aldrin	0.001
Chlordane	0.003

DDT	0.05
Dieldrin	0.001
Endrin	0.0002
Heptachlor	0.0001
Heptachlor Expoxide	0.0001
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.0005
Organophosphate Insecticides	
Parathion	0.1
Chlorophenoxy Herbicides	
2,4-Dichlorophenoxy-acetic acid (2,4-D)	0.1
2-(2,4,5-Trichloro-phenoxy)-propionic acid (2,4,5-TP or Silvex)	0.01
Phenols	0.001
Selenuim (total)	0.01
Sulphates	250
Total Dissolved Solids	500

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.504 Chemical Constituents

The following concentrations of chemical constituents must not be exceeded, except as provided in Sections 302.102 and 302.530:

a) The following standards must be met in all waters of the Lake Michigan Basin. Acute aquatic life standards (AS) must not be exceeded at any time except for those waters for which the Agency has approved a zone of initial dilution (ZID) pursuant to Sections 302.102 and 302.530. Chronic aquatic life standards (CS) and human health standards (HHS) must not be exceeded outside of waters in which mixing is allowed pursuant to Sections 302.102 and 302.530 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the CS or HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	Unit	AS	CS	HHS

Arsenic (Trivalent, dissolved)	µg/L	$340 \times 1.0^* = 340$	$340 \times 1.0^* = 148$	NA
Boron (total)	mg/L	40.1	7.6	NA
Cadmium (dissolved)	µg/L	$\exp[A + B\ln(H)] \times \{1.138672 - [(\ln H)(0.041838)]\}^*$ where A = -3.6867 and B = 1.128	$\exp[A + B\ln(H)] \times \{1.101672 - [(\ln H)(0.041838)]\}^*$ where A = -2.715 and B = 0.7852	NA
Chromium (Hexavalent, total)	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	µg/L	$\exp[A + B\ln(H)] \times 0.316^*$ where A = 3.7256 and B = 0.819	$\exp[A + B\ln(H)] \times 0.860^*$ where A = 0.6848 and B = 0.819	NA
Copper (dissolved)	µg/L	$\exp[A + B\ln(H)] \times 0.960^*$ where A = -1.700 and B = 0.9422	$\exp[A + B\ln(H)] \times 0.960^*$ where A = -1.702 and B = 0.8545	NA
Cyanide**	µg/L	22	5.2	NA
Fluoride (total)	µg/L	$\exp[A + B\ln(H)]$ where A = 6.7319 and B = 0.5394	$\exp[A + B\ln(H)]$, but shall not exceed 4.0 mg/L where A = 6.0445 and B = 0.5394	NA
Lead (dissolved)	µg/L	$\exp[A + B\ln(H)] \times \{1.46203 - [(\ln H)(0.145712)]\}^*$	$\exp[A + B\ln(H)] \times \{1.46203 - [(\ln H)(0.145712)]\}^*$	NA

		where A = -1.055 and B =1.273	where A = -4.003 and B = 1.273	
Manganese (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.9812*	$\exp[A+B\ln(H)]\times$ 0.9812*	NA
		where A = 4.9187 and B = 0.7467	where A = 4.0635 and B = 0.7467	
Nickel (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.998*	$\exp[A+B\ln(H)]\times$ 0.997*	NA
		where A = 2.255 and B = 0.846	where A = 0.0584 and B = 0.846	
Selenium (dissolved)	µg/L	NA	5.0	NA
TRC	µg/L	19	11	NA
Zinc (dissolved)	µg/L	$\exp[A+B\ln(H)]\times$ 0.978*	$\exp[A+B\ln(H)]\times$ 0.986*	NA
		where A = 0.884 and B = 0.8473	where A = 0.884 and B = 0.8473	
Benzene	µg/L	3900	800	310
Chlorobenzene	mg/L	NA	NA	3.2
2.4-Dimethylphenol	mg/L	NA	NA	8.7
2,4-Dinitrophenol	mg/L	NA	NA	2.8
Endrin	µg/L	0.086	0.036	NA
Ethylbenzene	µg/L	150	14	NA
Hexachloroethane	µg/L	NA	NA	6.7
Methylene chloride	mg/L	NA	NA	2.6

Parathion	µg/L	0.065	0.013	NA
Pentachlorophenol	µg/L	$\exp B([pH]+A)$ where A = -4.869 and B = 1.005	$\exp B([pH]+A)$ where A = -5.134 and B = 1.005	NA
Toluene	µg/L	2000	610	51.0
Trichloroethylene	µg/L	NA	NA	370
Xylene(s)	µg/L	1200	490	NA

where:

NA = Not Applied

Exp[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 302.510: 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).

b) The following water quality standards must not be exceeded at any time in any waters of the Lake Michigan Basin, unless a different standard is specified under subsection (c) of this Section.

Constituent		Unit	Water Quality Standard
Barium (total)	01007	mg/L	5.0
Chloride (total)		mg/L	500
Iron (dissolved)		mg/L	1.0

Phenols	mg/L	0.1
Sulfate	mg/L	500
Total Dissolved Solids	mg/L	1000

c) In addition to the standards specified in subsections (a) and (b) of this Section, the following standards must not be exceeded at any time in the Open Waters of Lake Michigan as defined in Section 302.501.

Constituent	Unit	Water Quality Standard
Arsenic (total)	µg/L	50.0
Boron (total)	mg/L	1.0
Barium (total)	mg/L	1.0
Chloride (total)	mg/L	12.0
Fluoride (total)	mg/L	1.4
Iron (dissolved)	mg/L	0.30
Lead (total)	µg/L	50.0
Manganese (total)	mg/L	0.15
Nitrate-Nitrogen	mg/L	10.0
Phosphorus	µg/L	7.0
Selenium (total)	µg/L	10.0
Sulfate	mg/L	24.0
Total Dissolved Solids	mg/L	180.0
Oil (hexane solubles or equivalent)	mg/L	0.10
Phenols	µg/L	1.0

d) In addition to the standards specified in subsections (a), (b) and (c) of this Section, the following human health standards (HHS) must not be exceeded in the Open Waters of Lake Michigan as defined in Section 302.501 by the arithmetic average

of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	Unit	Water Quality Standard
Benzene	µg/L	12.0
Chlorobenzene	µg/L	470.0
2,4-Dimethylphenol	µg/L	450.0
2,4-Dinitrophenol	µg/L	55.0
Hexachloroethane (total)	µg/L	5.30
Lindane	µg/L	0.47
Methylene chloride	µg/L	47.0
Trichloroethylene	µg/L	29.0

e) For the following bioaccumulative chemicals of concern (BCCs), acute aquatic life standards (AS) must not be exceeded at any time in any waters of the Lake Michigan Basin and chronic aquatic life standards (CS), human health standards (HHS), and wildlife standards (WS) must not be exceeded in any waters of the Lake Michigan Basin by the arithmetic average of at least four consecutive samples collected over a period of at least four days subject to the limitations of Sections 302.520 and 302.530. The samples used to demonstrate compliance with the HHS and WS must be collected in a manner that assures an average representation of the sampling period.

Constituent	Unit	AS	CS	HHS	WS
Mercury (total)	ng/L	1,700	910	3.1	1.3
Chlordane	ng/L	NA	NA	0.25	NA
DDT and metabolites	pg/L	NA	NA	150	11.0
Dieldrin	ng/L	240	56	0.0065	NA
Hexachlorobenzene	ng/L	NA	NA	0.45	NA
Lindane	µg/L	0.95	NA	0.5	NA
PCBs (class)	pg/L	NA	NA	26	120

2,3,7,8-TCDD	fg/L	NA	NA	8.6	3.1
Toxaphene	pg/L	NA	NA	68	NA

where:

mg/L = milligrams per liter (10^{-3} grams per liter)

µg/L = micrograms per liter (10^{-6} grams per liter)

ng/L = nanograms per liter (10^{-9} grams per liter)

pg/L = picograms per liter (10^{-12} grams per liter)

fg/L = femtograms per liter (10^{-15} grams per liter)

NA = Not Applied

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.510 Incorporations by Reference

a) The Board incorporates the following publications by reference:

American Public Health Association et al., Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005. Available from the American Public Health Association, 800 I Street, NW, Washington, D.C. 20001-3710, (202)777-2742.

USEPA. United States Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C. 20460, Method OIA-1677, DW: Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry, January 2004, Document Number EPA-821-R-04-001.

b) The Board incorporates the following federal regulations by reference. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, (202) 783-3238:

40 CFR 136 (1996)

40 CFR 141 (1988)

40 CFR 302.4 (1988)

The Sections of 40 CFR 132 (1996) listed below:

Appendix A

Section I A

Section II

Section III C

Section IV D, E, F, G, H, and I

Section V C

Section VI A, B, C, D, E, and F

Section VIII

Section XI

Section XVII

Appendix B

Section III

Section VII B and C

Section VIII

Appendix C

Section II

Section III A (1 through 6 and 8), B (1 and 2)

Appendix D

Section III C, D, and E

Section IV

c) This Section incorporates no future editions or amendments.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.553 Determining the Lake Michigan Aquatic Toxicity Criteria or Values – General Procedures

The Lake Michigan Aquatic Life Criteria and Values are those concentrations or levels of a substance at which aquatic life is protected from adverse effects resulting from short or long term exposure in water.

a) Tier I criteria and Tier II values to protect against acute effects in aquatic organisms will be calculated according to procedures listed at Sections 302.555, 302.560 and 302.563. The procedures of Section 302.560 shall be used as necessary to allow for interactions with other water quality characteristics such as hardness, pH, temperature, etc. Tier I criteria and Tier II values to protect against chronic effects in aquatic organisms shall be calculated according to the procedures listed at Section 302.565.

b) Minimum data requirements. In order to derive a Tier I acute or chronic criterion, data must be available for at least one species of freshwater animal in at least eight different families such that the following taxa are included:

1) The family Salmonidae in the class Osteichthyes;

2) One other family in the class Osteichthyes;

3) A third family in the phylum Chordata;

4) A planktonic crustacean;

5) A benthic crustacean;

6) An insect;

7) A family in a phylum other than Arthropoda or Chordata; and

8) A family from any order of insect or any phylum not already represented.

c) Data for tests with plants, if available, must be included in the data set.

d) If data for acute effects are not available for all the eight families listed above, but are available for the family Daphnidae, a Tier II value shall be derived according to procedures in Section 302.563. If data for chronic effects are not available for all the eight families, but there are acute and chronic data available according to

Section 302.565(b) so that three acute to chronic ratios (ACRs) can be calculated, then a Tier I chronic criterion can be derived according to procedures in Section 302.565. If three ACRs are not available, then a Tier II chronic value can be derived according to procedures in Section 302.565(b).

e) Data must be obtained from species that have reproducing wild populations in North America except that data from salt water species can be used in the derivation of an ACR.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.595 Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

a) The Agency shall maintain a listing of toxicity criteria and values derived pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion or value is derived and shall be published when updated in the Illinois Register.

b) A criterion or value published pursuant to subsection (a) of this Section may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion or value listed pursuant to subsection (a) of this Section until adopted by the Board as a numeric water quality standard.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.648 Determining the Human Threshold Criterion

The HTC is calculated according to the equation:

$$HTC = ADI/[W + (F \times BCF)]$$

where:

HTC = Human health protection criterion in milligrams per liter (mg/L);

ADI = Acceptable daily intake of substance in milligrams per day (mg/d) as specified in Section 302.645;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102 (b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic organism Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Sections 302.660 through 302.666.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.657 Determining the Human Nonthreshold Criterion

The HNC is calculated according to the equation:

$$HNC = RAI/[W + (F \times BCF)]$$

where:

HNC = Human Nonthreshold Protection Criterion in milligrams per liter (mg/L);

RAI = Risk Associated Intake of a substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 1,000,000 as derived in Section 302.654;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.102(b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic Life Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Section 302.663.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 302.669 Listing of Derived Criteria

a) The Agency shall develop and maintain a listing of toxicity criteria pursuant to this Subpart. This list shall be made available to the public and updated whenever a new criterion is derived and shall be published when updated in the Illinois Register.

b) A criterion published pursuant to subsection (a) may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion listed pursuant to subsection (a) until adopted by the Board as a water quality standard.

(Source: Amended at 36 Ill. Reg. _____, effective _____)