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POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE C: WATER POLLUTION

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APPENDIX A References to Previous Rules

APPENDIX B Sources of Codified Sections

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

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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 20 Ill. Reg. 370, effective December 23, 1996; expedited correction at 20 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 21 Ill. Reg. 1356, effective December 24, 1997; amended in R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in _____ at _____ Ill. Reg. _____, effective _____, 2002.

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 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 as provided in subsection (d). The samples used to demonstrate compliance or lack of compliance with a CS must be collected in a manner which assures an average representative of the sampling 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 as provided in subsection (d).

- d) 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 ZID pursuant to Section 302.102.

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- 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 ($\mu\text{g/L}$) ($\mu\text{g/L}$)	CS ($\mu\text{g/L}$) ($\mu\text{g/L}$)
Arsenic (trivalent, dissolved) (total)	22680 01002	360 X 1.0* = 360	190 X 1.0* = 190
Cadmium (dissolved) (total)	01025 01027	$\exp[A+B\ln(H)] \underline{X}$ {1.138672- [(lnH)(0.041838)]}* but not to exceed 50 $\mu\text{g/L}$, where A=-2.918 and B=1.128	$\exp[A+B\ln(H)] \underline{X}$ {1.101672- [(lnH)(0.041838)]}* where A=-3.490 and B=0.7852
Chromium (hexavalent, total) (total hexavalent)	01032	16	11
Chromium (trivalent, dissolved) (total - trivalent)	80357 01033	$\exp[A+B\ln(H)] \underline{X}$ 0.316* where A=3.688, and B=0.8190	$\exp[A+B\ln(H)] \underline{X}$ 0.860* where A=1.561, and B=0.8190
Copper (dissolved) (total)	01040 01042	$\exp[A+B\ln(H)] \underline{X}$ 0.960* where A=-1.464, and B=0.9422	$\exp[A+B\ln(H)] \underline{X}$ 0.960* where A=-1.465, and B=0.8545
Cyanide (weak acid dissociable)	00718	49 22	9.9 5.2
Lead (dissolved) (total)	01049 01051	$\exp[A+B\ln(H)] \underline{X}$ {1.46203- [(lnH)(0.145712)]}* where A=-2.863, and	$\exp[A+B\ln(H)] \underline{X}$ {1.46203- [(lnH)(0.145712)]}* where A=-2.863, and

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		where A=-1.301, and B=1.273	B=1.273
Mercury (dissolved)	<u>71890</u> 71900	$2.6 \times 0.85^* = 2.2$	$1.3 \times 0.85^* = 1.1$
Nickel (dissolved)	<u>01065</u>	$\frac{\exp[A+B\ln(H)] \times 0.998^*}{}$	$\frac{\exp[A+B\ln(H)] \times 0.997^*}{}$
		where A=0.5173, and B=0.8460	where A=-2.286, and B=0.8460
TRC	500600	19	11
Zinc (dissolved)	<u>01090</u>	$\frac{\exp[A+B\ln(H)] \times 0.978^*}{}$	$\frac{\exp[A+B\ln(H)] \times 0.986^*}{}$
		where A=0.8875, and B=0.8473	where A=-0.8227, and B=0.8473
Benzene	<u>78124</u>	<u>4200</u>	<u>860</u>
Ethylbenzene	<u>78113</u>	<u>150</u>	<u>14</u>
Toluene	<u>78131</u>	<u>2000</u>	<u>600</u>
Xylene(s)	<u>81551</u>	<u>920</u>	<u>360</u>

where: $\mu\text{g/L}$ ~~$\mu\text{g/L}$~~ = microgram per liter,

$\exp[x]$ = base natural ~~neutral~~ logarithms raised to the x- power, and

$\ln(H)$ = natural logarithm of Hardness (STORET 00900).

* = conversion factor multiplier for dissolved metals

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

Constituent	STORET Number	($\mu\text{g/L}$) ($\mu\text{g/L}$)
Mercury	71900	0.012
<u>Benzene</u>	<u>78124</u>	<u>310</u>

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Where ~~µg/L~~ ~~ug/L~~ = micrograms per liter

- g) 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
Nickel (total)	mg/L	01067	1.0
Phenols	mg/L	32730	0.1
Selenium (total)	mg/L	01147	1.0
Silver (total)	µg/L ug/L	01077	5.0
Sulfate	mg/L	00945	500.
Total Dissolved Solids	mg/L	70300	1000.
Zinc (total)	mg/L	01092	1.0

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

(Source: Amended at 20 Ill. Reg.7682, effective May 24, 1996; amended in _____
at _____ Ill. Reg. _____, effective _____, 2002)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

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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 Section 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.

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>AS</u>	<u>CS</u>	<u>HHS</u>
Arsenic (Trivalent, dissolved)	22680	µg/L	340 $\frac{X 1.0^*}{340} =$	148 $\frac{X 1.0^*}{148} =$	NA
Cadmium (dissolved)	01025	µg/L	$\exp[A + B \ln(H)] \frac{X}{\{1.38672 - [(\ln H)(0.0418 - 38)]\}^*}$ A = -3.6867, and B = 1.128	$\exp[A + B \ln(H)] \frac{X}{\{1.101672 - [(\ln H)(0.0418 - 38)]\}^*}$ A = -2.715, and B = 0.7852	NA
Chromium (Hexavalent, total)	01032	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	80357	µg/L	$\exp[A + B \ln(H)] \frac{X}{0.316^*}$ where A = 3.7256, and	$\exp[A + B \ln(H)] \frac{X}{0.860^*}$ where A = 0.6848, and	NA

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<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>AS</u>	<u>CS</u>	<u>HHS</u>
			B = 0.819	B = 0.819	
Copper (dissolved)	01040	µg/L	exp[A +Bln(H)] <u>X</u> <u>0.960* where</u> A = -1.700, <u>and</u> B = 0.9422	exp[A +Bln(H)] <u>X</u> <u>0.960* where</u> A = -1.702, <u>and</u> B = 0.8545	NA
Cyanide (Weak acid dissociable)	00718	µg/L	22	5.2	NA
Lead (dissolved)	01049	µg/L	exp[A +Bln(H)] <u>X</u> <u>{1.46203-</u> <u>[(lnH)(0.1457</u> <u>12)]}* where</u> A = -1.055, <u>and</u> B = 1.273	exp[A +Bln(H)] <u>X</u> <u>{1.46203-</u> <u>[(lnH)(0.1457</u> <u>12)]}* where</u> A = -4.003, <u>and</u> B = 1.273	NA
Nickel (dissolved)	01065	µg/L	exp[A +Bln(H)] <u>X</u> <u>0.998* where</u> A = 2.255, <u>and</u> B = 0.846	exp[A +Bln(H)] <u>X</u> <u>0.997* where</u> A = 0.0584, <u>and</u> 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 +Bln(H)] <u>X</u> <u>0.978* where</u>	exp[A +Bln(H)] <u>X</u> <u>0.986* where</u>	NA

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<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>AS</u>	<u>CS</u>	<u>HHS</u>
			A = 0.884, and B = 0.8473	A = 0.884, and B = 0.8473	
Benzene	<u>78124</u> 34030	µg/L	<u>3900</u> NA	<u>800</u> NA	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
<u>Ethylbenzene</u>	<u>78113</u>	<u>µg/L</u>	<u>150</u>	<u>14</u>	<u>NA</u>
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) <u>where</u> A = -4.869, <u>and</u> B = 1.005	exp B ([pH] +A) <u>where</u> A = -5.134, <u>and</u> B = 1.005	NA
Toluene	78131	mg/L	<u>2000</u> NA	<u>610</u> NA	51.0
Trichloroethylene	39180	µg/L	NA	NA	370
<u>Xylene(s)</u>	<u>81551</u>	<u>µg/L</u>	<u>1200</u>	<u>490</u>	<u>NA</u>

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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

(Source: Amended at 21 Ill. Reg. 1356, effective December 24, 1997, amended in _____ at _____ Ill. Reg. _____, effective _____, 2002)

Section 302.575 Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife

The Lake Michigan Basin Wildlife Criterion (LMWC) is the concentration of a substance which if not exceeded protects Illinois wild mammal and bird populations from adverse effects resulting from ingestion of surface waters of the Lake Michigan Basin and from ingestion of aquatic prey organisms taken from surface waters of the Lake Michigan Basin. Wildlife criteria calculated under this Section protect against long-term effects and are therefore considered chronic criteria. The methodology involves utilization of data from test animals to derive criteria to protect representative or target species: bald eagle, herring gull, belted kingfisher, mink and river otter. The lower of the geometric mean of species specific criteria for bird species or mammal species is chosen as the LMWC to protect a broad range of species.

- d) Calculation of TSV. The TSV, measured in milligrams per liter (mg/L), is calculated according to the equation:

$$TSV = \{ [TD \times W_t] / [UF_a \times UF_s \times UF_1] \} / \{ W + \sum [F_{TLi} \times BAF_{WLTLi}] \}$$

Where:

TSV = target species value in milligrams of substance per liter (mg/L).

TD = test dose that is toxic to the test species, either NOAEL or LOAEL.

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UF_a = the uncertainty factor for extrapolating toxicity data across species (unitless). A species-specific UF_a shall be selected and applied to each target species, consistent with the equation

UF_s = the uncertainty factor for extrapolating from subchronic to chronic exposures (unitless)

UF_1 = the uncertainty factor for extrapolation from LOAEL to NOAEL (unitless)

W_t = average weight in kilograms (kg) of the target species

W = average daily volume of water in liters consumed per day (L/d) by the target species

F_{TLi} = average daily amount of food consumed by the target species in kilograms (kg/d) for trophic level i

BAF_{WLTLi} = aquatic life bioaccumulation factor with units of liter per kilogram (L/kg), as derived in Section 302.570 for trophic level

- e) Calculation of the Lake Michigan Basin Wildlife Criterion. TSVs are obtained for each target species. The geometric mean TSVs of all mammal species is calculated and also of all bird species. The LMWC is the lower of the bird or mammal geometric mean TSV.

(Source: Added at 21 Ill. Reg. 1356, effective December 24, 1997, amended in _____ at _____ Ill. Reg. _____, effective _____, 2002)