

ILLINOIS POLLUTION CONTROL BOARD
August 19, 1999

IN THE MATTER OF:)
)
PERMITTING PROCEDURES FOR THE LAKE) R99-8
MICHIGAN BASIN: 35 ILL. ADM. CODE 301, 302, AND) (Rulemaking - Water)
309.141)

Adopted Rule. Final Notice .

OPINION AND ORDER OF THE BOARD (by G.T. Girard, C.A. Manning, and N.J. Melas):

On July 28, 1998, the Illinois Environmental Protection Agency (Agency) filed a rulemaking proposal which amends the Board's water regulations concerning permitting procedures for the Lake Michigan Basin. The rules, as proposed by the Agency, amend portions of the Board's rules dealing with the issuance of National Pollutant Discharge Elimination System (NPDES) permits and are necessary to implement the federal Great Lakes Initiative (GLI) which was previously adopted by the Board. See, In the Matter of: Conforming Amendments for the Great Lakes Initiative: 35 Ill. Adm. Code 302.101; 302.105; 302.Subpart E; 303.443 and 304.222, (December 18, 1997) R97-25.

The Agency's proposal was filed pursuant to Section 27 of the Environmental Protection Act (Act) (415 ILCS 5/27 (1998)) and was accompanied by a statement of reasons (Reasons). The Board accepted this proposal on August 6, 1998. On March 4, 1999, the Board sent the proposal to first notice pursuant to the Illinois Administrative Procedure Act (5 ILCS 100\1-1 *et seq.*) (IAPA). On June 17, 1999, the Board adopted a second-notice opinion and order and directed that the second notice be filed with the legislative Joint Committee on Administrative Rules (JCAR) pursuant to the IAPA. On July 20, 1999, JCAR issued a certificate of no objection to the rule.

Two hearings have been held in this matter before Hearing Officer Marie Tipsord. The first hearing was held on October 5, 1998, in Chicago, Illinois (Tr.1). At that hearing, the Agency submitted testimony in support of the proposal. A second hearing was held on December 8, 1998, in Springfield, Illinois (Tr.2). The Agency presented additional testimony and testimony was offered by Mr. William Seith on behalf of the Illinois Attorney General's Office (Attorney General). A deadline of January 14, 1999, was set for posthearing comments to be submitted. The Board received only one posthearing comment. During the first notice period the Board received an additional three comments.

Today, the Board adopts this proposal for final notice. Based on the record before the Board, the Board finds that adopting this proposal is warranted. In the sections that follow, the Board will discuss the procedural history, then the rule, followed by the public comments. We will not repeat in detail the procedural history and the Board's response to public comments; for a complete discussion of these topics, the reader is referred to the second-notice opinion of June 17, 1999. See, In the Matter of: Permitting Procedures for the Lake Michigan Basin: 35 Ill. Adm. Code 301, 302, and 309.141, (June 17, 1999) R99-8 (hereinafter June 17, 1999 opinion).

PROCEDURAL HISTORY

The procedural history of this rule is discussed in detail in the Board's second-notice opinion and order of June 17, 1999. See, In the Matter of: Permitting Procedures for the Lake Michigan Basin: 35 Ill. Adm. Code 301, 302, and 309.141, (June 17, 1999) R99-8 (hereinafter June 17, 1999 opinion). That discussion occurs at pages one through two of the June 17, 1999 opinion. In summary this proposal was filed by the Agency in response to issues raised in the Agency's adoption of 35 Ill. Adm. Code 352. On December 17, 1998, the Board denied a motion to dismiss R99-8 filed by the Illinois Environmental Regulatory Group (IERG) and supported by the Chemical Industry Council of Illinois (CICI) (PC 1). On June 17, 1999, the Board proceeded to second notice.

ADOPTED RULE

The rule adopts certain permit requirements necessary to implement the federal GLI. The states are required to adopt regulations to conform with the federal guidance for water quality standards in the Great Lakes pursuant to the Clean Water Act. 33 U.S.C.

§ 268(c)(2)(C). The federal guidance was published at 60 Fed. Reg. 15366 on March 23, 1995. In 1997, the Agency proposed rules to the Board which implement the federal guidance and the Board adopted these rules in R97-25. See In the Matter of: Conforming Amendments for the Great Lakes Initiative: 35 Ill. Adm. Code 302.101; 302.105; 302.Subpart E; 303.443 and 304.222 (December 18, 1997), R97-25. The requirements in this rule are in addition to those adopted by the Board in R97-25 and should be read in conjunction with that rulemaking. In the Matter of: Conforming Amendments for the Great Lakes Initiative: 35 Ill. Adm. Code 302.101; 302.105; 302.Subpart E; 303.443 and 304.222 (December 18, 1997), R97-25.

The Board's rules are being amended by updating the citation to the *Code of Federal Regulations* at Section 301.105, adding specialized definitions that are contained in the Agency's rule at Section 352.104 and adding implementation procedures under Section 309.141(h). The amendments to the incorporations by reference under Section 301.105(c): 1) update the citation to 40 C.F.R. 136 to reflect the 1996 edition of the federal rules, which contain the approved test methods; and, 2) add a new incorporation by reference to a test procedure specified in 40 C.F.R. 132.

The definitions adopted today at 35 Ill. Adm. Code 301 are, for the most part, derived from the federal GLI regulations at 40 C.F.R. 132.2. These include definitions of the terms "bioaccumulative chemicals of concern," "method detection level," "minimum level," "quantification level," "total maximum daily load," "wasteload allocation" and "wet weather point source." In addition, the order includes definitions of certain terms used in the implementation procedures.

The procedures for implementation of the federal GLI are set forth under a new subsection at 35 Ill. Adm. Code 309.141(h). These procedures are intended to be used by the Agency when issuing NPDES permits to Lake Michigan Basin dischargers. Section 309.141(h)(1) provides that the Total Maximum Daily Load (TMDL) or the Waste Load Allocations (WLA) will be set through either the Lake Michigan Lakewide Management Plan (LaMP) or the remedial action plan (RAP) for an Area of Concern. Reasons at 5. This provision is consistent with the federal GLI procedure concerning TMDL and WLA at 40 C.F.R. 132 Appendix F, Procedure 3. If neither the LaMP or a RAP has been completed the effluent limits shall be established pursuant to the remaining sections of Section 309.141. *Id.* If it is expected that these limits will be superseded upon completion of the TMDL or WLA process, these limits shall be set as interim and the permit shall include a reopener clause, which would be triggered by the completion of TMDL or WLA. *Id.*

Section 309.141(h)(2) specifies an acceptable risk level of one in 100,000 for establishing Tier I criteria and Tier II values for combination of substances exhibiting carcinogenic or other nonthreshold toxic mechanisms.

The proposed risk level of 1 in 100,000, which is recommended by the federal GLI guidelines, was adopted by the Board in R97-25 (In the Matter of: Conforming Amendments for the Great Lakes Initiative: 35 Ill. Adm. Code 302.101; 302.105; 302.Subpart E; 303.443 and 304.222 (December 18, 1997), R97-25); 35 Ill. Adm. Code 302.590. In addition, Sections 309.141(h)(2)(A) and (h)(2)(B) set forth specific requirements for the consideration of additive effects of two classes of substances known as the chlorinated dibenzo-p-dioxins (CDD) and chlorinated dibenzofurans (CDF). Reasons at 5. These procedures are derived from the federal GLI at 40 C.F.R. 132 Appendix F, Procedure 4. In both CDD and CDF, the arrangement of the atoms in the molecule can vary, creating congeners which have different levels of toxic effects from molecule to molecule. *Id.* The proposed procedure assigns specific conversion factors to the congeners that allows a permit writer to calculate the additive effect on a consistent basis. The proposed procedure also requires the Agency to consider the cumulative risk from a combination of carcinogenic or other nonthreshold toxic substances under specified conditions.

Section 309.141(h)(3) sets forth the conversion factors to be used in translating between water quality standards, criteria or values for metals expressed in either the dissolved form or as total amount recoverable. Reasons at 6. In this regard, while many modern water quality standards are expressed in the dissolved form,¹ historical water quality and effluent data has been reported as total amount recoverable. Reasons at 6. The proposed conversion factors, which are based on the review of scientific literature, allow for the consistent translation of total recoverable metal to dissolved form. Further, the proposed provision also allows for the use of alternate site-specific conversion factor.

Section 309.141(h)(4) together with the procedures specified in 35 Ill. Adm. Code 352.Subpart D provide guidance to the Agency in choosing which pollutants require water quality based effluent limits (WQBEL) and, if required, at what level in NPDES permits. Reasons at 6. Subsection (h)(4)(A) specifies the first step in the process which involves the estimation of projected effluent quality (PEQ) of a parameter in the discharge of a facility, taking into account the chronic or acute exposure periods of the standard, criteria or value. *Id.* The proposed provision requires the PEQ to be based on representative facility specific data that reflect the upper bound of a 95% confidence level for the 95th percentile value. Subsection (h)(4)(B) provides a method of calculating the PEQ when less than ten facility specific data points are available. The PEQ or the alternate PEQ must be compared with water quality standard, criteria, or value to determine whether to impose no limit, consider dilution and mixing, or require additional monitoring. Subsection (h)(4)(C) requires the Agency to use monthly average effluent data to evaluate the need for WQBELs to meet chronic standards and daily effluent data to evaluate the need for effluent limits to meet acute standards. Reasons at 6-7. Subsection (h)(4)(D) allows for alternative scientifically defensible statistical methods to calculate PEQ. Reasons at 7.

If PEQ for a parameter is greater than the water quality standard, criteria or value for that parameter, the next step involves the consideration of dilution and mixing in accordance with Section 309.141(h)(5), which allows for such consideration based on the degree of treatment. A Mixing zone and dilution may be considered only if the discharger is providing treatment consistent with the best degree of treatment under 35 Ill. Adm. Code 304.102(a). Reasons at 7.

The next step in the process involves the comparison of PEQ of a parameter with the projected effluent limitation (PEL) for that parameter to determine the need for specifying a WQBEL in the NPDES permit. Section 309.141(h)(6) sets forth a simple mass balance formula for calculating PEL giving consideration to the water quality standard, relative flowrates of effluent and receiving water, dilution allowance, and the background concentration of the parameter. Reasons at 7.

Section 309.141(h)(7) sets forth the conditions under which a WQBEL or certain monitoring requirements must be included in the NPDES permit based upon a comparison of PEQ and PEL. Reasons at 7.

The Board also proposed amendments to 35 Ill. Adm. Code 302. The amendments were proposed because at the close of the rulemaking in R97-25 (In the Matter of: Conforming Amendments for the Great Lakes Initiative; 35 Ill. Adm. Code 302.101; 302.105; 302.Subpart E; 303.443 and 304.222 (December 18, 1997), R97-25), JCAR submitted a list of typographical errors which occurred in the text of Part 302. Only typographical corrections and nonsubstantive amendments to Part 302 were made by the Board in this proceeding.

PUBLIC COMMENTS

The Board received a total of four public comments. The first comment (PC 1) was filed by the CICI and was filed in support of IERG's motion to dismiss and was addressed above and in the June 17, 1999 opinion. The other comments included comments by the Naval Training Center Great Lakes (Navy) (PC 2), IERG (PC 3) and the Illinois Steel Group (PC 4). The Navy's comments were addressed in the June 17, 1999 opinion at pages five through nine. The Board made several changes in response to Navy's comment. The IERG and Illinois Steel Group

¹ The standards are expressed in dissolved form since that form was used in developing the toxicological information as being more available for absorption by aquatic life.

comments were discussed in the June 17, 1999 opinion at pages nine through eleven. IERG and the Illinois Steel Group had argued that the record was insufficient to proceed. The Board disagreed with IERG and the Illinois Steel Group.

CONCLUSION

These amendments propose changes to the Board's water regulations which implement the federal Great Lakes Initiative in the Lake Michigan Basin of Illinois. The Board notes that the proposed amendments are squarely based upon the Board's authority under the Act to develop regulations for the protection of the waters of the State, and are necessary to implement the federal GLI in Illinois. Further, these rules clarify the Agency's authority to carry out procedures which are necessary to implement the federal GLI.

The Board finds that the record supports the adoption of this rule. Therefore, the Board will proceed to final adoption of the rule and will send the rule to final adoption under the Illinois Administrative Procedure Act. 5 ILCS 100/1-1 *et seq.* Further, the Board finds that the proposal is economically reasonable and technically feasible.

ORDER

The Board directs the Clerk to cause the filing of the following proposal for Final Notice with the Secretary of State Administrative Code Unit:

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE C: WATER POLLUTION

CHAPTER I: POLLUTION CONTROL BOARD

PART 301

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<u>301.442</u>	<u>Wet Weather Point Source</u>
<u>301.443</u>	<u>Whole Effluent Toxicity</u>

APPENDIX References to Previous Rules

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/13 and 27].

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; amended at 5 Ill. Reg. 6384, effective May 28, 1981; codified at 6 Ill. Reg. 7818; amended in R88-1 at 13 Ill. Reg. 5984, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2879, effective February 13, 1990; amended in R99-8 at 23 Ill. Reg. _____, effective _____.

Note: Capitalization denotes statutory language.

Section 301.106 Incorporations by Reference

- a) Abbreviations. The following abbreviated names are used for materials incorporated by reference:

"ASTM" means American Society for Testing and Materials

"GPO" means Superintendent of Documents, U.S. Government Printing Office

"NTIS" means National Technical Information Service

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater", available from the American Public Health Association

"USEPA" means United States Environmental Protection Agency

- b) The Board incorporates the following publications by reference:

American Public Health Association et al., 1015 Fifteenth Street, N.W., Washington, D.C. 20005

Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985

ASTM. American Society for Testing and Materials, 1700 Race Street, Philadelphia, PA 19103 (215) 299-5400

ASTM Standard E 724-80 "Standard Practice for Conducting Static Acute Toxicity Tests with Larvae of Four Species of Bivalve Molluscs", approved 1980.

ASTM Standard E 729-80 "Standard Practice for Conducting Static Acute Toxicity Tests with Fishes, Macroinvertebrates, and Amphibians", approved 1980.

ASTM Standard E 857-81 "Standard Practice for Conducting Subacute Dietary Toxicity Tests with Avian Species", approved 1981.

ASTM Standard E 1023-84 "Standard Guide for Assessing the Hazard of a Material to Aquatic Organisms and Their Uses", approved 1984.

ASTM Standard E 1103-86 "Method for Determining Subchronic Dermal Toxicity", approved 1986.

ASTM Standard E 1147-87 "Standard Test Method for Partition Coefficient (n-Octanol/Water) Estimation by Liquid Chromatography", approved February 27, 1987.

ASTM Standard E 1192-88 "Standard Guide for Conducting Acute Toxicity Tests on Aqueous Effluents with Fishes, Macroinvertebrates and Amphibians", approved 1988.

ASTM Standard E 1193-87 "Standard Guide for Conducting Renewal Life-Cycle Toxicity Tests with Daphnia Magna", approved 1987.

ASTM Standard E 1241-88 "Standard Guide for Conducting Early Life-Stage Toxicity Tests with Fishes", approved 1988.

ASTM Standard E 1242-88 "Standard Practice for Using Octanol-Water Partition Coefficients to Estimate Median Lethal Concentrations for Fish due to Narcosis", approved 1988.

ASTM Standard E 4429-84 "Standard Practice for Conducting Static Acute Toxicity Tests on Wastewaters with Daphnia", approved 1984.

NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4600

SIDES: STORET Input Data Editing System, January, 1973, Document Number PB-227 052/8

Water Quality Data Base Management Systems, February, 1984, Document Number AD-P004 768/8

USEPA. United States Environmental Protection Agency, Office of Health and Environmental Assessment, Washington, D.C. 20460

Mutagenicity and Carcinogenicity Assessment for 1,3-Butadiene, September, 1985, Document Number EPA/600/8-85/004A

- c) 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:

Procedure 5.b.2 of Appendix F of 40 CFR 132 (1995)
 40 CFR 136 (1996-1988)
 40 CFR 141 (1988)
 40 CFR 302.4 (1988)

- d) This Section incorporates no future editions or amendments.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 301.221 Area of Concern

Area of Concern or AOC is an area specially designated for remediation efforts.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.231 Bioaccumulative Chemicals of Concern

Bioaccumulative Chemicals of Concern or BCC means a chemical or class of chemicals meeting the definition at 35 Ill. Adm. Code 302.501.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.301 Lake Michigan Lakewide Management Plan

Lake Michigan Lakewide Management Plan or LaMP is a plan to manage the Illinois portion of Lake Michigan as approved by USEPA.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.311 Method Detection Level

Method Detection Level is the minimum concentration of an analyte (substance) that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero as determined by the procedure set forth in Appendix B of 40 CFR 136.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.312 Minimum Level

Minimum Level or ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method-specified sample weights, volumes and processing steps have been followed. The analytical procedure used for determining minimum level must be a procedure published by USEPA or nationally recognized organization, including but not limited to those methods found in 40 CFR 136, 40 CFR 132, or Standard Methods, incorporated by reference in 35 Ill. Adm. Code 302.510.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.331 Outlier

Outlier is a test value that is not statistically valid under tests approved in 40 CFR 136.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.341 Pollutant Minimization Program

Pollutant Minimization Program means a plan to achieve or maintain the goal of reducing contaminant discharges to below water quality based effluent limits.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.346 Preliminary Effluent Limitation

Preliminary Effluent Limitation or PEL is an estimate of an allowable discharge taking into consideration mixing or dilution.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.356 Projected Effluent Quality

Projected Effluent Quality or PEQ is the amount of a contaminant estimated to be discharged by a facility or activity taking into account statistical analysis of the discharge or activity.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.371 Quantification Level

Quantification Level is a measurement of the concentration of a contaminant obtained by using a specified laboratory procedure calibrated at a specified concentration above the method detection level. It is considered the lowest concentration at which a particular contaminant can be quantitatively measured using a specified laboratory procedure for monitoring of the contaminant. The analytical procedure used for determining quantification level must be a procedure published by USEPA or nationally recognized organization, including but not limited to those methods found in 40 CFR 136, 40 CFR 132, or Standard Methods, incorporated by reference in 35 Ill. Adm. Code 302.510.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.372 Reasonable Potential Analysis

Reasonable Potential Analysis or Reasonable Potential to Exceed means the procedure to predict whether an existing or future discharge would cause or contribute to a violation of water quality standards, criteria or values.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.373 Same Body of Water

Same Body of Water means that, for purposes of evaluating intake toxic substances consistent with 35 Ill. Adm. Code 352.425, the Agency will consider intake toxic substances to be from the same body of water if the Agency finds that the intake toxic substance would have reached the vicinity of the outfall point in the receiving water within a reasonable period had it not been removed by the permittee and there is a direct hydrological connection between the intake and the discharge points. Notwithstanding the provisions of this definition, an intake toxic substance shall be considered to be from the same body of water if the permittee's intake point is located on Lake Michigan and the outfall point is located on a tributary of Lake Michigan. In this situation, the background concentration of the toxic substance in the receiving water shall be similar to or greater than that in the intake water and the difference, if any, between the water quality characteristics of the intake and receiving water shall not result in an adverse impact on the receiving water.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.411 Total Maximum Daily Load

Total Maximum Daily Load or TMDL is the sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background, as more fully defined at 40 CFR 130.2(i). A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into a water body and still assure attainment and maintenance of water quality standards.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.421 Wasteload Allocation

Waste Load Allocation or WLA is the portion of receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution, as more fully defined at 40 CFR 130.2(h). In the absence of a TMDL approved by USEPA pursuant to 40 CFR 130.7 or an assessment and remediation plan developed and approved in accordance with procedure 3.A of Appendix F of 40 CFR 132, a WLA is the allocation for an individual point source that ensures that the level of water quality to be achieved by the point source is derived from and complies with all applicable water quality standards.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.441 Water Quality Based Effluent Limitation

Water Quality Based Effluent Limitation or WQBEL is a limit imposed in a permit so that the applicable water quality standard, criteria or value is not exceeded outside of a designated mixing zone.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.442 Wet Weather Point Source

Wet Weather Point Source means any discernible, confined and discrete conveyance from which pollutants are, or may be, discharged as the result of a wet weather event. Discharges from wet weather point sources shall include only: discharges of stormwater from a municipal separate storm sewer as defined at 40 CFR 122.26(b)(8); stormwater discharge associated with industrial activity as defined at 40 CFR 122.26(b)(14); discharges of stormwater and sanitary wastewaters (domestic, commercial, and industrial) from a combined sewer overflow; or any other stormwater discharge for which a permit is required under Section 402(p) of the Clean Water Act. A stormwater discharge associated with industrial activity that is mixed with process wastewater shall not be considered a wet weather point source.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

Section 301.443 Whole Effluent Toxicity

Whole Effluent Toxicity or WET means a test procedure that determines the effect of an effluent on aquatic life.

(Source: Added at 23 Ill. Reg. _____, effective _____.)

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

PART 302
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302.618	Determining the Acute Aquatic Toxicity Criterion - Toxicity Dependent on Water Chemistry
302.621	Determining the Acute Aquatic Toxicity Criterion - Procedures 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 Combination 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

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 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. _____, effective _____.

~~BOARD NOTE: This Part implements the Environmental Protection Act, as of July 1, 1994.~~

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section 302.101 Scope and Applicability

- a) This Part contains schedules of water quality standards which are applicable throughout the State as designated in 35 Ill. Adm. Code 303. Site specific water quality standards are found with the water use designations in 35 Ill. Adm. Code 303.
- b) Subpart B contains general use water quality standards which must be met in waters of the State for which there is no specific designation (35 Ill. Adm. Code 303.201).
- c) Subpart C contains the public and food processing water supply standards. These are cumulative with Subpart B and must be met by all designated waters at the point at which water is drawn for treatment and distribution as a potable supply or for food processing (35 Ill. Adm. Code 303.202).
- d) Subpart D contains the secondary contact and indigenous aquatic life standards. These standards must be met only by certain waters designated in 35 Ill. Adm. Code 303.204 and 303.441.

- e) Subpart E contains the Lake Michigan Basin water quality standards. These must be met in the waters of the Lake Michigan Basin as designated in 35 Ill. Adm. Code 303 .443.
- f) Subpart F contains the procedures for determining each of the criteria designated in Section 302.210.
- g) Unless the contrary is clearly indicated, all references to "Parts" or "Sections" are to Ill. Adm. Code, Title 35: Environmental Protection. For example, "Part 309" is 35 Ill. Adm. Code 309, and "Section 309.101" is 35 Ill. Adm. Code 309.101.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.501 Scope, Applicability, and Definitions

- a) Subpart E contains the Lake Michigan Basin water quality standards. These must be met in the waters of the Lake Michigan Basin as designated in 35 Ill. Adm. Code 303.443.
- b) In addition to the definitions provided at 35 Ill. Adm. Code 301.200 through 301.444, and in place of conflicting definitions at Section 302.100, the following terms have the meanings specified for the Lake Michigan Basin:

“Acceptable daily exposure” or “ADE” means an estimate of the maximum daily dose of a substance ~~that which~~ is not expected to result in adverse noncancer effects to the general human population, including sensitive subgroups.

“Acceptable endpoints”, for the purpose of wildlife criteria derivation, means acceptable subchronic and chronic endpoints ~~that which~~ affect reproductive or developmental success, organismal viability or growth, or any other endpoint ~~that which~~ is, or is directly related to, parameters that influence population dynamics.

“Acute to chronic ratio” or “ACR” is the standard measure of the acute toxicity of a material divided by an appropriate measure of the chronic toxicity of the same material under comparable conditions.

“Acute toxicity” means adverse effects that result from an exposure period ~~that which~~ is a small portion of the life span of the organism.

“Adverse effect” means any deleterious effect to organisms due to exposure to a substance. This includes effects ~~that which~~ are or may become debilitating, harmful or toxic to the normal functions of the organism, but does not include non -harmful effects such as tissue discoloration alone or the induction of enzymes involved in the metabolism of the substance.

“Baseline BAF” for organic chemicals, means a BAF that is based on the concentration of freely dissolved chemical in the ambient water and takes into account the partitioning of the chemical within the organism; for inorganic chemicals, a BAF is based on the wet weight of the tissue.

“Baseline BCF” for organic chemicals, means a BCF that is based on the concentration of freely dissolved chemical in the ambient water and takes into account the partitioning of the chemical within the organism; for inorganic chemicals, a BAF is based on the wet weight of the tissue.

“Bioaccumulative chemical of concern” or “BCC” is any chemical that has the potential to cause adverse effects and that, upon entering the surface waters, by itself or as its toxic transformation

product, accumulates in aquatic organisms by a human health bioaccumulation factor greater than 1,000, after considering metabolism and other physiochemical properties that might enhance or inhibit bioaccumulation, in accordance with the methodology in Section 302.570. In addition, the half life of the chemical in the water column, sediment or biota must be greater than eight weeks. BCCs include, but are not limited to, the following substances:

Chlordane
 4,4'-DDD; p,p'-DDD; 4,4'-TDE; p,p'-TDE
 4,4'-DDE; p,p'-DDE
 4,4'-DDT; p,p'-DDT
 Dieldrin
 Hexachlorobenzene
 Hexachlorobutadiene; Hexachloro-1,3-butadiene
 Hexachlorocyclohexanes; BHCs
 alpha- Hexachlorocyclohexane; alpha-BHC
 beta- Hexachlorocyclohexane; beta-BHC
 delta- Hexachlorocyclohexane; delta-BHC
 Lindane; gamma- Hexachlorocyclohexane; gamma-BHC
 Mercury
 Mirex
 Octachlorostyrene
 PCBs; polychlorinated biphenyls
 Pentachlorobenzene
 Photomirex
 2,3,7,8-TCDD; Dioxin
 1,2,3,4-Tetrachlorobenzene
 1,2,4,5-Tetrachlorobenzene
 Toxaphene

“Bioaccumulation” is the net accumulation of a substance by an organism as a result of uptake from all environmental sources.

“Bioaccumulation factor” or “BAF” is the ratio (in L/kg) of a substance's concentration in the tissue of an aquatic organism to its concentration in the ambient water, in situations where both the organism and its food are exposed and the ratio does not change substantially over time.

“Bioconcentration” means the net accumulation of a substance by an aquatic organism as a result of uptake directly from the ambient water through gill membranes or other external body surfaces.

“Bioconcentration Factor” or “BCF” is the ratio (in L/kg) of a substance's concentration in the tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and the ratio does not change substantially over time.

“Biota-sediment accumulation factor” or “BSAF” means the ratio (in kg of organic carbon/kg of lipid) of a substance's lipid-normalized concentration in the tissue of an aquatic organism to its organic carbon-normalized concentration in surface sediment, in situations where the ratio does not change substantially over time, both the organism and its food are exposed, and the surface sediment is representative of average surface sediment in the vicinity of the organism.

“Carcinogen” means a substance ~~that which~~ causes an increased incidence of benign or malignant neoplasms, or substantially decreases the time to develop neoplasms, in animals or humans. The classification of carcinogens is determined by the procedures in Section II.A of ~~a~~ Appendix C to 40

CFR 132 (1996) incorporated by reference in Section 302.510.

“Chronic effect” means an adverse effect that is measured by assessing an acceptable endpoint, and results from continual exposure over several generations, or at least over a significant part of the test species' projected life span or life stage.

“Chronic toxicity” means adverse effects that result from an exposure period ~~that which~~ is a large portion of the life span of the organism.

“Dissolved organic carbon” or “DOC” means organic carbon ~~that which~~ passes through a 1 μm pore size filter.

“Dissolved metal” means the concentration of a metal that will pass through a 0.45 μm pore size filter.

“Food chain” means the energy stored by plants is passed along through the ecosystem through trophic levels in a series of steps of eating and being eaten, also known as a food web.

“Food chain multiplier” or “FCM” means the ratio of a BAF to an appropriate BCF.

“Linearized multi-stage model” means a mathematical model for cancer risk assessment. This model fits linear dose-response curves to low doses. It is consistent with a no-threshold model of carcinogenesis.

“Lowest observed adverse effect level” or “LOAEL” means the lowest tested dose or concentration of a substance ~~that which~~ results in an observed adverse effect in exposed test organisms when all higher doses or concentrations result in the same or more severe effects.

“No observed adverse effect level” or “NOAEL” means the highest tested dose or concentration of a substance ~~that which~~ results in no observed adverse effect in exposed test organisms where higher doses or concentrations result in an adverse effect.

“Octanol water partition coefficient” or “Kow” is the ratio of the concentration of a substance in the n-octanol phase to its concentration in the aqueous phase in an equilibrated two-phase octanol water system. For log Kow, the log of the octanol water partition coefficient is a base 10 logarithm.

“Open Waters of Lake Michigan” means all of the waters within Lake Michigan in Illinois jurisdiction lakeward from a line drawn across the mouth of tributaries to Lake Michigan, but not including waters enclosed by constructed breakwaters.

“Particulate organic carbon” or “POC” means organic carbon ~~that which~~ is retained by a 1 μm pore size filter.

“Relative source contribution” or “RSC” means the percent of total exposure ~~that which~~ can be attributed to surface water through water intake and fish consumption.

“Resident or indigenous species” means species ~~that which~~ currently live a substantial portion of their life cycle, or reproduce, in a given body of water, or ~~that which~~ are native species whose historical range includes a given body of water.

“Risk associated dose” or “RAD” means a dose of a known or presumed carcinogenic substance in mg/kg/day which, over a lifetime of exposure, is estimated to be associated with a plausible

upper bound incremental cancer risk equal to one in 100,000.

“Slope factor” or “ q_1^* ” is the incremental rate of cancer development calculated through use of a linearized multistage model or other appropriate model. It is expressed in mg/kg/day of exposure to the chemical in question.

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater", available from the American Public Health Association.

“Subchronic effect” means an adverse effect, measured by assessing an acceptable endpoint, resulting from continual exposure for a period of time less than that deemed necessary for a chronic test.

“Target species” is a species to be protected by the criterion.

“Target species value” is the criterion value for the target species.

“Test species” is a species that has test data available to derive a criterion.

“Test dose” or “TD” is a LOAEL or NOAEL for the test species.

“Tier I criteria” are numeric values derived by use of the Tier I methodologies that either have been adopted as numeric criteria into a water quality standard or are used to implement narrative water quality criteria.

“Tier II values” are numeric values derived by use of the Tier II methodologies that are used to implement narrative water quality criteria. They are applied as criteria, have the same effect, and subject to the same appeal rights as criteria.

“Trophic level” means a functional classification of taxa within a community that is based on feeding relationships. For example, aquatic green plants and herbivores comprise the first and second trophic levels in a food chain.

“Toxic unit acute” or “ TU_a ” is the reciprocal of the effluent concentration that causes 50 percent of the test organisms to die by the end of the acute exposure period, which is 48 hours for invertebrates and 96 hours for vertebrates.

“Toxic unit chronic” or “ TU_c ” is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period, which is at least seven days for Ceriodaphnia, fathead minnow and rainbow trout.

“Uncertainty factor” or “UF” is one of several numeric factors used in deriving criteria from experimental data to account for the quality or quantity of the available data.

"USEPA" means United States Environmental Protection Agency.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.502 Dissolved Oxygen

Dissolved oxygen (STORET number 00300) must not be less than 90% of saturation, except due to natural causes, in the Open Waters of Lake Michigan as defined at Section 302.501. The other waters of the Lake Michigan ~~Basin~~ basin must not be less than 6.0 mg/L during at least 16 hours of any 24 hour period, nor less than 5.0 mg/L at any time.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.503 pH

pH (STORET number 00400) must be within the range of 7.0 to 9.0, except for natural causes, in the Open Waters of Lake Michigan as defined at Section 302.501. Other waters of the ~~Basin~~ basin must be within the range of 6.5 to 9.0, except for natural causes.

(Source: Amended at 23 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 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	148	NA
Cadmium (dissolved)	01025	µg/L	exp[A +Bln(H)] A=-3.6867 B = 1.128	exp[A +Bln(H)] A = -2.715 B = 0.7852	NA
Chromium (Hexavalent, total)	01032	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	80357	µg/L	exp[A +Bln(H)] A = 3.7256 B =0.819	exp[A +Bln(H)] A = 0.6848 B = 0.819	NA
Copper (dissolved)	01040	µg/L	exp[A +Bln(H)] A = -1.700 B = 0.9422	exp[A +Bln(H)] A = -1.702 B = 0.8545	NA
Cyanide (Weak acid dissociable)	00718	µg/L	22	5.2	NA
Lead (dissolved)	01049	µg/L	exp[A +Bln(H)] A = -1.055	exp[A +Bln(H)] A = -4.003	NA

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>AS</u>	<u>CS</u>	<u>HHS</u>
			B = 1.273	B = 1.273	
Nickel (dissolved)	01065	μg/L	exp[A +Bln(H)] A = 2.255 B = 0.846	exp[A +Bln(H)] A = 0.0584 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)] A = 0.884 B = 0.8473	exp[A +Bln(H)] A = 0.884 B = 0.8473	NA
Benzene	34030	μg/L	NA	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
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) A = -4.869 B = 1.005	exp B ([pH] +A) A = -5.134 B = 1.005	NA
Toluene	78131	mg/L	NA	NA	51.0
Trichloroethylene	39180	μg/L	NA	NA	370

Where:

NA = Not Applied

$\text{Exp}[x]$ = base of natural logarithms
raised to the x-power

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

- 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.

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>Water Quality Standard</u>
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.

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>Water Quality Standard</u>
Arsenic (total)	01002	$\mu\text{g/L}$	50.0
Barium (total)	01007	mg/L	1.0
Chloride	00940	mg/L	12.0
Iron (dissolved)	01046	mg/L	0.30
Lead (total)	01051	$\mu\text{g/L}$	50.0
Manganese (total)	01055	mg/L	0.15
Nitrate-Nitrogen	00620	mg/L	10.0

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>Water Quality Standard</u>
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~~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.

<u>Constituent</u>	<u>STORET Number</u>	<u>Unit</u>	<u>Water Quality Standard</u>
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.

<u>Constituent</u>	<u>STORETNumber</u>	<u>Unit</u>	<u>AS</u>	<u>CS</u>	<u>HHS</u>	<u>WS</u>
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:

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 23 Ill. Reg. _____, effective _____.)

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

All sources of heated effluents in existence as of January 1, 1971, shall meet the following restrictions outside of a mixing zone which shall be no greater than a circle with a radius of 305 m (1000 feet) or a n equal fixed area of simple form.

- a) There shall be no abnormal temperature changes that may affect aquatic life.
- b) The normal daily and seasonal temperature fluctuations that existed before the addition of heat shall be maintained.

- c) The maximum temperature rise at any time above natural temperatures shall not exceed 1.7 °C (3° F). In addition, the water temperature shall not exceed the maximum limits indicated in the following table:

	°C	°F		°C	°F
JAN.	7	45	JUL.	27	80
FEB.	7	45	AUG.	27	80
MAR.	7	45	SEPT.	27	80
APR.	13	55	OCT.	18	65
MAY	16	60	NOV.	16	60
JUN.	21	70	DEC.	10	50

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.521 Supplemental Antidegradation Provisions for BCCs

- a) Notwithstanding the provisions of Section 302.105, waters within the Lake Michigan Basin must not be lowered in quality due to new or increased loading of substances defined as bioaccumulative chemicals of concern (BCCs) in Section 302.501 from any source or activity subject to the NPDES permitting, Section 401 water quality certification provisions of the Clean Water Act (P.L. 92-100, as amended), or joint permits from the Agency and the Illinois Department of Natural Resources under Section 39(n) of the Act [415 ILCS 5/39(n)] until and unless it can be affirmatively demonstrated that such change is necessary to accommodate important economic or social development.
- 1) Where ambient concentrations of a BCC are equal to or exceed an applicable water quality criterion, no increase in loading of that BCC is allowed.
 - 2) Where ambient concentrations of a BCC are below the applicable water quality criterion, a demonstration to justify increased loading of that BCC must include the following:
 - A) Pollution Prevention Alternatives Analysis. Identify any cost-effective reasonably available pollution prevention alternatives and techniques that would eliminate or significantly reduce the extent of increased loading of the BCC.
 - B) Alternative or Enhanced Treatment Analysis. Identify alternative or enhanced treatment techniques that are cost effective and reasonably available to the entity that would eliminate or significantly reduce the extent of increased loading of the BCC.
 - C) Important Social or Economic Development Analysis. Identify the social or economic development and the benefits that would be forgone if the increased loading of the BCC is not allowed.
 - 3) In no case shall increased loading of BCCs result in exceedance of applicable water quality criteria or concentrations exceeding the level of water quality necessary to protect existing uses.
 - 4) Changes in loadings of any BCC within the existing capacity and processes of an existing NPDES authorized discharge, certified activity pursuant to Section 401 of the Clean Water Act, or joint permits from the Agency and the Illinois Department of

Natural Resources under Section 39(n) of the Act are not subject to the antidegradation review of subsection (a) of this Section. These changes include but are not limited to:

- A) normal operational variability, including, but not limited to, intermittent increased discharges due to wet weather conditions;
 - B) changes in intake water pollutants;
 - C) increasing the production hours of the facility; or
 - D) increasing the rate of production.
- 5) Any determination to allow increased loading of a BCC pursuant to a demonstration of important economic or social development need shall satisfy the public participation requirements of 40 CFR 25 prior to final issuance of the NPDES permit, Section 401 water quality certification, or joint permits from the Agency and the Illinois Department of Natural Resources under Section 39(n) of the Act.
- b) The following actions are not subject to the provisions of subsection (a) of this Section, unless the Agency determines the circumstances of an individual situation warrant application of those provisions to adequately protect water quality:
- 1) Short-term, temporary (i.e., weeks or months) lowering of water quality;
 - 2) Bypasses that are not prohibited at 40 CFR 122.41 (m); or
 - 3) Response actions pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, or similar federal or State authority, undertaken to alleviate a release into the environment of hazardous substances, pollutants or contaminants ~~that which may~~ pose danger to public health or welfare.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.535 Ammonia Nitrogen

The Open Waters of Lake Michigan as defined in Section 302.501 must not exceed 0.02 mg/L total ammonia (as N: STORET Number 00610). The remaining waters of the Lake Michigan ~~Basin basin~~ shall be subject to the following:

- a) Total ammonia nitrogen (as N: STORET Number 00610) must in no case exceed 15 mg/L.
- b) Un-ionized ammonia nitrogen (as N: STORET Number 00612) must not exceed the acute and chronic standards given below subject to the provisions of Sections 302.208(a) and (b) of this Part:
 - 1) From April through October, the Acute Standard (AS) shall be 0.33 mg/L and the chronic standard (CS) shall be 0.057 mg/L.
 - 2) From November through March, the AS shall be 0.14 mg/L and the CS shall be 0.025 mg/L.
- c) For purposes of this Section, the concentration of un-ionized ammonia nitrogen as N and total ammonia as N shall be computed according to the following equations:

$$U = \frac{N}{[0.94412(1 + 10^x) + 0.0559]}$$

$$\text{and } N = U[0.94412(1 + 10^x) + 0.0559]$$

$$\text{Where: } X = 0.09018 + \frac{2729.92}{(T + 273.16)} - \text{pH}$$

U = Concentration of un-ionized ammonia as N in mg/L

N = Concentration of ammonia nitrogen as N in mg/L

T = Temperature in degrees Celsius.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.540 Other Toxic Substances

Waters of the Lake Michigan Basin must be free from any substance or any combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. The numeric standards protective of particular uses specified for individual chemical substances in Section 302.504 are not subject to recalculation by this Section, however, where no standard is applied for a category, a numeric value may be calculated herein.

- a) Any substance shall be deemed toxic or harmful to aquatic life if present in concentrations that exceed the following:
 - 1) A Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC) or Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV) derived pursuant to procedures set forth in Sections 302.555, 302.560 or 302.563 at any time; or
 - 2) A Tier I Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or Tier II Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV) derived pursuant to procedures set forth in Section 302.565 as an average of four samples collected on four different days.
- b) Any combination of substances, including effluents, shall be deemed toxic to aquatic life if present in concentrations that exceed either subsection (b)(1) or (2) of this Section:
 - 1) No sample of water from the Lake Michigan Basin collected outside of a designated zone of initial dilution shall exceed 0.3 TU_c as determined for the most sensitive species tested using acute toxicity testing methods.
 - 2) No sample of water from the Lake Michigan Basin collected outside a designated mixing zone shall exceed 1.0 TU_c as determined for the most sensitive species tested using chronic toxicity testing methods.
 - 3) To demonstrate compliance with subsections (1) and (2) of this subsection (b), at least two resident or indigenous species will be tested. The rainbow trout will be used to represent fishes for the Open Waters of Lake Michigan and the fathead minnow will represent fishes for the other waters of the Lake Michigan Basin. Ceriodaphnia will represent invertebrates for all waters of the Lake Michigan Basin. Other common species shall be used if listed in Table I A of 40 CFR 136, incorporated by reference at Section 302.510, and approved by the Agency.

- c) Any substance shall be deemed toxic or harmful to wildlife if present in concentrations that exceed a Tier I Lake Michigan Basin Wildlife Criterion (LMWLC) derived pursuant to procedures set forth in Section 302.575 as an arithmetic average of four samples collected over four different days.
- d) For any substance that is a threat to human health through drinking water exposure only, the resulting criterion or value shall be applicable to only the Open Waters of Lake Michigan. For any substance that is determined to be a BCC, the resulting criterion shall apply in the entire Lake Michigan Basin. These substances shall be deemed toxic or harmful to human health if present in concentrations that exceed either of the following:
- 1) A Tier I Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) or Tier II Lake Michigan Basin Human Health Threshold Value (LMHHTV) based on disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs as derived pursuant to procedures set forth in Section 302.585 as an arithmetic average of four samples collected over four different days; or
 - 2) A Tier I Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or Tier II Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV) based on disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage as derived pursuant to procedures set forth in Section 302.590 as an arithmetic average of four samples collected over four different days.
- e) The derived criteria and values apply at all points outside of any waters in which mixing is allowed pursuant to Section 302.102 or Section 302.530.
- f) The procedures of this Subpart E set forth minimum data requirements, appropriate test protocols and data assessment methods for establishing criteria or values pursuant to subsections (b), (c), and (d) of this Section. No other procedures may be used to establish such criteria or values unless approved by the Board in a rulemaking or adjusted standards proceeding pursuant to Title VII of the Act. The validity and applicability of these procedures may not be challenged in any proceeding brought pursuant to Title VIII or X of the Act, although the validity and correctness of application of the numeric criteria or values derived pursuant to this Subpart may be challenged in such proceedings pursuant to subsection (g) of this Section.
- g) Challenges to application of criteria and values.
- 1) A permittee may challenge the validity and correctness of application of a criterion or value derived by the Agency pursuant to this Section only at the time such criterion or value is first applied in its NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. Failure of a person to challenge the validity of a criterion or value at the time of its first application to that person's facility shall constitute a waiver of such challenge in any subsequent proceeding involving application of the criterion or value to that person.
 - 2) Consistent with subsection (g)(1) of this Section, if a criterion or value is included as, or is used to derive, a condition of an NPDES discharge permit, a permittee may challenge the criterion or value in a permit appeal pursuant to 35 Ill. Adm. Code 309.181. In any such action, the Agency shall include in the record all information upon which it has relied in developing and applying the criterion or value, and whether such information was developed by the Agency or submitted by the petitioner. THE BURDEN OF PROOF SHALL BE ON THE PETITIONER pursuant to Section 40(a)(1) of the Act.

- 3) Consistent with subsection (g)(1) of this Section, in an action where alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion or value, the person bringing such action shall have the burdens of going forward with proof and persuasion regarding the general validity and correctness of application of the criterion or value.
- h) Subsections (a) through (e) of this Section do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:
 - 1) Application shall be made in strict accordance with label directions;
 - 2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq. (1972));
 - 3) Applications of aquatic pesticides must be in accordance with the laws, regulations and guidelines of all State and federal agencies authorized by law to regulate, use or supervise pesticide applications;
 - 4) No aquatic pesticide shall be applied to waters affecting public or food processing water supplies unless a permit to apply the pesticide has been obtained from the Agency. All permits shall be issued so as not to cause a violation of the Act or of any of the Board's rules or regulations. To aid applicators in determining their responsibilities under this subsection (h), a list of waters affecting public water supplies will be published and maintained by the Agency's Division of Public Water Supplies.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.545 Data Requirements

The Agency shall review, for validity, applicability and completeness the data used in calculating criteria or values. To the extent available, and to the extent not otherwise specified, testing procedures, selection of test species and other aspects of data acquisition must be according to methods published by USEPA or nationally recognized standards of organizations, including, but not limited to, those methods found in Standard Methods, incorporated by reference in Section 302.510, or recommended in 40 CFR 132 and incorporated by reference in Section 302.510.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.555 Determining the Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC): Independent of Water Chemistry

If the acute toxicity of the chemical has not been shown to be related to a water quality characteristic, including, but not limited to, hardness, pH, or temperature, the Tier I LMAATC is calculated using the procedures below.

- a) For each species for which more than one acute value is available, the Species Mean Acute Value (SMAV) is calculated as the geometric mean of the acute values from all tests.
- b) For each genus for which one or more SMAVs are available, the Genus Mean Acute Value (GMAV) is calculated as the geometric mean of the SMAVs available for the genus.
- c) The GMAVs are ordered from high to low in numerical order.
- d) Ranks (R) are assigned to the GMAVs from "1" for the lowest to "N" for the highest. If two or more GMAVs are identical, successive ranks are arbitrarily assigned.

- e) The cumulative probability, P, is calculated for each GMAV as $R/(N+1)$.
- f) The GMAVs to be used in the calculations of subsection (g) of this Section must be those with cumulative probabilities closest to 0.05. If there are fewer than 59 GMAVs in the total data set, the values utilized must be the lowest four obtained through the ranking procedures of subsections (c) and (d) of this Section.
- g) Using the GMAVs identified pursuant to subsection (f) of this Section and the Ps calculated pursuant to subsection (e) of this Section, the Final Acute Value (FAV) and the LMAATC are calculated as:

$$\begin{aligned} \text{FAV} &= \exp(A) \text{ and} \\ \text{LMAATC} &= \text{FAV}/2 \end{aligned}$$

Where:

$$A = L + 0.2236 S$$

$$L = [\sum (\ln \text{GMAV}) - S(\sum (P^{0.5}))]/4$$

$$S = [[\sum ((\ln \text{GMAV})^2) - ((\sum (\ln \text{GMAV}))^2)/4] / [\sum (P) - ((\sum (P^{0.5}))^2)/4]]^{0.5}$$

- h) If a resident or indigenous species, whose presence is necessary to sustain commercial or recreational activities, will not be protected by the calculated FAV, then the SMAV for that species is used as the FAV.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.560 Determining the Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC):
Dependent on Water Chemistry

If data are available to show that a relationship exists between a water quality characteristic (WQC) and acute toxicity to two or more species, a Tier I LMAATC must be calculated using procedures in this Section. Although the relationship between hardness and acute toxicity is typically non-linear, it can be linearized by a logarithmic transformation (i.e., for any variable, K, $f(K) = \text{logarithm of } K$) of the variables and plotting the logarithm of hardness against the logarithm of acute toxicity. Similarly, relationships between acute toxicity and other water quality characteristics, such as pH or temperature, may require a transformation, including no transformation (i.e., for any variable, K, $f(K) = K$) for one or both variables to obtain least squares linear regression of the transformed acute toxicity values on the transformed values of the water quality characteristic. An LMAATC is calculated using the following procedures.

- a) For each species for which acute toxicity values are available at two or more different values of the water quality characteristic, a linear least squares regression of the transformed acute toxicity (TAT) values on the transformed water quality characteristic (TWQC) values is performed to obtain the slope of the line describing the relationship.
- b) Each of the slopes determined pursuant to subsection (a) of this Section is evaluated as to whether it is statistically valid, taking into account the range and number of tested values of the water quality characteristic and the degree of agreement within and between species. If slopes are not available for at least one fish and one invertebrate species, or if the available slopes are too dissimilar or if too few data are available to define the relationship between acute toxicity and the water quality characteristic, then the LMAATC must be calculated using the procedures in Section 302.555.

- c) Normalize the TAT values for each species by subtracting W, the arithmetic mean of the TAT values of a species, from each of the TAT values used in the determination of the mean, such that the arithmetic mean of the normalized TAT values for each species individually or for any combination of species is zero (0.0).
- d) Normalize the TWQC values for each species using X, the arithmetic mean of the TWQC values of a species, in the same manner as in subsection (c) of this Section.
- e) Group all the normalized data by treating them as if they were from a single species and perform a least squares linear regression of all the normalized TAT values on the corresponding normalized TWQC values to obtain the pooled acute slope, V.
- f) For each species, the graphical intercept representing the species TAT intercept, f(Y), at a specific selected value, Z, of the WQC is calculated using the equation:

$$f(Y) = W - V(X - g(Z))$$

Where:

f() is the transformation used to convert acute toxicity values to TAT values

Y is the species acute toxicity intercept or species acute intercept

W is the arithmetic mean of the TAT values as specified in subsection (c) of this Section

V is the pooled acute slope as specified in subsection (e) of this Section

X is the arithmetic mean of the TWQC values as specified in subsection (c) of this Section

g() is the transformation used to convert the WQC values to TWQC values

Z is a selected value of the WQC

- g) For each species, determine the species acute intercept, Y, by carrying out an inverse transformation of the species TAT value, f(Y). For example, in the case of a logarithmic transformation, $Y = \text{antilogarithm of } (f(Y))$; or in the case where no transformation is used, $Y = f(Y)$.
- h) The Final Acute Intercept (FAI) is derived by using the species acute intercepts, obtained from subsection (f) of this Section, in accordance with the procedures described in Section 302.555 (b) through (g), with the word "value" replaced by the word "intercept". Note that in this procedure geometric means and natural logarithms are always used.
- i) The Aquatic Acute Intercept (AAI) is obtained by dividing the FAI by two .

If, for a commercially or recreationally important species, the geometric mean of the acute values at Z is lower than the FAV at Z, then the geometric mean of that species must be used as the FAV.
- j) The LMAATC at any value of the WQC, denoted by WQCx, is calculated using the terms defined in subsection (f) of this Section and the equation:

$$\text{LMAATC} = \exp[V(g(\text{WQCx}) - g(Z)) + f(\text{AAI})]$$

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.563 Determining the Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV)

If all eight minimum data requirements for calculating ~~an~~ FAV using Tier I procedures are not met, a Tier II LMAATV must be calculated for a substance as follows:

- a) The lowest GMAV in the database is divided by the Secondary Acute Factor (SAF) corresponding to the number of satisfied minimum data requirements listed in the Tier I methodology (Section 302.553). In order to calculate a Tier II LMAATV, the data base must contain, at a minimum, a GMAV for one of the following three genera in the family Daphnidae -- Ceriodaphnia sp., Daphnia sp., or Simocephalus sp. The Secondary Acute Factors are:

Number of Minimum data requirements satisfied (required taxa)	Secondary Acute Factor
1	43.8
2	26.0
3	16.0
4	14.0
5	12.2
6	10.4
7	8.6

- b) If dependent on a water quality characteristic, the Tier II LMAATV must be calculated according to Section 302.560.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.565 Determining the Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or the Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV)

- a) Determining Tier I LMCATC
- 1) When chronic toxicity data are available for at least eight resident or indigenous species from eight different North American genera of freshwater organisms as specified in Section 302.553, a Tier I LMCATC is derived in the same manner as the FAV in Section 302.555 or 302.560 by substituting LMCATC for FAV or FAI, chronic for acute, SMCV (Species Mean Chronic Value) for SMAV, and GMCV (Genus Mean Chronic Value) for GMAV.
 - 2) If data are not available to meet the requirements of subsection (a) of this Section, a Tier I LMCATC is calculated by dividing the FAV by the geometric mean of the acute-chronic

ratios (ACRs) obtained from at least one species of aquatic animal from at least three different families provided that of the three species:

- A) At least one is a fish;
 - B) At least one is an invertebrate; and
 - C) At least one species is an acutely sensitive freshwater species if the other two are saltwater species.
- 3) The acute-chronic ratio (ACR) for a species equals the acute toxicity concentration from data considered under Section 302.555 or 302.560, divided by the chronic toxicity concentration.
- 4) If a resident or indigenous species whose presence is necessary to sustain commercial or recreational activities will not be protected by the calculated LMCATC, then the SMCV for that species is used as the CATC.
- b) Determining the Tier II LMCATV
- 1) If all eight minimum data requirements for calculating a FCV using Tier I procedures are not met, or if there are not enough data for all three ACRs, a Tier II Lake Michigan Chronic Aquatic Life Toxicity Value shall be calculated using a secondary acute chronic ratio (SACR) determined as follows:
- A) If fewer than three valid experimentally determined ACRs are available:
 - i) Use sufficient ACRs of 18 so that the total number of ACRs equals three; and
 - ii) Calculate the Secondary Acute-Chronic Ratio as the geometric mean of the three ACRs; or
 - B) If no experimentally determined ACRs are available, the SACR is 18.
- 2) Calculate the Tier II LMCATV using one of the following equations:
- A) Tier II LMCATV = FAV / SACR
 - B) Tier II LMCATV = SAV / FACR
 - C) Tier II LMCATV = SAV / SACR
- Where:
- the SAV equals 2 times the value of the Tier II LMAATV calculated in Section 302.563
- 3) If, for a commercially or recreationally important species, the SMCV is lower than the calculated Tier II LMCATV, then the SMCV must be used as the Tier II LMCATV.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

Section 302.580 Procedures for Deriving Water Quality Criteria and Values in the Lake Michigan Basin to Protect Human Health-General

- a) The Lake Michigan Basin human health criteria or values for a substance are those concentrations at which humans are protected from adverse effects resulting from incidental exposure to, or ingestion of, the waters of Lake Michigan and from ingestion of aquatic organisms taken from the waters of Lake Michigan. A Lake Michigan Human Health Threshold Criterion (LMHHTC) or Lake Michigan Human Health Threshold Value (LMHHTV) will be calculated for all substances according to Section 302.585, if data is available. Water quality criteria or values for substances which are, or may be, carcinogenic to humans will also be calculated according to procedures for the Lake Michigan Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Human Health Nonthreshold Value (LMHHNV) in Section 302.590.
- b) Minimum data requirements for BAFs for Lake Michigan Basin human health criteria:
 - 1) Tier I.
 - A) For all organic chemicals, either a field-measured BAF or a BAF derived using the BSAF methodology is required unless the chemical has a BAF less than 125, then a BAF derived by any methodology is required; and
 - B) For all inorganic chemicals, including organometals such as mercury, either a field-measured BAF or a laboratory-measured BCF is required.
 - 2) Tier II. Any bioaccumulation factor method in Section 302.570(a) may be used to derive a Tier II criterion.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

TITLE 35 ENVIRONMENTAL PROTECTION

SUBTITLE C: WATER POLLUTION

CHAPTER I: POLLUTION CONTROL BOARD

PART 309

PERMITS

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Appendix A References to Previous Rules

AUTHORITY: Implementing Sections 13 and 13.3 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/13, 13.3 and 27].

SOURCE: Adopted in R71-14, at 4 PCB 3, March 7, 1972; amended in R73-11, 12, at 14 PCB 661, December 5, 1974, at 16 PCB 511, April 24, 1975, and at 28 PCB 509, December 20, 1977; amended in R73-11, 12, at 29 PCB 477, at 2 Ill. Reg. 16, p. 20, effective April 20, 1978; amended in R79-13, at 39 PCB 263, at 4 Ill. Reg. 34, p. 159, effective August 7, 1980; amended in R77-12B, at 41 PCB 369, at 5 Ill. Reg. 6384, effective May 28, 1981; amended in R76-21, at 44 PCB 203, at 6 Ill. Reg. 563, effective December 24, 1981; codified at 6 Ill. Reg. 7818; amended in R82-5, 10, at 54 PCB 411, at 8 Ill. Reg. 1612, effective January 18, 1984; amended in R86-44 at 12 Ill. Reg. 2495 effective January 13, 1988; amended in R88-1 at 13 Ill. Reg. 5993, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2892, effective February 13, 1990; amended in R91-5 at 16 Ill. Reg. 7339, effective April 27, 1992; amended in R95-22 at 20 Ill. Reg. 5526, effective April 1, 1996; amended in R99-8 at 23 Ill. Reg. _____, effective _____.

SUBPART A: NPDES PERMITS

Section 309.141 Terms and Conditions of NPDES Permits

In establishing the terms and conditions of each issued NPDES Permit, the Agency shall apply and ensure compliance with all of the following, whenever applicable:

- a) Effluent limitations under ~~Sections~~Section 301 and 302 of the CWA;
- b) Standards of performance for new sources under Section 306 of the CWA;
- c) Effluent standards, effluent prohibitions, and pretreatment standards under Section 307 of the CWA;
- d) Any more stringent limitation, including those :
 - 1) necessary to meet water quality standards, treatment standards, or schedules of compliance, established pursuant to any Illinois statute or regulation (under authority preserved by Section 510 of the CWA),
 - 2) necessary to meet any other federal law or regulation , or
 - 3) required to implement any applicable water quality standards; such limitations to include any legally applicable requirements necessary to implement total maximum daily loads established pursuant to Section 303(d) of the CWA and incorporated in the continuing planning process approved under Section 303(e) of the CWA and any regulations or guidelines issued pursuant thereto;
- e) Any more stringent legally applicable requirements necessary to comply with a plan approved pursuant to Section 208(b) of the CWA;

- f) Prior to promulgation by the Administrator of the U.S. Environmental Protection Agency of applicable effluent standards and limitations pursuant to Sections 301, 302, 306 and 307 of the CWA, such conditions as the Agency determines are necessary to carry out the provisions of the CWA; ~~and~~
- g) If the NPDES Permit is for the discharge of pollutants into navigable waters from a vessel or other floating craft (except that no NPDES Permit shall be issued for the discharge of pollutants from a vessel or other floating craft into Lake Michigan) any applicable regulations promulgated by the Secretary of the Department in which the Coast Guard is operating, establishing specifications for safe transportation, handling, carriage, storage and stowage of pollutants ; ~~and~~.

~~*Section 309.141(f) was declared invalid in Peabody Coal Co. v. PCB, 3 Ill. App. 3d 5 (5th District, 1976) and declared valid in U.S. Steel v. PCB, 52 Ill. App. 3d 1 (2d District, 1977).~~

- h) If the NPDES Permit is for the discharge of pollutants from other than wet weather point sources into the Lake Michigan Basin as defined at 35 Ill. Adm. Code 303.443:

1) Total Maximum Daily Loads (TMDLs) and Waste Load Allocation (WLA) will be established through either the LaMP or a RAP for an Area of Concern. If a LaMP or RAP has not been completed and adopted, effluent limits shall be established consistent with the other provisions of this Section, including, but not limited to, Additivity, Intake Pollutants, Loading Limits, Level of Detection/Level of Quantification and Compliance Schedules. When calculation of TMDLs or a Waste Load Allocation is incomplete and it is expected that limits established through other provisions will be superseded upon completion of the TMDL or Waste Load Allocation process, those limits shall be identified as interim and the permit shall include a reopener clause triggered by completion of a TMDL or WLA determination. Any new limits brought about through exercise of the reopener clause shall be eligible for delayed compliance dates and compliance schedules consistent with Section 39(b) of the Act [415 ILCS 5/39(b)], 35 Ill. Adm. Code 309.148, and 35 Ill. Adm. Code 352.Subpart H.

2) 35 Ill. Adm. Code 302.590 establishes an acceptable risk level of one in 100,000 (10(-5)) for establishing Tier I criteria and Tier II values for combinations of substances exhibiting a carcinogenic or other nonthreshold toxic mechanism. For those discharges containing multiple nonthreshold substances application of this additive standard shall be consistent with this subsection.

A) For discharges in the Lake Michigan basin containing one or more 2,3,7,8-substituted chlorinated dibenzo-p-dioxins or 2,3,7,8-substituted dibenzofurans, the tetrachloro dibenzo-p-dioxin 2,3,7,8-(TCDD) toxicity equivalence concentration (TEC_{TCDD}) shall be determined as outlined in subsection (h)(2)(B).

B) The values listed in the following Table shall be used to determine the 2,3,7,8-TCDD toxicity equivalence concentrations using the following equation:

$$(TEC)_{TCDD} = \text{Sigma}(C)_x (TEF)_x (BEF)_x$$

WHERE:

$$(TEC)_{TCDD} = \frac{\text{2,3,7,8-TCDD toxicity equivalence concentration in effluent}}{\text{Concentration of total chemical x in effluent}}$$

$$(TEF)_x = \text{TCDD toxicity equivalency factor for x}$$

$$(BEF)_x = \text{TCDD bioaccumulation equivalency factor for x}$$

TABLE

<u>Congener</u>	<u>TEF</u>	<u>BEF</u>
<u>2,3,7,8-TCDD</u>	<u>1.0</u>	<u>1.0</u>
<u>1,2,3,7,8-PeCdd</u>	<u>0.5</u>	<u>0.9</u>
<u>1,2,3,4,7,8-HxCDD</u>	<u>0.1</u>	<u>0.3</u>
<u>1,2,3,6,7,8-HxCDD</u>	<u>0.1</u>	<u>0.1</u>
<u>1,2,3,7,8,9-HxCDD</u>	<u>0.1</u>	<u>0.1</u>
<u>1,2,3,4,6,7,8-HpCDD</u>	<u>0.01</u>	<u>0.05</u>
<u>OCDD</u>	<u>0.001</u>	<u>0.01</u>
<u>2,3,7,8-TCDF</u>	<u>0.1</u>	<u>0.8</u>
<u>1,2,3,7,8-PeCDF</u>	<u>0.05</u>	<u>0.2</u>
<u>2,3,4,7,8-PeCDF</u>	<u>0.5</u>	<u>1.6</u>
<u>1,2,3,4,7,8-HxCDF</u>	<u>0.1</u>	<u>0.08</u>
<u>1,2,3,6,7,8-HxCDF</u>	<u>0.1</u>	<u>0.2</u>
<u>2,3,4,6,7,8-HxCDF</u>	<u>0.1</u>	<u>0.7</u>
<u>1,2,3,7,8,9-HxCDF</u>	<u>0.1</u>	<u>0.6</u>
<u>1,2,3,4,6,7,8-HpCDF</u>	<u>0.01</u>	<u>0.01</u>
<u>1,2,3,4,7,8,9-HpCDF</u>	<u>0.01</u>	<u>0.4</u>
<u>OCDF</u>	<u>0.001</u>	<u>0.02</u>

C) Any combination of carcinogenic or otherwise nonthreshold toxic substances shall be assessed on a case by case basis. The Agency shall only consider such additivity for chemicals that exhibit the same type of effect and the same mechanism of toxicity, based on available scientific information that supports a reasonable assumption of additive effects.

3) Conversion factors for determining the dissolved concentration of metals from the total recoverable concentration.

A) The numeric standards for certain metal parameters in 35 Ill. Adm. Code 302.504 are established as dissolved forms of the substance since the dissolved form more closely relates to the toxicology literature utilized in deriving the standard. However, most discharge monitoring data used in deriving a PEQ will be from a total recoverable analytical method and permit limits if and when established will be set at total recoverable to accommodate the total recoverable analytical method. The Agency will use a conversion factor to determine the amount of total metal corresponding to dissolved metal for each metal with a water quality standard set at dissolved concentration. In the absence of facility specific data the following default conversion factors will be used for both PEQ derivation and establishing WQBELs. The conversion factor represents the portion of the total recoverable metal presumed to be in dissolved form. The conversion values given in the following table are multiplied by the appropriate total recoverable metal concentration to obtain a corresponding dissolved concentration that then may be compared to the acute or chronic standard. A dissolved metal concentration may be divided by the conversion factor to obtain a corresponding total metal value that will generally be the metal form regulated in NPDES permits.

<u>Metal</u>	<u>Conversion Factor</u>	
	<u>Acute Standard</u>	<u>Chronic Standard</u>
<u>Arsenic</u>	<u>1.000</u>	<u>1.000</u>

<u>Cadmium</u>	<u>0.850</u>	<u>0.850</u>
<u>Chromium (Trivalent)</u>	<u>0.316</u>	<u>0.860</u>
<u>Chromium (Hexavalent)</u>	<u>0.982</u>	<u>0.962</u>
<u>Copper</u>	<u>0.960</u>	<u>0.960</u>
<u>Mercury</u>	<u>0.850</u>	<u>0.850</u>
<u>Nickel</u>	<u>0.998</u>	<u>0.997</u>
<u>Selenium</u>	<u>0.922</u>	<u>0.922</u>

Zinc	0.978	0.986
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B) A permittee may propose an alternate conversion factor for any particular site specific application. The request must contain sufficient site specific data, or other data that is representative of the site, to identify a representative ratio of the dissolved fraction to the total recoverable fraction of the metal in the receiving water body at the edge of the mixing zone. If a site specific conversion factor is approved, that factor will be used for PEQ derivation and establishment of a WQBEL in lieu of its default counterpart in subsection (h)(3)(A).

4) Reasonable potential to exceed.

A) The first step in determining if a reasonable potential to exceed the water quality standard exists for any particular pollutant parameter is the estimation of the maximum expected effluent concentration for that substance. That estimation will be completed for both acute and chronic exposure periods and is termed the PEQ. The PEQ shall be derived from representative facility specific data to reflect a 95 percent confidence level for the 95th percentile value. These data will be presumed to adhere to a lognormal distribution pattern unless the actual effluent data demonstrates a different distribution pattern. If facility specific data in excess of 10 data values is available, a coefficient of variation that is the ratio of the standard deviation to the arithmetic average shall be calculated by the Agency. The PEQ is derived as the upper bound of a 95 percent confidence bracket around the 95th percentile value through a multiplier from the following table applied to the maximum value in the data set that has its quality assured consistent with 35 Ill. Adm. Code 352.410 as appropriate for acute and chronic data sets.

PEQ = (maximum data point)(statistical multiplier)

Coefficient of Variation

<u>No. Samples</u>	<u>0.1</u>	<u>0.2</u>	<u>0.3</u>	<u>0.4</u>	<u>0.5</u>	<u>0.6</u>	<u>0.7</u>	<u>0.8</u>	<u>0.9</u>	<u>1.0</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>
<u>1</u>	<u>1.4</u>	<u>1.9</u>	<u>2.6</u>	<u>3.6</u>	<u>4.7</u>	<u>6.2</u>	<u>8.0</u>	<u>10.1</u>	<u>12.6</u>	<u>15.5</u>	<u>18.7</u>	<u>22.3</u>	<u>26.4</u>
<u>2</u>	<u>1.3</u>	<u>1.6</u>	<u>2.0</u>	<u>2.5</u>	<u>3.1</u>	<u>3.8</u>	<u>4.6</u>	<u>5.4</u>	<u>6.4</u>	<u>7.4</u>	<u>8.5</u>	<u>9.7</u>	<u>10.9</u>
<u>3</u>	<u>1.2</u>	<u>1.5</u>	<u>1.8</u>	<u>2.1</u>	<u>2.5</u>	<u>3.0</u>	<u>3.5</u>	<u>4.0</u>	<u>4.6</u>	<u>5.2</u>	<u>5.8</u>	<u>6.5</u>	<u>7.2</u>
<u>4</u>	<u>1.2</u>	<u>1.4</u>	<u>1.7</u>	<u>1.9</u>	<u>2.2</u>	<u>2.6</u>	<u>2.9</u>	<u>3.3</u>	<u>3.7</u>	<u>4.2</u>	<u>4.6</u>	<u>5.0</u>	<u>5.5</u>
<u>5</u>	<u>1.2</u>	<u>1.4</u>	<u>1.6</u>	<u>1.8</u>	<u>2.1</u>	<u>2.3</u>	<u>2.6</u>	<u>2.9</u>	<u>3.2</u>	<u>3.6</u>	<u>3.9</u>	<u>4.2</u>	<u>4.5</u>
<u>6</u>	<u>1.1</u>	<u>1.3</u>	<u>1.5</u>	<u>1.7</u>	<u>1.9</u>	<u>2.1</u>	<u>2.4</u>	<u>2.6</u>	<u>2.9</u>	<u>3.1</u>	<u>3.4</u>	<u>3.7</u>	<u>3.9</u>
<u>7</u>	<u>1.1</u>	<u>1.3</u>	<u>1.4</u>	<u>1.6</u>	<u>1.8</u>	<u>2.0</u>	<u>2.2</u>	<u>2.4</u>	<u>2.6</u>	<u>2.8</u>	<u>3.1</u>	<u>3.3</u>	<u>3.5</u>
<u>8</u>	<u>1.1</u>	<u>1.3</u>	<u>1.4</u>	<u>1.6</u>	<u>1.7</u>	<u>1.9</u>	<u>2.1</u>	<u>2.3</u>	<u>2.4</u>	<u>2.6</u>	<u>2.8</u>	<u>3.0</u>	<u>3.2</u>
<u>9</u>	<u>1.1</u>	<u>1.2</u>	<u>1.4</u>	<u>1.5</u>	<u>1.7</u>	<u>1.8</u>	<u>2.0</u>	<u>2.1</u>	<u>2.3</u>	<u>2.4</u>	<u>2.6</u>	<u>2.8</u>	<u>2.9</u>
<u>10</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.9</u>	<u>2.0</u>	<u>2.2</u>	<u>2.3</u>	<u>2.4</u>	<u>2.6</u>	<u>2.7</u>
<u>11</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>	<u>2.1</u>	<u>2.2</u>	<u>2.3</u>	<u>2.4</u>	<u>2.5</u>
<u>12</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.9</u>	<u>2.0</u>	<u>2.1</u>	<u>2.2</u>	<u>2.3</u>	<u>2.4</u>
<u>13</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>	<u>2.0</u>	<u>2.1</u>	<u>2.2</u>	<u>2.3</u>
<u>14</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>	<u>2.0</u>	<u>2.1</u>	<u>2.2</u>
<u>15</u>	<u>1.1</u>	<u>1.2</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.8</u>	<u>1.9</u>	<u>2.0</u>	<u>2.1</u>
<u>16</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>	<u>1.9</u>	<u>2.0</u>
<u>17</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.7</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>	<u>1.9</u>
<u>18</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.6</u>	<u>1.6</u>	<u>1.7</u>	<u>1.7</u>	<u>1.8</u>	<u>1.9</u>

<u>19</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.3</u>	<u>1.3</u>	<u>1.4</u>	<u>1.5</u>	<u>1.5</u>	<u>1.6</u>	<u>1.6</u>	<u>1.7</u>	<u>1.8</u>	<u>1.8</u>
<u>20</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.2</u>	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>	<u>1.5</u>	<u>1.5</u>	<u>1.6</u>	<u>1.6</u>	<u>1.7</u>	<u>1.7</u>
<u>30</u>	<u>1.0</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	<u>1.3</u>	<u>1.3</u>	<u>1.3</u>	<u>1.3</u>	<u>1.4</u>	<u>1.4</u>
<u>40</u>	<u>1.0</u>	<u>1.0</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>	<u>1.2</u>
<u>50</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>	<u>1.1</u>
<u>60 or greater</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>	<u>1.0</u>

- i) If the PEQ is less than or equal to the water quality standard, there is no reasonable potential and no limit will be established in the permit.
- ii) If the PEQ is more than the water quality standard, the Agency will proceed to consideration of dilution and mixing pursuant to subsection (h)(5).
- B) If facility-specific data of 10 or less data values is available, an alternative PEQ shall be derived using the table in subsection (h)(4)(A) assuming a coefficient of variation of 0.6, applied to the maximum value in the data set that has its quality assured consistent with 35 Ill. Adm. Code 352.410.
- i) If the PEQ is less than or equal to the water quality standard, there is no reasonable potential and no limit will be established in the permit.
- ii) If the PEQ exceeds the water quality standard, an alternative PEQ will be calculated using the maximum value in the data set and a multiplier of 1.4. If the alternative PEQ also exceeds the water quality standard, the Agency will proceed to consider dilution and mixing pursuant to subsection (h)(5).
- iii) If the PEQ exceeds the water quality standard but the alternative PEQ is less than or equal to the standard, the Agency will either proceed to consider dilution and mixing pursuant to subsection (h)(5), or will incorporate a monitoring requirement and reopener clause to reassess the potential to exceed within a specified time schedule, not to exceed one year. In determining which of these options to use in any individual application, the Agency shall consider the operational and economic impacts on the permittee and the effect, if any, deferral of a final decision would have on an ultimate compliance schedule if a permit limit were subsequently determined to be necessary.
- C) The Agency shall compare monthly average effluent data values, when available, with chronic aquatic life, human health and wildlife standards to evaluate the need for monthly average WQBELs. The Agency shall use daily effluent data values to determine whether a potential exists to exceed acute aquatic life water quality standards.
- D) The Agency may apply other scientifically defensible statistical methods for calculating PEQ for use in the reasonable potential analysis as provided for in Procedure 5.b.2 of Appendix F to 40 CFR 132, incorporated by reference at 35 Ill. Adm. Code 301.106.
- E) Regardless of the statistical procedure used, if the PEQ for the parameter is less than or equal to the water quality standard for that parameter, the Agency shall deem the discharge not to have a reasonable potential to exceed, and a water

quality based effluent limit (WQBEL) shall not be required unless otherwise required under 35 Ill. Adm. Code 352.430.

5) If the PEQ for a parameter is greater than the particular water quality standard, criteria or value for that parameter, the Agency will assess the level of treatment being provided by the discharger. If the discharger is providing (or will be providing) a level of treatment consistent with the best degree of treatment required by 35 Ill. Adm. Code 304.102(a), the PEQ derived under subsection (h)(4) shall be compared to a preliminary effluent limitation (PEL) determined by applying an appropriate mixing zone or a default mixing zone to the discharge. Mixing opportunity and dilution credit will be considered as follows:

A) Discharges to tributaries of the Lake Michigan Basin shall be considered to have no available dilution for either acute or chronic exposures, and the PEL will be set equivalent to the water quality standard unless dilution is documented through a mixing zone study.

B) Bioaccumulative chemicals of concern (BCCs):

i) No mixing shall be allowed for new discharges of BCCs commencing on or after December 24, 1997. The PEL will be set equivalent to the water quality standard.

ii) Mixing shall be allowed for discharges of BCCs which existed as of December 24, 1997 in accordance with the requirements of 35 Ill. Adm. Code 302.530.

C) Direct discharges to the Open Waters of Lake Michigan shall have a default mixing allowance of 2:1 for acute standards, criteria or values and 10:1 for chronic standards, criteria or values if the discharge configuration indicates that the effluent readily and rapidly mixes with the receiving waters. If ready and rapid mixing is in doubt the Agency shall deny any default dilution or mixing allowance and require a mixing or dispersion study to determine the proper dilution allowance. If the discharger applies for more than the default dilution or mixing allowance, it must submit a mixing or dispersion study to justify its request. Whenever a mixing or dispersion study is available, it shall be used to determine dilution or mixing allowance in lieu of the default allowance.

6) Preliminary effluent limitations calculations.

(A) The preliminary effluent limitation (PEL) is calculated in a simple mass balance approach reflecting the dilution allowance established in subsection (h)(5):

$$\begin{aligned} \text{WQS} &= [(Q_e)(\text{PEL}) + (Q_d)(C_d)] / [Q_e + Q_d] \text{ or} \\ \text{PEL} &= [\text{WQS}(Q_e + Q_d) - (Q_d)(C_d)] / Q_e \end{aligned}$$

WHERE:

WQS = applicable water quality standard, criteria or value

Qe = effluent flowrate

Qd = allowable dilution flowrate

Cd = background pollutant concentration in dilution water

B) The representative background concentration of pollutants to develop TMDLs and WLAs calculated in the absence of a TMDL shall be established as follows:

i) "Background" represents all pollutant loadings, specifically loadings that flow from upstream waters into the specified watershed, water body, or water body segment for which a TMDL or WLA in the absence of a TMDL is being developed and enter the specified watershed, water body, or water body segment through atmospheric deposition, chemical reaction, or sediment release or resuspension.

(ii) When determining what available data are acceptable for use in calculating background, the Agency shall use its best professional judgment, including consideration of the sampling location and the reliability of the data through comparison, in part, to detection and quantification levels. When data in more than 1 of the data sets or categories described in subsection (h)(6)(B)(iii) exists, best professional judgment shall be used to select the data that most accurately reflects or estimates background concentrations. Pollutant degradation and transport information may be considered when using pollutant loading data to estimate a water column concentration.

(iii) The representative background concentration for a pollutant in the specified watershed, water body, or water body segment shall be established on a case-by-case basis as the geometric mean of: acceptable water column data; water column concentrations estimated through use of acceptable caged or resident fish tissue data; or water column concentrations estimated through the use of acceptable or projected pollutant loading data. When determining the geometric mean of the data for a pollutant that includes values both above and below the detection level, commonly accepted statistical techniques shall be used to evaluate the data. If all of the acceptable data in a data set are below the detection level for a pollutant, then all the data for the pollutant in that data set shall be assumed to be zero.

7) Water quality based effluent limitations.

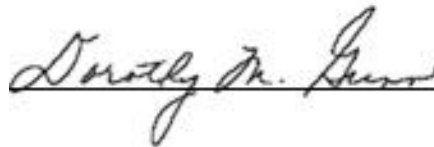
A) If the PEQ is less than or equal to the PEL, it will be concluded that there is no reasonable potential to exceed. Under such circumstances a permit limit for that contaminant will not be set unless otherwise justified under one or more provisions of 35 Ill. Adm. Code 352.430.

- B) If the PEQ is equal to or greater than the PEL, and the PEQ was calculated using a data set of more than 10 values, a water quality based effluent limitation (WQBEL) will be included in the permit. If the PEQ was calculated using a data set of less than or equal to 10 values, and the alternative PEQ calculated under subsection (h)(4)(B) also exceeds the PEL, a WQBEL will be included in the permit.
- C) If the PEQ was calculated using a data set of less than or equal to 10 values, and the PEQ is greater than the PEL but the alternative PEQ is less than the PEL, the Agency will either establish a WQBEL in the permit or incorporate a monitoring requirement and reopener clause to reassess potential to exceed within a specified time schedule, not to exceed one year. In determining which of these options to use in any individual application, the Agency shall consider the operational and economic impacts on the permittee and the effect, if any, deferral of a final decision would have on an ultimate compliance schedule if a permit limit were subsequently determined to be necessary.
- D) The WQBEL will be set at the PEL, unless the PEL is appropriately modified to reflect credit for intake pollutants when the discharged water originates in the same water body to which it is being discharged. Consideration of intake credit will be limited to the provisions of 35 Ill. Adm. Code 352.425.
- E) The reasonable potential analysis shall be completed separately for acute and chronic aquatic life effects. When WQBELs are based on acute impacts, the limit will be expressed as a daily maximum. When the WQBEL is based on chronic effects, the limit will be expressed as a monthly average. Human health and wildlife based WQBELs will be expressed as monthly averages. If circumstances warrant, the Agency shall consider alternatives to daily and monthly limits.

(Source: Amended at 23 Ill. Reg. _____, effective _____.)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 19th day of August 1999 by a vote of 7-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board