ILLINOIS POLLUTION CONTROL BOARD
October 16, 1997

IN THE MATTER OF:	)	
	)	
CONFORMING AMENDMENTS FOR THE	)	R97-25
GREAT LAKES INITIATIVE: 35 ILL.	)	(Rulemaking - Water)
ADM. CODE 302.101; 302.105;	)	
302.SUBPART E; 303.443 AND 304.222	)	

Proposed Rule. Second Notice.

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

On March 21, 1997, the Illinois Environmental Protection Agency (Agency) filed a rulemaking proposal to amend the water quality standards for the Lake Michigan Basin in conformance with the federal Great Lakes Initiative (GLI). Along with the proposal, the Agency filed a statement of reasons (Reasons) and a certification pursuant to Section 28 of the Environmental Protection Act (Act) (415 ILCS 5/28 (1996)) that the amendments are federally required. The Agency also asked the Board to waive certain filing requirements. On April 3, 1997, the Board accepted the Agency's proposal for hearing, accepted the certification that the rule was federally required, and granted the motion to waive certain filing requirements.

The first hearing was held in this matter on May 19, 1997, before Board Hearing Officer Marie Tipsord. At that hearing, the Agency presented testimony to support the proposed rules. On June 19, 1997, the Board adopted a first notice opinion and order based on the Agency's proposal, the first hearing, and the two public comments filed by the Agency prior to first notice.

On July 28, 1997, a second hearing was held in this matter. At that hearing additional testimony by the Agency and testimony from Mr. Jeffrey Smith from Commonwealth Edison on behalf of the Illinois Environmental Regulatory Group (IERG) was presented. The Board has received 14 public comments in this matter.

Today, the Board sends this matter to second notice pursuant to the Illinois Administrative Procedure Act (5 ILCS 100/5-5 *et seq*. (1996)) for review by the Joint Committee on Administrative Rules. In the sections that follow, the Board will discuss certain procedural issues including a motion to create a subdocket. The Board will also discuss issues which have arisen since the first notice opinion and order and the changes to the rules which will be made in response to those issues.

PROCEDURAL MATTERS

On September 18, 1997, the Board granted several motions which had been filed in this proceeding regarding the filing of comments and supplementing the record. Since that order, the Board has received three filings asking to file comments instanter: on September 26,

1997, from R. Lavin & Sons; and on September 29, 1997, from Illinois Environmental Regulatory Group and from the National Wildlife Federation. All three motions to file instanter are well beyond the date the hearing officer had set for closing this record and well beyond the Board's normal seven day response time. See 35 Ill. Adm. Code 101.241. Therefore, the Board denies the motions to file instanter, and these comments will not be considered in preparing this rule for second notice.

CREATING A SUBDOCKET

The Board reserved ruling on a motion filed by IERG on September 4, 1997, (IERG Mot.) seeking the establishment of a subdocket. On September 12, 1997, the Agency filed a response to the IERG motion (Sept. 12 Ag. Resp.). Although the Board received no additional filings specifically characterized as a response to the motion, other commentors did discuss the issue raised in the motion and those comments will be discussed below.

IERG is asking the Board to create a subdocket for the purpose of addressing the issue of mixing zones under the GLI. In support of the request, IERG points out that the Agency's proposal was based on the federal GLI proposal. IERG Mot. at 1. On June 6, 1997, the D.C. Circuit Court of Appeals issued an opinion which vacates several provisions of the federal GLI including the phase out of mixing zones for Bioaccumulative Chemicals of Concern (BCC). American Iron and Steel Institute v. USEPA et al. 1997 WL 297251 (D.C. Cir June 6, 1997) (Exh. 9). The Court vacated the phase out of mixing zones finding that USEPA had failed to consider the enormous costs that would be imposed on dischargers because of the phase out. Exh. 9 at 12.

IERG maintains that since the phase out of mixing zones contained in the Board's proposed rule is based on the federal GLI provision struck by the court, the record in this matter lacks economic justification for the phase out. IERG Mot. at 2-3. IERG argues that the Agency relied on the economic analysis conducted by USEPA in support of the Agency's assertion that the GLI provisions are economically reasonable. IERG Mot. at 2-3, citing Agency Reasons at 9-10. IERG continues its argument stating that as the United States Environmental Protection Agency (USEPA) record does not address the economic impacts of the mixing zone phase out, the Board's record is also "void of economic data for the Board's consideration." IERG Mot. at 3.

IERG also believes that a subdocket will be helpful to address the human health and wildlife standards for polychlorinated biphenyls (PCBs) which were also vacated by the Court. IERG Mot. at 3. IERG argues that although USEPA has promulgated revised human health and wildlife criteria in March of 1997, USEPA will be revising further the human health criteria. IERG Mot. at 3. IERG bases this comment on the memorandum from Jim Hanlon of USEPA submitted by the Agency to the Board on September 2, 1997 (USEPA memorandum).[1]

[1] The Board granted the Agency's motion to supplement the record with the memorandum, dated July 31, 1997, from Jim Hanlon, Deputy Director, Office of Science and Technology, USEPA on September 18, 1997.

The Agency opposes the creation of a subdocket for consideration of a phase out on mixing zones for BCCs as well as the standard for PCBs. Sept. 12 Ag. Resp. at 1. The Agency believes both proposals are ripe for decision at this time and both are supported by the record. *Id*. The Agency opposes a subdocket concerning PCBs because the Agency suggests an amendment to the human health PCB standard as a part of its comments before the Board today. The amendment recommended by Agency would provide a standard that would be consistent with the standard suggested in the USEPA memorandum. Specifically, the standard does take into account the revised cancer potency factor of 2. Therefore, the Agency maintains that additional evidence is not needed and a subdocket need not be opened to establish Lake Michigan Basin water quality standards for PCBs.

The Agency concedes that it initially concurred in the creation of a subdocket to consider the phase out on mixing zones for BCCs; however, the Agency subsequently received the USEPA memorandum. The memorandum from Jim Hanlon includes an analysis and response to the American Iron and Steel Institute v. USEPA. The USEPA memorandum indicates that two analyses were done to evaluate the impact of a mixing zone phase out. The first analysis was based on current analytical method detection levels (MDLs) and showed that elimination of mixing zones would have minimal cost impacts. USEPA memorandum at 4. The elimination would have no impact because as a practical matter a discharger could not be found to be in noncompliance unless its discharges are at or above the detection level and most of the criteria and effluent concentrations for BCCs are well below the MDL. *Id*. The second analysis hypothesized that the ability to detect BCCs was improved by a factor of 10 or 100 and showed that as detection levels improve, elimination of the mixing zone provision may result in significantly higher costs from phasing out mixing zones. *Id*. The second analysis was cited by the court in its decision to vacate the phase out for BCC mixing zones. Thus, USEPA intends to clarify and amend the GLI to reinstate the mixing zone phase out in 1998. *Id*.

The Agency points out that the current MDLs in Illinois cannot change without additional rulemaking. Thus, for the economic hardship that concerned the D.C. Court of Appeals to affect any Illinois dischargers, better scientific detection methods would have to be developed and those methods would have to be adopted by the Board. PC 8 at 5. Further, the Agency believes that the phase out of the BCC mixing zone should be retained because the phase out preserves the conceptual benefits of eliminating persistent toxic chemicals from the Lake Michigan ecosystem yet is unlikely to cause any Illinois dischargers to incur any adverse economic effects from noncompliance. PC 8 at 5. Therefore, the Agency does not believe a subdocket is necessary to further consider mixing zones under GLI.

The Lake Michigan Federation and the Sierra Club of Illinois (LMFSC) in their comment (PC 5) support the phasing out of mixing zones even though the D.C. Court of Appeals vacated that part of the federal GLI. The LMFSC argue that the phase out should be maintained because:

1. no mixing zones for BCCs currently exist in the Illinois portion of Lake Michigan and so the cost rationale cited by the court does not apply to Illinois;
2. the court's remand of the mixing zone phase out was based on municipal concerns over only mercury;
3. the court's reliance on the study by the Michigan town of Owosso is misplaced because that study is outdated; and
4. the court recognized that the phase out complies with federal law. PC 5.

The Board is persuaded that a subdocket is not necessary in this proceeding to consider a phase out of mixing zones for BCCs. First, the Board notes that although the Board must consider the economic reasonableness of a rule, the Board is not limited to adopting only rules which the Board has determined to be technically feasible and economically reasonable. See Granite City v. Pollution Control Board, 155 Ill.2d 149, 613 N.E.2d 719 (1993) (Granite City). The Illinois Supreme Court stated in the Granite City case:

> The Board must then use its technical expertise and judgment in balancing any hardship that the regulations may cause to dischargers against its statutorily mandated purpose and function of protecting our environment and public health. Granite City at 613 N.E.2d at 734.

In this proceeding, the economic information provided in the record and supplemented by the Agency, in its final comments and the USEPA memorandum convinces the Board that the phasing out of mixing zones is economically reasonable. The additional material illustrates conclusively to the Board that at current detection levels, the phase out of mixing zones will have minimal economic impact on the regulated community. Further, any potential economic impact can be offset by the fact that the proposed rule prohibits establishing new mixing zones but the rule does not immediately prohibit mixing zones. Rather, the rule provides that existing mixing zones are eligible for mixing allowance until March 23, 2007. Thus, even if a discharger currently has a mixing zone, the rule will allow that discharger to maintain its mixing zone until March 23, 2007. This will allow the discharger time to investigate alternatives which could include an adjusted standard or site-specific rule if the economic hardship is arbitrary or unreasonable.

Finally, the Board finds that the phasing out of mixing zones is appropriate as a matter of good public policy. The phasing out of mixing zones will help to insure the water quality of the Lake Michigan Basin and thereby protect human health and the environment at minimal economic costs to dischargers to the Lake Michigan Basin. Therefore, the Board finds that opening a subdocket to delay rulemaking on the Lake Michigan Basin mixing zone phase out for BCC's is not warranted.

The Board also finds that the human health standard for PCBs does not need further review at this time. The Agency has suggested amending the PCB human health standard using the revised cancer potency factor. Also, the Board will take administrative notice of action taken by the USEPA on October 9, 1997, regarding the standards for PCBs in the GLI.

See 62 FR 52922-52924.[2] The USEPA has withdrawn the human health standards for PCBs, but recommends that the states and tribes adopt a standard no less stringent than 2.6 ug/l or use Tier I methodologies for human health. Thus, the Agency's suggested action is consistent with USEPA guidance. The Board will accept the Agency's proposal and the Board will not open a subdocket to consider human health standards for PCBs.

ISSUES

Prior to proceeding to second notice there are certain issues raised in the public comments which the Board must address. The Agency has suggested changes to the rule as it was proposed at first notice. In addition, IERG, R. Lavin & Sons, Inc., and the LMFSC have raised issues and suggested some additional language changes. The Board will first discuss the comments from IERG, then R. Lavin & Sons (Lavin) followed by LMFSC. The Board will lastly address the suggestions of the Agency.

Illinois Environmental Regulatory Group Comments

On August 27, 1997, the Board received a filing from IERG (Aug. 27 IERG) which included proposed language changes in three sections. First, IERG suggests changes in the procedures to establish BCCs. Second, IERG suggests changes to the Tier I wildlife criterion water quality derivation procedures. Third, IERG suggests a clarification of the definition of Lake Michigan Basin Waters.

Bioaccumulative Chemicals of Concern

IERG is concerned with the manner in which BCCs are designated as proposed at first notice. Specifically, IERG is concerned with the absence of procedures which establish how, when, and by whom a chemical is to be designated a BCC. IERG has suggested that the manner in which a BCC is to be designated should include a procedure for the Board's adoption of the BCC. Aug. 27 IERG at 2. IERG asks that the Board add a new Section 302.520 which spells out the procedures for designating a BCC and renumber Section 302.520 as proposed to Section 302.521. *Id*. New Section 302.520 would have the Board determine, via a Board rulemaking, what does or does not constitute a BCC. However, while the chemical is under Board consideration, the chemical would be treated as a BCC (PC 6 at 7), thus, satisfying GLI requirements. As proposed by IERG, the new Section 302.520 would read:

> Section 302.520 Regulation and Designation of Bioaccumulative Chemicals of Concern (BCCs)
>
> a) For the purposes of regulating BCCs in accordance with Sections 302.521 and 302.530 of this Part, the following chemicals shall be considered as BCCs:

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[2] The Board will enter the *Federal Register* pages as an exhibit in this rulemaking.

1) any chemical or class of chemicals listed as a BCC in Section 302.501; and

2) any chemical or class of chemicals that the Agency has determined meets the characteristics of a BCC as defined in Section 302.501 as indicated by:

A) publication in the Illinois Register; or

B) notification to a NPDES permittee or applicant; or

C) filing a petition with the Board to verify that the chemical shall be designated a BCC.

b) Notwithstanding subsections (a)(2)(A) and (B) of this Section, a chemical shall not be regulated as a BCC if the Agency has not filed a petition, within 60 days after such publication or notification, with the Board in accordance with Section 28.2 of the Act to verify that the chemical shall be designated a BCC.

c) Pursuant to subsection (b) of this Section and Section 302.570 of this Part, if the Board verifies that a chemical has a human health bioaccumulation factor greater than 1,000 and is consistent with the definition of a BCC in Section 302.105, the Board shall designate the chemical as a BCC and list the chemical in Section 302.501. If the Board fails to verify the chemical as a BCC in its final action on the verification petition, the chemical shall not be listed as a BCC and shall not be regulated as a BCC in accordance with Sections 302.521 and 302.530 of this Part.

The Agency agrees that a new Section 302.520 should be added to reflect a procedure for determining BCCs. The Agency supports language which reflects a proposal to publicize the availability of information on unlisted BCCs, the application of unlisted BCCs to a discharger, or the opportunity to participate in a listing rulemaking before the Board. 9/2 Ag. at 23. The Agency agrees to the language suggested by IERG except that the Agency recommends deleting the limitation that only NPDES permit holders be notified in (a)(2) of the amendatory language. *Id*. The Agency believes that the scope of discharges affected by the definition of BCCs is larger than NPDES permit holders or applicants.

The LMFSC commented that the Board should retain the definition of BCC as proposed in Section 302.510 because that definition is consistent with the GLI. PC 5 at 6. The LMFSC maintains that the USEPA intended to allow for additional chemicals to be added and never intended the list to be limited to the 22 chemicals listed in the definition. *Id*. LFMSC further asserts in its comment that IERG's suggested new Section 302.520 is not clearly consistent with the GLI's minimum federal mandates. PC 5 at 6. LFMSC believes that the section proposed by IERG should not be adopted. *Id*.

The Board accepts the IERG suggestion to add a new section which delineates procedures for amending the list of BCCs. The Board further agrees with the Agency that the notification should not be limited to NPDES permit holders or applicants and the Board will amend the language accordingly. The addition of this section will provide specific procedures to amend the list of BCCs. These procedures will include a rulemaking pursuant to Section 28.2 of the Act and the Illinois Administrative Procedure Act. 415 ILCS 5/28.2 (1996); 5 ILCS 100/5-5 *et seq*. (1996) These added procedures will insure that interested parties will be notified and have an opportunity to comment on any additions to the list of BCCs. At the same time, the actual definition of BCCs had not been amended so that the universe of potential BCCs remains unaltered. Thus, the Board finds that adding this language will insure that any future addition to the list of BCCs will be done according to Illinois law while protecting the intent of the GLI.

Wildlife criteria derivation procedures

IERG expressed concern regarding the proposed application of the GLI wildlife criteria derivation procedures proposed at Section 302.575. Tr.2 at 57. IERG had several discussions with the Agency and as a result of those discussions proposed that language be added to Section 302.575. The Agency is in agreement with the language suggested by IERG. 9/2 Ag. at 43. IERG recommends adding:

> This method shall also be used for non-BCC, as appropriately modified based upon consideration of the following factors: selection of scientifically justified target species; relevant routes of chemical exposure; and pertinent toxicity endpoints. Aug. 27 IERG at 4.

The modification put forth by IERG clarifies that the methods set forth in Section 302.575 are to be used to develop Tier I wildlife criterion for non-BCCs. The Board finds that the suggested language clears up an ambiguity in the proposed rule. Therefore, the Board will accept the language suggested by IERG and agreed to by the Agency.

Clarification of Lake Michigan Basin waters

IERG has suggested clarifying the definition of Lake Michigan Basin at Section 303.443 to make clear that only those tributary waters which fulfill the definition of waters at 35 Ill. Adm. Code 301.440 and which are within Illinois' jurisdiction are included in the

definition. Aug. 27 IERG at 5. IERG has indicated that it has discussed this matter with the Agency, and IERG and the Agency have agreed to language. Specifically, IERG recommends adding the phrase "(as defined in 35 Ill. Adm. Code 301.440), within Illinois jurisdiction," to Section 303.443(b).

This amendment to the proposal will lend specificity to the rule. Further, the amendment may also help to address concerns raised by other comments. Thus, the Board will accept the language suggested by IERG and agreed to by the Agency.

R. Lavin & Sons, Inc. Comments

Lavin presents three issues for the Board's consideration in Lavin's comment filed August 28, 1997. Lavin suggest that the Board should 1) clarify that the GLI does not regulate stormwater point sources; 2) clarify that the definition of "Lake Michigan Basin waters under Illinois jurisdiction" excludes stormwater and waters enclosed in sewers; and 3) correct water quality standards for metals that use total rather than dissolved form to measure metals. PC 4 at 1-5.

Clarify that GLI does not regulate stormwater point sources

Lavin argues that the federal GLI provides that for wet weather point sources, states need not adopt and apply the final Guidance implementation procedures. PC 4 at 2, citing 60 FR 15380 and 60 FR 15390. The definition of "wet weather point source" includes stormwater according to Lavin. PC 4 at 1. Thus, Lavin maintains that the inclusion of stormwater in the definition of wet weather point source coupled with the exclusion of wet weather point source from the federal GLI establishes that the federal GLI does not regulate stormwater point sources. PC 4 at 2.

Lavin argues that to "avoid premature rulemaking" the Board should amend the proposal to clarify that the proposed regulations do not regulate stormwater. Lavin suggests that the Board add a sentence to Section 302.501(a) which states: "[t]he Lake Michigan Basin water quality standards do not apply to wet weather point sources." PC 4 at 3. Lavin also suggests adding a definition for "wet weather point source" to Section 302.501(b).

The Department of the Navy (Navy) filed a comment which directly responds to the comments filed by Lavin. Navy disagrees with Lavin regarding the regulation of wet weather point sources. PC9 at 6-7. Navy argues that the federal GLI at 60 FR 15371 states that "the water quality criteria to protect human health, wildlife and aquatic life, and the antidegradation provisions apply to the waters in the Great Lakes System regardless of whether discharges to the water are from point or nonpoint sources." PC 9 at 6-7. Thus, Navy maintains that wet weather point sources are not excluded from the federal GLI and should not be excluded from Illinois water quality criteria. PC 9 at 7.

The Navy agrees that Lavin is correct that the federal GLI excepts wet weather point sources from the precise implementation provisions of GLI. PC 9 at 7. The Agency has

elected to adopt its own version of the implementation procedures rather than incorporating the federal procedures by reference. *Id*. Navy maintains that the Agency does not use the term wet weather point source so there is no need to add definition for that term to the Board's rule. *Id*.

The Illinois Attorney General's Office filed a comment responding to Lavin's request that the Board exempt wet weather point sources from the proposed rules. The Attorney General maintains that key concepts of the GLI take into account the multi-media nature of the pollution problem. Those key concepts include 1) water quality criteria and antidegradation, 2) consideration of the presence of pollutants in ambient waters, including pollutants from nonpoint source dischargers, when establishing water quality criteria based effluent limitations, and 3) addressing nonpoint sources by specifying that the loading capacity of a receiving water that does not meet water quality standards for a particular pollutant be allocated among nonpoint sources as well as point sources through the total maximum daily loads concept (TMDL). PC 10 at 2, citing 60 FR 15371. The Attorney General argues that although states and tribes generally do not have to adopt guidance for wet weather events a specific exception to that guidance is for the application of TMDL general condition for wet weather events. *Id*. The Attorney General asserts that for the Board to adopt an exception for stormwater discharges at this time would be to ignore the totality of the federal GLI. *Id*.

The LMFSC also agree that GLI does not require the states to adopt implementation procedures for wet weather point sources. PC 11 at 3. However, LMFSC does believe that the GLI's acute and chronic water quality criteria and values for the protection of aquatic life, the criteria for the protection of wildlife, and nondrinking water quality criteria for human health apply to all waters of the Great Lakes System PC 11 at 3. Therefore to exclude wet weather point sources from the GLI jurisdiction would be contrary to the plain language of the GLI, according to LMFSC. PC 11 at 4.

The Agency agrees that it has testified that some stormwater flows are not subject to the permitting provisions of GLI. PC 8 at 2. However, the Agency maintains that the language changes suggested by Lavin to Sections 302.501(a) and 303.443(b) confuses the distinction between a discharge or effluent standard and a water quality standard. *Id*. The Agency maintains that these water quality standards do not directly apply to the discharges from point sources, non-point sources, wet weather flows and airborne deposition but to the waters of the state outside any allowed or permitted mixing zone. The concentration of contaminants in these waters is a result of the contribution of many sources but can only be controlled to the extent that regulatory authority exits for those limitations. *Id*. The Agency asserts that it intends to make the non application of GLI to wet weather flows clearer in the Agency's implementation rules. *Id*. The Agency does not object to adding the definition of wet weather point source to Section 302.501(b).

The Board will not accept Lavin's suggestion to clarify that GLI does not regulate stormwater flows. The Board finds that the rule as proposed is clear that the provisions are water quality standards which apply to the Lake Michigan Basin. These proposed rules do not discuss sources of the pollution and to exclude one specific source would be inappropriate.

The Agency is charged with the responsibility of adopting rules implementing the water quality standards and the Board will leave to the Agency the responsibility of clarifying the implementation of the GLI water quality standards.

Clarify that the definition of "Lake Michigan Basin water under Illinois jurisdiction" excludes stormwater and water enclosed in sewers

Lavin expressed a concern that the current definition of "Lake Michigan Basin waters under Illinois jurisdiction" could be interpreted to include waters enclosed in sewers that eventually lead to tributaries of Lake Michigan. PC 4 at 4. Lavin points out that the definition of "waters" in the Board's rules specifically excludes "sewers". *Id*. Thus, Lavin argues the GLI water quality standards should cease to apply upon reaching the sewer closest to Lake Michigan's tributaries. PC 4 at 4-5. Lavin maintains that "[t]heoretically . . . the point of application of the water quality standards could be at any point between a discharging facility and Lake Michigan." PC 4 at 5. In order to clarify the definition, Lavin suggests amending Section 303.443 to read:

> Lake Michigan harbors and waters within the breakwaters, and waters, as that term is defined in 35 Ill. Adm. Code 301.440, downstream of the closest sewer leading to a tributary to Lake Michigan including streams, sloughs and other watercourses not named elsewhere in this Part, but not including discharges from wet weather point sources that lead to these tributaries. PC 4 at 5.

Navy opposes Lavin's suggestion that waters of Lake Michigan Basin should be defined as "downstream of the closest sewer leading to a tributary to Lake Michigan." Navy argues that Lavin points to no authority for this position and such a proposition would "subvert the ameliorative intent of the GLI." PC 9 at 8. Navy maintains that Lavin's "theory" is not at question, but rather what the regulations actually provide. *Id*. Navy maintains that the "Great Lakes System" is defined to include all streams, rivers, lakes and other bodies of water within the drainage basin of the Great Lakes within the United States. *Id*. Navy believes that under Lavin's definition, dischargers downstream may be left to bear the consequences of upstream sewer dischargers. *Id*.

The Attorney General also opposes the change to the definition of Lake Michigan Basin waters suggested by Lavin. PC 10 at 2-3. The Attorney General argues that the focus of the GLI is to maintain, if not improve the current water quality of the Great Lakes. PC 10 at 2. The Attorney General states "[i]t is logical that any adverse impacts to water quality in tributary waters. . . will . . . lead to eventual degradation of the Lake Michigan waters." PC 10 at 3. The Attorney General argues that the proposal by Lavin to exempt stormwaters and waters enclosed in sewers does not fulfill the intent of the antidegradation provisions of GLI and therefore should not be adopted.

The LMFSC does not agree that the definition of Lake Michigan Basin waters should be amended as proposed by Lavin. PC 11 at 4-5. LMFSC maintains that the water quality criteria apply to all waters in the Great Lakes System. PC 11 at 5.

The Board finds that the record does not support adding the phrase "downstream of the closest sewer leading to a" in the definition of Lake Michigan Basin at Section 303.443. The Board is persuaded that the addition of this phrase would only confuse the language of the proposal and could leave the rule open to an interpretation contrary to the actual intent of the GLI and the Board.

Use of dissolved metals standards versus total metals standard

Lavin points out that the Agency's statement of reasons indicated that there is a change in the measured form of metal contaminates from total to dissolved. PC 4 at 6, citing Statement of Reasons at 5. Lavin also points to testimony by Mr. Robert Mosher, an Agency representative, in which Mr. Mosher stated that "for numerical standards for metals, the freely dissolved form is being proposed as the basis for the standard." PC 4 at 6, citing Tr.1 at 21. Lavin maintains that given the decision to use the dissolved form to measure metals, the use of the dissolved form must be applied consistently to the metals. PC 4 at 6. Lavin suggest adding "dissolved" after Chromium (hexavalent), Lead, and Mercury in Section 302.504.

Navy encourages the Board to adopt a total standard for all metals. PC 9 at 10. Navy maintains that USEPA has recommended using dissolved standard rather than total standard as a general recommendation not specific to GLI. PC 9 at 9. This recommendation is based on the fact that it is the fraction of the total metals concentration which is most bioavailable and therefore responsible for most of the observed toxicity, according to Navy. *Id*. Navy also argues that use of a dissolved standard fails to account for metals contamination present in sediments or the potential for increased metals loading of sediments with the undissolved or particulate metals found in the discharge. PC 9 at 9-10.

The LMFSC also supports the use of a total standard for all metals. PC 11 at 6-7. LMFSC maintains that Illinois should not use dissolved metals standard to monitor water quality and determine attainment of water quality standards. PC 11 at 7. LMFSC maintains that the Agency used the dissolved metals standards for some metals because this parameter was used in the toxicity studies that were used to develop the GLI.

The Agency points out that some of the standards for metal were taken directly from the existing standards at 35 Ill. Adm. Code 302. PC 8 at 3. The Agency states that there is no quantitative difference in the concentration of the metal hexavalent chromium depending on the total or dissolved state. *Id*. Mercury should be retained as a total water quality standard because it is constantly being changed by biological action into methylmercury compounds according to the Agency. *Id*.

The Board is not persuaded that a change to a total standard for metals is supported by the record and therefore the Board will not make that change. With regard to Lavin's

suggestion, the Board is persuaded that the standard for hexavalent chromium, mercury, and lead are more appropriate as total standards.

Lake Michigan Federation and Sierra Club comments

In addition to the comments discussed above, LMFSC also provided extensive comments on the proposed rule. LMFSC's comments begin by suggesting that the State of Illinois designate Lake Michigan as an "Outstanding National Resource Water" pursuant to the GLI. PC 5 at 5. LMFSC argues that Lake Michigan meets the criteria as Lake Michigan serves as a drinking water source for approximately seven million people, is an exceptional environmental value, and is of high recreational value. PC 5 at 5-6.

LMFSC argues that several provisions of the proposed rule regulating antidegradation are inconsistent with the federal GLI. Specifically, LMFSC believes that Section 302.520 should include the language that a proposed increase in discharge may be permitted only upon demonstration of important social or economic benefits "to the area in which the waters are located." PC 5 at 11. LMFSC argues that this language should be included to insure that the benefit is not confined to the discharger, but those in the surrounding downstream communities. *Id*. LMFSC also maintains that Section 302.520 should allow activities to be covered to include those for which "independent regulatory authority exists". *Id*. An example of such activities would be best management practices required by the state. Finally, LMFSC argues that the language in Section 302.530(b) which provides an exemption for short-term discharges, bypasses, and other activities must be amended to allow the director of the Agency to make such determinations on a case-by-case basis. *Id*.

LMFSC questions the exclusion of the Chicago River, the North Shore Channel, and the Calumet River from the definition of Lake Michigan Basin. PC 5 at 15. LMFSC questions whether there is a sound scientific basis for this exemption since "toxic chemicals in these tributaries most likely flow back into Lake Michigan" during wet weather events. *Id*. LMFSC urges the Board and the Agency to review this matter.

LMFSC also urges the Board to adopt the GLI methodology for Tier II wildlife values in Section 302.555. PC 5 at 13. LMFSC maintain that adoption of the Tier II values will allow the protection of wildlife while allowing the collection of data. LMFSC also recommend that the Tier I and Tier II values be applicable to BCCs and non-BCCs. PC 5 at 13.

LMFSC suggest that the 15 grams/day fish consumption rate used to derive the human health criteria in Section 302.565 and 302.570 is inadequate protection for many Illinois citizens who catch and eat fish from Lake Michigan. PC 5 at 13. LMFSC urge the Board to adopt a more protective 30 grams/day consumption for the human health criteria. PC 5 at 14.

LMFSC maintains that a variance should not be granted unless the applicant has initiated pollution minimization procedures and that the variance would result in substantial and widespread economic and social impact. PC 5 at 15. LMFSC argues that the variance

standard is focused no longer only on the discharger's financial costs of meeting the water quality standard in the effluent. *Id*.

The Agency responded specifically to LMFSC's comments regarding antidegradation. The Agency indicated that they did not include the language allowing any activity for which independent regulatory authority exists because the Agency believes the language is too vague. PC 8 at 6. The Agency also pointed out that the fish consumption level was derived using surveys from the Great Lakes region. PC 8 at 7.

The Illinois Steel Group also responded specifically to LMFSC's comment regarding the definition of the Lake Michigan Basin. PC 7. The Illinois Steel Group maintains that removing the exemption for the Chicago River, the North Shore Channel, and the Calumet River is not supported by the record. PC 7 at 2. The Illinois Steel Group also argues that such a change in the definition would "severely prejudice affecting facilities" which are located well away from Lake Michigan on the Calumet River. *Id*.

The Board will not make any additional changes to the rule as proposed based on the comments filed by LMFSC. The Board finds that the record lacks sufficient information to make the changes suggested.

Agency Comments

In addition to the comments by the Agency discussed above, the Agency's August 27, 1997 filing included several other suggested language changes for the Board's consideration. Many of those changes were minor clarifications or typographical errors and the Board will accept those changes without comment. The following is a section-by-section breakdown of the more substantial changes recommended by the Agency.

Section 302.501

The Agency suggested adding a definition from 60 FR 15366 for bioconcentration as well as another correction and changes for consistency. The Board will accept the Agency's suggestion to add the definition for bioconcentration. The Board, however, found no other changes in the section indicated by the Agency.

Section 302.504

The Agency suggested using "concentrations" rather than "levels" in this Section. The Agency proposed that in the tables the level for selenium be amended to "N/A" as the USEPA has not finalized an acute standard for selenium and its forms. The Agency also proposes a revision for the human health criterion for mercury to 3.1 nanograms per Liter. The Board will accept these changes.

Sections 302.507 and 302.508

The Agency recommends amending the titles of these section to more accurately reflect the content of the sections. The Board agrees with this change.

Section 302.520

This Section will be renumbered to Section 302.521. The Agency also suggests changing references to the Department of Transportation to the Department of Natural Resources. The Agency also suggests clarifying language in Section 302.520(a)(1) that would include concentration of BCCs equal to the water quality standard. The Board will accept these changes.

Section 302.575

The Agency recommends that this Section be amended to clarify that the Section is applicable basin-wide and to provide criteria for application of the procedures to non-BCCs. In addition the Agency recommends removal of redundant references to target species and clarifying that the "Test dose" and "Toxic dose" are synonymous. The Agency also recommends deleting superfluous language on the extrapolation of subchronic to chronic levels. The Board will accept these changes.

Section 302.585

The Agency recommends amending this section to clarify that Tier I or II can be alternatives and that total uncertainty applies to individual criteria or values. The Board will accept these changes.

CONCLUSION

The Board finds that the proposal is economically reasonable and technically feasible. The Board also finds that the Agency has generally supported the proposal and the proposal warrants approval for second notice. The Board will proceed with the proposal as published at first notice with the amendments discussed above and reflected in the attached order.

ORDER

The Board directs the Clerk to cause the filing of the following proposal for Second Notice with the Joint Committee on Administrative Rules:

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

SUBPART D: SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section

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 21 Ill. Reg. 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 21 Ill. Reg. _____, effective _____.

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 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 ~~are cumulative with the Subpart B and C standards and~~ must be met ~~by~~ in the waters of the Lake Michigan Basin ~~and such other waters~~ as ~~may be~~ designated in 35 Ill. Adm. Code 303~~ (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 21 Ill. Reg. _____, effective _____.)

Section 302.105 Nondegradation

Except as otherwise provided in Section 302.520, ~~Waters~~ waters whose existing quality is better than the established standards at their date of their adoption will be maintained in their present high quality. Such waters will not be lowered in quality unless and until it is affirmatively demonstrated that such change will not interfere with or become injurious to any appropriate beneficial uses made of, or presently possible in, such waters and that such change is justifiable as a result of necessary economic or social development.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.501 Scope, ~~and~~ Applicability, and Definitions

a) Subpart E contains the Lake Michigan Basin water quality standards. These ~~are cumulative with the general use and public water supply standards of Subparts B and C. They~~ must be met in the waters of the Lake Michigan Basin ~~and such additional waters~~ as ~~may be~~ designated in ~~Part 303 (~~35 Ill. Adm. Code ~~Section~~ 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 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 which affect reproductive or developmental success, organismal viability or growth, or any other endpoint 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 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 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 that 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 that 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 which, 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 physicochemical 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 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 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 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 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 which is a large portion of the life span of the organism.

"Dissolved organic carbon" or "DOC" means organic carbon 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 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 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 which is retained by a 1 μm pore size filter.

"Relative Source Contribution" or "RSC" means the percent of total exposure which can be attributed to surface water through water intake and fish consumption.

"Resident or Indigenous Species" means species which currently live a substantial portion of their life cycle, or reproduce, in a given body of water, or 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 21 Ill. Reg. _____, effective _____.)

Section 302.502 Dissolved Oxygen

Dissolved oxygen (STORET number 00300) ~~shall~~ must not be less than 90% 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 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 21 Ill. Reg. _____, effective _____.)

Section 302.503 pH

pH (STORET number 00400) ~~shall~~ 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 must be within the range of 6.5 to 9.0 except for natural causes.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

Section 302.504 Chemical Constituents

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

~~CONSTITUENT~~	~~STORET NUMBER~~	~~CONCENTRATION mg/l~~
~~Ammonia Nitrogen~~	~~00610~~	~~0.02~~
~~Chloride~~	~~00940~~	~~12.0~~

~~Sulfate 00945 24.0~~
~~Phosphorus (as P) 00665 0.007~~
~~Total Solids (Dissolved) 70300 180.0~~

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 Section 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.

Constituent	STORET Number	Unit	AS	CS	HHS
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	01049	µg/L	exp[A	exp[A	NA

Constituent	STORET Number	Unit	AS	CS	HHS
(dissolved)			+ Bln(H)] A = -1.055 B = 1.273	+ Bln(H)] A = -4.003 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	N/A	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	exp B ([pH] + A) A = -5.134	NA

Constituent	STORET Number	Unit	AS	CS	HHS
			B = 1.005	B = 1.005	
Toluene	78131	mg/L	NA	NA	51.0
Trichloroethylene	39180	µg/L	NA	NA	370

Where:

NA = Not Applied

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

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.

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

Constituent	STORET Number	Unit	Water Quality Standard

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

Constituent	STORET Number	Unit	Water Quality Standard
Arsenic (total)	01002	µg/L	50 0
Barium (total)	01007	mg/L	1.0
Chloride	00940	mg/L	12.0
Iron (dissolved)	01046	mg/L	0.30
Lead (total)	01051	µg/L	50.0
Manganese (total)	01055	mg/L	0.15
Nitrate-Nitrogen	00620	mg/L	10.0
Phosphorus	00665	µg/L	7.0
Selenium (total)	01147	µg/L	10.0
Sulfate	00945	mg/L	24.0
Total Dissolved Solids	70300	mg/L	180.0
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	34396	µg/L	5.30

Constituent	STORET Number	Unit	Water Quality Standard
(total)			
Lindane	39782	µg/L	0.47
Methylene chloride	34423	µg/L	47.0
Oil (hexane solubles or equivalent)	00550, 00556 or 00560	mg/L	0.10
Phenols	32730	µg/L	1.0
Toluene	78131	mg/L	5.60
Trichloroethylene	39180	µg/L	29.0

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

Constituent)	STORET Number	Units	AS	CS	HHS	WS
Mercury (total)	71900	ng/L	1,700	910	3.1	1.3
Chlordane	39350	ng/L	NA	NA	0.25	NA
DDT and metabolites	39370	pg/L	NA	NA	150	11.0
Dieldrin	39380	ng/L	240	56	0.0065	NA
Hexachlorobenzene	39700	ng/L	NA	NA	0.45	NA
Lindane	39782	µg/L	0.95	NA	0.5	NA

Constituent)	STORET Number	Units	AS	CS	HHS	WS
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 21 Ill. Reg. _____, effective _____.)

Section 302.505 Fecal Coliform

Based on a minimum of five samples taken over not more than a 30-day period, fecal coliform (STORET number 31616) ~~shall~~ must not exceed a geometric mean of 20 per 100 ml~~L~~ in the Open waters of Lake Michigan as defined in Section 302.501. The remaining waters of the Lake Michigan Basin must not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

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

~~a)~~ 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 equal fixed area of simple form.

a~~1~~) There shall be no abnormal temperature changes that may affect aquatic life.

b2) The normal daily and seasonal temperature fluctuations that existed before the addition of heat shall be maintained.

c3) The maximum temperature rise at any time above natural temperatures shall not exceed 1.7° (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

b) The owner or operator of a source of heated effluent which discharges 150 megawatts (0.5 billion British Thermal Units per hour) or more shall demonstrate in a hearing before this Board not less than 5 nor more than six years after the adoption of this regulation, that discharges from that source have not caused and cannot be reasonably expected in future to cause significant ecological damage to the lake. If such proof is not made to the satisfaction of the Board, backfitting of alternative cooling devices shall be accomplished within a reasonable time as determined by the Board.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

Section 302.508 Thermal Standards for Sources Under Construction But Not In Operation on January 1, 1971

Any effluent source under construction but not in operation on as of January 1, 1971 but not in operation, shall must meet all the requirements of Section 302.507 and in addition shall must meet the following restrictions:

a) Neither the bottom, the shore, the hypolimnion, nor the thermocline shall be affected by any heated effluent.

b) No heated effluent shall affect spawning grounds or fish migration routes.

c) Discharge structures shall be so designed as to maximize short-term mixing and thus to reduce the area significantly raised in temperature.

d) No discharge shall exceed ambient temperatures by more than 11°C (20°F).

e) Heated effluents from more than one source shall not interact.

f) All reasonable steps shall be taken to reduce the number of organisms drawn into or against the intakes.

~~g) Cleaning of condensers shall be accomplished by mechanical devices. If chemicals must be used to supplement mechanical devices, the concentration shall be subject to this Subpart at the point of discharge shall not exceed the 96-hour TL_m for fresh water organisms.~~

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

Section 302.510 Incorporations by Reference

a) 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, 18th Edition, 1996. Available from the American Public Health Association, 1015 Fifteenth St., NW, Washington, D.C. 20005. (202) 789-5600.

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

40 CFR 136 (1996)
40 CFR 141 (1988)
40 CFR 302.4 (1988)
The Sections of 40 CFR 132 (1996) listed below:

Appendix A

Section I A
Section II
Section III C
Section IV D, E, F, G, H, and I
Section V C
Section VI A, B, C, D, E, and F
Section VIII
Section XI
Section XVII

Appendix B

Section III
Section VII B and C

Section VIII

Appendix C

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

Appendix D

Section III C, D, and E
Section IV

d) This Section incorporates no future editions or amendments.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.515 Offensive Conditions

Waters of the Lake Michigan Basin must be free from sludge or bottom deposits, floating debris, visible oil, odor, plant or algal growth, color or turbidity of other than natural origin. The allowed mixing provisions of Section 302.102 shall not be used to comply with the provisions of this Section.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

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

a) For the purposes of regulating BCCs in accordance with Sections 302.521 and 302.530 of this Part, the following chemicals shall be considered as BCCs:

1) any chemical or class of chemicals listed as a BCC in Section 302.501; and

2) any chemical or class of chemicals that the Agency has determined meets the characteristics of a BCC as defined in Section 302.501 as indicated by:

A) publication in the Illinois Register; or

B) notification to a permittee or applicant; or

C) filing a petition with the Board to verify that the chemical shall be designated a BCC.

b) Notwithstanding subsections (a)(2)(A) and (B) of this Section, a chemical shall not be regulated as a BCC if the Agency has not filed a petition, within 60 days after such publication or notification, with the Board in accordance with Section 28.2 of the Act to verify that the chemical shall be designated a BCC.

c) Pursuant to subsection (b) of this Section and Section 302.570 of this Part, if the Board verifies that a chemical has a human health bioaccumulation factor greater than 1,000 and is consistent with the definition of a BCC in Section 302.105, the Board shall designate the chemical as a BCC and list the chemical in Section 302.501. If the Board fails to verify the chemical as a BCC in its final action on the verification petition, the chemical shall not be listed as a BCC and shall not be regulated as a BCC in accordance with Sections 302.521 and 302.530 of this Part.

(Source: Added at 21 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 (Pub. 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 foregone if the increased loading of the BCC is not allowed.

3) In no case shall increased loading of BCCs result in exceedence 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). 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 which may pose danger to public health or welfare.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.525 Radioactivity

Except as provided in Section 302.102, all waters of the Lake Michigan Basin must meet the following concentrations in any sample:

a) Gross beta (STORET number 03501) concentrations must not exceed 100 picocuries per liter (pCi/L).

b) Concentrations of radium 226 (STORET number 09501) and strontium 90 (STORET number 13501) must not exceed 1 and 2 picocuries per Liter, respectively.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.530 Supplemental Mixing Provisions for Bioaccumulative Chemicals of Concern (BCCs)

The General Provisions of Section 302.102 (Allowed Mixing, Mixing Zones and ZIDs) apply within the Lake Michigan Basin except as otherwise provided herein for substances defined as BCCs in Section 302.501:

a) No mixing shall be allowed for BCCs for new discharges commencing on or after the effective date of this rule.

b) Discharges of BCCs existing as of the effective date of this rule are eligible for mixing allowance consistent with Section 302.102 until March 23, 2007. After March 23, 2007 mixing for BCCs will not be allowed except as provided in subsections (c) and (d) of this Section.

c) Mixing allowance for a source in existence on the effective date of this rule may continue beyond March 23, 2007 where it can be demonstrated on a case by case basis that continuation of mixing allowance is necessary to achieve water conservation measures that result in overall reduction of BCC mass loading to the Lake Michigan Basin.

d) Mixing allowance for a source in existence on the effective date of this rule shall only continue if necessitated by technical and economic factors. Any mixing allowance continued beyond March 23, 2007 based on technical and economic factors shall be limited to not more than one NPDES permit term, and shall reflect the maximum achievable BCC loading reduction within the

identified technical and economic considerations necessitating the exception. Such continued mixing allowance shall not be renewed beyond that permit term unless a new determination of technical and economic necessity is made.

(Source: Added at 21 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 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) must be 0.33 mg/L and the chronic standard (CS) must be 0.057 mg/L.

2) From November through March, the AS must be 0.14 mg/L and the CS must 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:

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

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

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

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: Added at 21 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 Toxicity Criterion (LMAATC) or Tier II Lake Michigan Basin Acute Aquatic 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 Toxicity Criterion (LMCATC) or Tier II Lake Michigan Basin Chronic Aquatic 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_a 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 Titles 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 its 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, a list of waters affecting public water supplies will be published and maintained by the Agency's Division of Public Water Supplies.

(Source: Added at 21 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: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.550 Analytical Testing

All methods of sample collection, preservation, and analysis used in applying any of the requirements of this Chapter shall be consistent with USEPA's current manual of practice or with other procedures acceptable to USEPA and the Agency.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

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

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

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

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

1) The family Salmonidae in the class Osteichthyes;

2) One other family in the class Osteichthyes;

3) A third family in the phylum Chordata;

4) A planktonic crustacean;

5) A benthic crustacean;

6) An insect;

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

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

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

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

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

(Source: Added at 21 Ill. Reg. _____, effective _____.)

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

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) must be those with cumulative probabilities closest to 0.05. If there are less 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).

g) Using the GMAVs identified pursuant to subsection (f) and the Ps calculated pursuant to subsection (e), the Final Acute Value (FAV) and the LMAATC are calculated as:

$$FAV = \exp(A) \text{ and}$$
$$LMAATC = FAV/2$$

Where:

$A = L + 0.2236\ S;$

$L = [\ddot{a}(\ln GMAV) - S(\ddot{a}(P^{0.5}))]/4$; and

$S = [[\ddot{a}((\ln GMAV)^2) - ((\ddot{a}(\ln GMAV))^2)/4]/[\ddot{a}(P) - ((\ddot{a}(P^{0.5}))^2)/4]]^{0.5}$.

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: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.560 Determining the Tier I Lake Michigan Basin Acute Aquatic 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) = 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) is evaluated as to whether or not 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).

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 is subsection (c) of this Section;

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

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 = 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 instead of the FAV.

j) The LMAATC at any value of the WQC, denoted by WQCx, is calculated using the terms defined in subsection (f) and the equation:

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

(Source: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.563 Determining the Tier II Lake Michigan Basin Acute Aquatic Life 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: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.565 Determining the Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or 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 Sections 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), 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 Sections 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 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, use sufficient ACRs of 18 so that the total number of ACRs equals three; and

B) Calculate the Secondary Acute-Chronic Ratio as the geometric mean of the three ACRs; or

C) 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: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.570 Procedures for Deriving Bioaccumulation Factors for the Lake Michigan Basin

A bioaccumulation factor (BAF) is used to relate the concentration of a substance in an aquatic organism to the concentration of the substance in the waters in which the organism resides when all routes of exposure (ambient water and food) are included. A BAF is used in the derivation of water quality criteria to protect wildlife and criteria and values to protect human health.

a) Selection of data. BAFs can be obtained or developed from one of the following methods, listed in order of preference.

1) Field-measured BAF.

2) Field-measured biota-sediment accumulation factor (BSAF).

3) Laboratory-measured Bioconcentration Factor (BCF).
The concentration of particulate organic carbon (POC) and dissolved organic carbon (DOC) in the test solution shall be either measured or reliably estimated.

4) Predicted BCF.
Predicted baseline BCF = Kow.

b) Calculation of baseline BAFs for organic chemicals.
The most preferred BAF or BCF from above is used to calculate a baseline BAF which in turn is utilized to derive a human health or wildlife specific BAF.

1) Procedures for determining the necessary elements of baseline calculation.

A) Lipid normalization. The lipid-normalized concentration, C_l, of a chemical in tissue is defined using the following equation:

$$C_l = C_b / f_l$$

Where:

C_b = concentration of the organic chemical in the tissue of aquatic biota (either whole organism or specified tissue) (µg/g).
f_l = fraction of the tissue that is lipid.

B) Bioavailability.

The fraction of the total chemical in the ambient water that is freely dissolved, f_{fd}, shall be calculated using the following equation:

$$f_{fd} = 1 / \{ 1 + [(DOC)(Kow)/10] + [(POC)(Kow)] \}$$

Where:

DOC = concentration of dissolved organic carbon, kg of dissolved organic carbon/L of water.
Kow = octanol-water partition coefficient of the chemical.
POC = concentration of particulate organic carbon, kg of particulate organic carbon/L of water.

C) Food Chain Multiplier (FCM). For an organic chemical, the FCM used shall be taken from Table B-1 in 40 CFR 132. Appendix B (1996) incorporated by reference at Section 302.510.

2) Calculation of baseline BAFs.

A) From field-measured BAFs:

Baseline BAF = { [measured BAF_{tT} / f_{fd}] - 1 } { 1 / f_l }

Where:

BAF_{tT} = BAF based on total concentration in tissue and water of study organism and site.
f_l = fraction of the tissue of study organism that is lipid.
f_{fd} = fraction of the total chemical that is freely dissolved in the ambient water.

B) From a field measured biota-sediment accumulation factor (BSAF)

$(Baseline\ BAF)_i$ =

$$(baseline\ BAF)_r\ (BSAF)_i\ (Kow)_i\ /\ (BSAF)_r\ (Kow)_r$$

Where:

$(BSAF)_i$ = BSAF for chemical "$_i$".
$(BSAF)_r$ = BSAF for the reference chemical "$_r$".
$(Kow)_i$ = octanol-water partition coefficient for chemical "$_i$".
$(Kow)_r$ = octanol-water partition coefficient for the reference chemical "$_r$".

i) A BSAF shall be calculated using the following equation:

$$BSAF = C_l / C_{soc}$$

Where:

C_l = the lipid-normalized concentration of the chemical in tissue.
C_{soc} = the organic carbon-normalized concentration of the chemical in sediment.

ii) The organic carbon-normalized concentration of a chemical in sediment, C_{soc}, shall be calculated using the following equation:

$$C_{soc} = C_s / f_{oc}$$

Where:

C_s = concentration of chemical in sediment (µg/g sediment).
f_{oc} = fraction of the sediment that is organic carbon.

C) From a laboratory-measured BCF:

baseline BAF = (FCM) { [measured BCF_{tT} / f_{fd}] - 1 } { 1 /f_l }

Where:

BCF_{tT} = BCF based on total concentration in tissue and water.
f_l = fraction of the tissue that is lipid.
f_{fd} = fraction of the total chemical in the test water that is freely dissolved.
FCM = the food-chain multiplier obtained from Table B-1 in 40 CFR 132, Appendix B incorporated by reference at Section 302.510 by linear interpolation for trophic level 3 or 4, as necessary.

D) From a predicted BCF:

baseline BAF =
(FCM) (predicted baseline BCF) = (FCM)(Kow)

Where:

FCM = the food-chain multiplier obtained from Table B-1 in 40 CFR 132, Appendix 5, incorporated by reference at Section 302.510 by linear interpolation for trophic level 3 or 4, as necessary.
Kow = octanol-water partition coefficient.

c) Human health and wildlife BAFs for organic chemicals:

1) Fraction freely dissolved (f_{fd}). By using the equation in subsection (b)(1)(B) of this Section the f_{fd} to be used to calculate human health and

wildlife BAFs for an organic chemical shall be calculated using a standard POC concentration of 0.00000004 kg/L and a standard DOC concentration of 0.000002 kg/L:

$$f_{fd} = 1 / [1 + (0.00000024 \text{ kg/L})(Kow)]$$

2) Human health BAF. The human health BAFs for an organic chemical shall be calculated using the following equations:

A) For trophic level 3:

$$\text{Human Health BAF}_{HHTL3} = [(\text{baseline BAF})(0.0182) + 1] (f_{fd})$$

B) For trophic level 4:

$$\text{Human Health BAF}_{HHTL4} = [(\text{baseline BAF}) (0.0310) + 1] (f_{fd})$$

Where:

0.0182 and 0.0310 are the standardized fraction lipid values for trophic levels 3 and 4, respectively, that are used to derive human health criteria and values.

3) Wildlife BAF. The wildlife BAFs for an organic chemical shall be calculated using the following equations:

A) For trophic level 3:

$$\text{Wildlife BAF}_{WLTL3} = [(\text{baseline BAF})(0.0646) + 1] (f_{fd})$$

B) For trophic level 4:

$$\text{Wildlife BAF}_{WLTL4} = [(\text{baseline BAF})(0.1031) + 1] (f_{fd})$$

Where:

0.0646 and 0.1031 are the standardized fraction lipid values for trophic levels 3 and 4, respectively, that are used to derive wildlife criteria.

d) Human health and wildlife BAFs for inorganic chemicals. For inorganic chemicals the baseline BAFs for trophic levels 3 and 4 are both assumed to equal the BCF determined for the chemical with fish.

1) Human health. Measured BAFs and BCFs used to determine human health BAFs for inorganic chemicals shall be based on concentration in edible tissue (e.g., muscle) of freshwater fish.

2) Wildlife. Measured BAFs and BCFs used to determine wildlife BAFs for inorganic chemicals shall be based on concentration in the whole body of freshwater fish and invertebrate.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

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

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

a) This method shall also be used for non-BCCs when appropriately modified to consider the following factors:

1) Selection of scientifically justified target species;

2) Relevant routes of chemical exposure;

3) Pertinent toxicity endpoints.

b) Minimum data requirements:

1) Test dose (TD). In order to calculate a LMWC the following minimal data base is required:

A) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 28 days for one bird species; and

B) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 90 days for one mammal species.

2) Bioaccumulation Factor (BAF) data requirements:

A) For any chemical with a BAF of less than 125 the BAF may be obtained by any method; and

B) For chemicals with a BAF of greater than 125 the BAF must come from a field measured BAF or BSAF.

c) Principles for development of criteria

1) Dose standardization. The data for the test species must be expressed as, or converted to, the form mg/kg/d utilizing the guidelines for drinking and feeding rates and other procedures in 40 CFR 132, incorporated by reference at Section 302.510.

2) Uncertainty factors (UF) for utilizing test dose data in the calculation of the target species value (TSV).

A) Correction for intermittent exposure. If the animals used in a study were not exposed to the toxicant each day of the test period, the no observed adverse effect level (NOAEL) must be multiplied by the ratio of days of exposure to the total days in the test period.

B) Correction from the lowest observed adverse effect level (LOAEL) to NOAEL (UF_l). For those substances for which a LOAEL has been derived, the UF_1 shall not be less than one and should not exceed 10.

C) Correction for subchronic to chronic extrapolation (UF_s). In instances where only subchronic data are available, the TD may be derived from subchronic data. The value of the UF_s shall not be less than one and should not exceed 10.

D) Correction for Interspecies extrapolations (UF_a). For the derivation of criteria, a UF_a shall not be less than one and should not exceed 100. The UF_a shall be used only for extrapolating toxicity data across species within a taxonomic class. A species specific UF_a shall be selected and applied to each target species, consistent with equation below.

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

$$TSV = \{ [TD \times Wt] / [UF_a \times UF_s \times UF_l] \} / \{ W + [F_{TLi} \times BAF_{WLTLi}] \}$$

Where:

TSV = target species value in milligrams of substance per liter (mg/L).
TD = test dose that is toxic to the test species, either NOAEL or LOAEL.
UF_a = Uncertainty factor for extrapolating toxicity data across species (unitless). A species-specific UF_a shall be selected and applied to each target species, consistent with the equation.
UF_s = the uncertainty factor for extrapolating from subchronic to chronic exposures (unitless).
UF_l = the uncertainty factor for extrapolation from LOAEL to NOAEL (unitless).
Wt = Average weight in kilograms (kg) of the target species.
W = Average daily volume of water in liters consumed per day (L/d) by the target species.
F_{TLi} = Average daily amount of food consumed by the target species in kilograms (kg/d).
BAF_{WLTLi} = Aquatic life Bioaccumulation Factor with units of liter per kilogram (L/kg), as derived in Section 302.570.

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

(Source: Added at 21 Ill. Reg. _____, 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: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.585 Procedures for Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) and the Lake Michigan Basin Human Health Threshold Value (LMHHTV)

The LMHHTC or LMHHTV is derived for all toxic substances from the most sensitive end point for which there exists a dosage or concentration below which no adverse effect or response is likely to occur.

a) Minimum data requirements:

1) Tier I. The minimum data set sufficient to derive a Tier I LMHHTC shall include at least one epidemiological study or one animal study of greater than 90 days duration; or

2) Tier II. When the minimum data for deriving Tier I criteria are not available, a more limited database consisting of an animal study of greater than 28 days duration shall be used.

b) Principles for development of Tier I criteria and Tier II values:

1) The experimental exposure level representing the highest level tested at which no adverse effects were demonstrated (NOAEL) shall be used for calculation of a criterion or value. In the absence of a NOAEL, a LOAEL shall be used if it is based on relatively mild and reversible effects;

2) Uncertainty factors (UFs) shall be used to account for the uncertainties in predicting acceptable dose levels for the general human population based upon experimental animal data or limited human data:

A) An UF of 10 shall be used when extrapolating from experimental results of studies on prolonged exposure to average healthy humans;

B) An UF of 100 shall be used when extrapolating from results of long-term studies on experimental animals;

C) An UF of up to 1000 shall be used when extrapolating from animal studies for which the exposure duration is less than chronic, but greater than subchronic;

D) An UF of up to 3000 shall be used when extrapolating from animal studies for which the exposure duration is less than subchronic;

E) An additional UF of between one and ten shall be used when deriving a criterion from a LOAEL. The level of additional uncertainty applied shall depend upon the severity and the incidence of the observed adverse effect;

F) An additional UF of between one and ten shall be applied when there are limited effects data or incomplete sub-acute or chronic toxicity data.

3) The total uncertainty (ä of the uncertainty factors) shall not exceed 10,000 for Tier I criterion and 30,000 for Tier II value; and

4) All study results shall be converted to the standard unit for acceptable daily exposure of milligrams of toxicant per kilogram of body weight per day (mg/kg/day). Doses shall be adjusted for continuous exposure.

c) Tier I criteria and Tier II value derivation.

1) Determining the Acceptable Daily Exposure (ADE).

ADE = test value / ä of the UFs from subsection (b)(2) of this Section

Where:

acceptable daily exposure is in milligrams toxicant per kilogram body weight per day (mg/kg/day).

2) Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) or the Lake Michigan Basin Human Health Threshold Value (LMHHTV)

LMHHTC or LMHHTV =

$$\frac{\{ ADE \times BW \times RSC \}}{\{ WC + [(FC_{TL3} \times BAF_{HHTL3}) + (FC_{TL4} \times BAF_{HHTL4})] \}}$$

Where:

LMHHTC or LMHHTV is in milligrams per liter (mg/L).
ADE = acceptable daily intake in milligrams toxicant per kilogram body weight per day (mg/kg/day).
RSC = relative source contribution factor of 0.8.
BW = weight of an average human (BW = 70 kg).
WC = per capita water consumption (both drinking and incidental exposure) for surface waters classified as public water supplies = two liters/day; or per capita incidental daily water ingestion for surface waters not used as human drinking water sources = 0.01 liters/day.
FC_{TL3} = mean consumption of trophic level 3 fish by regional sport fishers of regionally caught freshwater fish = 0.0036 kg/day.
FC_{TL4} = mean consumption of trophic level 4 fish by regional sport fishers of regionally caught freshwater fish = 0.0114 kg/day.
BAF_{HHTL3} = human health bioaccumulation factor for edible portion of trophic level 3 fish, as derived using the BAF methodology in Section 302.570.
BAF_{HHTL4} = human health bioaccumulation factor for edible portion of trophic level 4 fish, as derived using the BAF methodology in Section 302.570.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

Section 302.590 Procedures for Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV)

A LMHHNC or LMHHNV shall be derived for those toxic substances for which any exposure, regardless of extent, carries some risk of damage from cancer or a nonthreshold toxic mechanism. For single or combinations of substances, a risk level of one in one hundred

thousand (1 in 100,000 or 10^{-5}) shall be used for the purposes of determination of a LMHHNC or LMHHNV.

a) Minimum data requirements. Minimal experimental or epidemiological data requirements are incorporated in the cancer classification determined by USEPA at Appendix C II A to 40 CFR 132 incorporated by reference at Section 302.510.

b) Principles for development of criteria or values:

1) Animal data are fitted to a linearized multistage computer model (Global 1986 in "Mutagenicity and Carcinogenicity Assessment for 1, 3-Butadiene" September 1985 EPA/600/8-85/004A incorporated by reference at Section 301.106 or scientifically justified equivalents). The upper-bound 95 percent confidence limit on risk at the one in one hundred thousand risk level shall be used to calculate a risk associated dose (RAD); and

2) A species scaling factor shall be used to account for differences between test species and humans. Milligrams per surface area per day is an equivalent dose between species. All doses presented in mg/kg bodyweight will be converted to an equivalent surface area dose by raising the mg/kg dose to the 3/4 power.

c) Determining the Risk Associated Dose (RAD). The RAD shall be calculated using the following equation:

$$RAD = 0.00001 / q_1^*$$

Where:

RAD = risk associated dose in milligrams of toxicant or combinations of toxicants per kilogram body weight per day (mg/kg/day).
0.00001 (1 X 10^{-5}) = incremental risk of developing cancer equal to one in 100,000.
q_1^* = slope factor $(mg/kg/day)^{-1}$.

d) Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV):

LMHHNC or LMHHNV =

$$\{RAD \times BW\} / \{ WC + [(FC_{TL3} \times BAF_{HHTL3}) + (FC_{TL4} \times BAF_{HHTL4})]\}$$

Where:

LMHHNC or LMHHNV is in milligrams per liter (mg/L).
RAD = Risk Associated Dose of a substance or combination of substances in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 100,000.
BW = weight of an average human (BW = 70 kg).
WC = per capita water consumption for surface waters classified as public water supplies = 2 liters/day, or per capita incidental daily water ingestion for surface waters not used as human drinking water sources = 0.01 liters/day.
FC_{TL3} = mean consumption of trophic level 3 of regionally caught freshwater fish = 0.0036 kg/day.
FC_{TL4} = mean consumption of trophic level 4 of regionally caught freshwater fish = 0.0114 kg/day.
BAF_{HHTL3}, BAF_{HHTL4} = bioaccumulation factor for trophic levels 3 and 4 as derived in Section 302.570.

(Source: Added at 21 Ill. Reg. _____, effective _____.)

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

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

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

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

(Source: Added at 21 Ill. Reg._____, effective _____.)

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
CHAPTER I: POLLUTION CONTROL BOARD
PART 303
WATER USE DESIGNATIONS AND SITE SPECIFIC WATER QUALITY STANDARDS

SUBPART A: GENERAL PROVISIONS

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303.100 Scope and Applicability
303.101 Multiple Designations
303.102 Rulemaking Required

SUBPART B: NONSPECIFIC WATER USE DESIGNATIONS

Section
303.200 Scope and Applicability
303.201 General Use Waters
303.202 Public and Food Processing Water Supplies
303.203 Underground Waters
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SUBPART C: SPECIFIC USE DESIGNATIONS AND SITE SPECIFIC WATER QUALITY STANDARDS

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303.300 Scope and Applicability
303.301 Organization
303.311 Ohio River Temperature
303.312 Waters Receiving Fluorspar Mine Drainage
303.321 Wabash River Temperature
303.322 Unnamed Tributary of the Vermilion River
303.323 Sugar Creek and Its Unnamed Tributary
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303.400 Bankline Disposal Along the Illinois Waterway/River
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303.441 Secondary Contact Waters
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303.444 Salt Creek, Higgins Creek, West Branch of the DuPage River, Des Plaines River

SUBPART D: THERMAL DISCHARGES

Section
303.500 Scope and Applicability
303.502 Lake Sangchris Thermal Discharges

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. 27, p. 221, effective July 5, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979; amended at 5 Ill. Reg. 11592, effective October 19, 1981; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161 effective September 7, 1982; amended at 7 Ill. Reg. 8111, effective June 23, 1983; amended in R87-27 at 12 Ill. Reg. 9917, effective May 27, 1988; amended in R87-2 at 13 Ill. Reg. 15649, effective September 22, 1989; amended in R87-36 at 14 Ill. Reg. 9460, effective May 31, 1990; amended in R86-14 at 14 Ill. Reg. 20724, effective December 18, 1990; amended in R89-14(C) at 16 Ill. Reg. 14684, effective September 10, 1992; amended in R92-17 at 18 Ill. Reg. 2981, effective February 14, 1994; amended in R91-23 at 18 Ill. Reg. 13457, effective August 19, 1994; amended in R93-13 at 19 Ill. Reg. 1310, effective January 30, 1995; amended in R95-14 at 20 Ill. Reg. 3534, effective February 8, 1996; amended in R97-25 at 21 Ill. Reg. _____, effective _____.

Section 303.443 Lake Michigan Basin

The waters of the Lake Michigan Basin ~~shall~~must meet the Lake Michigan Basin water quality standards of 35 Ill. Adm. Code 302 Subpart E. Lake Michigan Basin waters under Illinois jurisdiction consist of the following:

a) The 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;

b) Lake Michigan harbors and waters within breakwaters, and waters (as defined in 35 Ill. Adm. Code 301.440) within Illinois jurisdiction tributary to Lake Michigan including streams, sloughs and other watercourses not named elsewhere in this Part; and

c) The Chicago River, the North Shore Channel, and the Calumet River are not part of the Lake Michigan Basin.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

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

PART 304
EFFLUENT STANDARDS

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304.101 Preamble
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304.103 Background Concentrations
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304.105 Violation of Water Quality Standards
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304.120 Deoxygenating Wastes
304.121 Bacteria
304.122 Total Ammonia Nitrogen (as N: STORET number 00610)
304.123 Phosphorus (STORET number 00665)
304.124 Additional Contaminants
304.125 pH
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304.140 Delays in Upgrading (Repealed)
304.141 NPDES Effluent Standards
304.142 New Source Performance Standards (Repealed)

SUBPART B: SITE SPECIFIC RULES AND EXCEPTIONS NOT OF GENERAL APPLICABILITY

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304.201 Wastewater Treatment Plant Discharges of The Metropolitan Reclamation ~~Sanitary~~ District of Greater Chicago
304.202 Chlor-alkali Mercury Discharges in St. Clair County
304.203 Copper Discharges by Olin Corporation
304.204 Schoenberger Creek: Groundwater Discharges
304.205 John Deere Foundry Discharges
304.206 Alton Water Company Treatment Plant Discharges
304.207 Galesburg Sanitary District Deoxygenating Wastes Discharges
304.208 City of Lockport Treatment Plant Discharges
304.209 Wood River Station Total Suspended Solids Discharges
304.210 Alton Wastewater Treatment Plant Discharges
304.211 Discharges From Borden Chemicals and Plastics Operating Limited Partnership Into an Unnamed Tributary of Long Point Slough
304.212 Sanitary District of Decatur Discharges

SUBPART C: TEMPORARY EFFLUENT STANDARDS

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

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 30, p. 343, effective July 27, 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; amended at 4 Ill. Reg. 20, p. 53, effective May 7, 1980; amended at 6 Ill. Reg. 563, effective December 24, 1981; 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 7 Ill. Reg. 3020, effective March 4, 1983; amended at 7 Ill. Reg. 8111, effective June 23, 1983; amended at 7 Ill. Reg. 14515, effective October 14, 1983; amended at 7 Ill. Reg. 14910, effective November 14, 1983; amended at 8 Ill. Reg. 1600, effective January 18, 1984; amended at 8 Ill. Reg. 3687, effective March 14, 1984; amended at 8 Ill. Reg. 8237, effective June 8, 1984; amended at 9 Ill. Reg. 1379, effective January 21, 1985; amended at 9 Ill. Reg. 4510, effective March 22, 1985; peremptory amendment at 10 Ill. Reg. 456, effective December 23, 1985; amended at 11 Ill. Reg. 3117, effective January 28, 1987; amended in R84-13 at 11 Ill. Reg. 7291, effective April 3, 1987; amended in R86-17(A) at 11 Ill. Reg. 14748, effective August 24, 1987; amended in R84-16 at 12 Ill. Reg. 2445, effective January 15, 1988; amended in R83-23 at 12 Ill. Reg. 8658, effective May 10, 1988; amended in R87-27 at 12 Ill. Reg. 9905, effective May 27, 1988; amended in R82-7 at 12 Ill. Reg. 10712, effective June 9, 1988; amended in R85-29 at 12 Ill. Reg. 12064, effective July 12, 1988; amended in R87-22 at 12 Ill. Reg. 13966, effective August 23, 1988; amended in R86-3 at 12 Ill. Reg. 20126, effective November 16, 1988; amended in R84-20 at 13 Ill. Reg. 851, effective January 9, 1989; amended in R85-11 at 13 Ill. Reg. 2060, effective February 6, 1989; amended in R88-1 at 13 Ill. Reg. 5976, effective April 18, 1989; amended in R86-17(B) at 13 Ill. Reg. 7754, effective May 4, 1989, amended in R88-22 at 13 Ill. Reg. 8880, effective

May 26, 1989; amended in R87-6 at 14 Ill. Reg. 6777, effective April 24, 1990; amended in R87-36 at 14 Ill. Reg. 9437, effective May 31, 1990; amended in R88-21(B) at 14 Ill. Reg. 12538, effective July 18, 1990; amended in R84-44 at 14 Ill. Reg. 20719, effective December 11, 1990; amended in R86-14 at 15 Ill. Reg. 241, effective December 18, 1990; amended in R93-8 at 18 Ill. Reg. 267, effective December 22, 1993; amended in R87-33 at 18 Ill. Reg. 11574, effective July 7, 1994; amended in R87-33 at 18 Ill. Reg. 11574, effective July 7, 1994; amended in R95-14 at 20 Ill. Reg. 3528, effective February 8, 1996; amended in R94-1(B) at 21 Ill. Reg. 364, effective December 23, 1996; effective December 23, 1996; amended in R97-25 at 21 Ill. Reg. _____, effective _____.

SUBPART B: SITE SPECIFIC RULES AND
EXCEPTIONS NOT OF GENERAL APPLICABILITY

Section 304.222 Intermittent Discharge of TRC

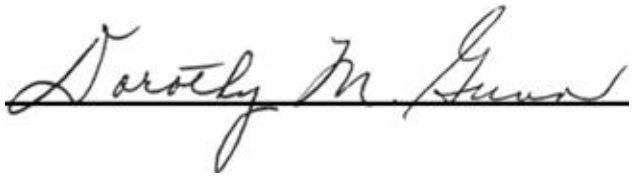
The acute TRC water quality standard of 35 Ill. Adm. Code 302.208 and 302.504(a) by operation of Section 304.105 shall not apply to any discharge which contains TRC solely as the result of intermittent usage for antifouling purposes related to the operation of condensers and cooling systems. For the purposes of this Section usage of chlorine or related substances measurable as TRC shall be deemed to be intermittent if usage is restricted to a maximum of two hours per day per condenser or cooling system unit. Discharge concentration of TRC averaged or composited over the discharge period shall not exceed 0.2 mg/l nor shall the TRC concentration exceed 0.5 mg/l at any time.

(Source: Amended at 21 Ill. Reg. _____, effective _____.)

IT IS SO ORDERED.

K.M. Hennessey abstains.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the 16th day of October 1997, by a vote of 6-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board