ILLINOIS POLLUTION CONTROL BOARD
August 31, 1989

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO TITLE 35, SUBTITLE C (TOXICS CONTROL)	)	R88-21
	)	

PROPOSED REGULATIONS FIRST NOTICE

ORDER OF THE BOARD (by R. C. Flemal)

The Board hereby proposes for First Notice the following amendements to 35 Ill. Adm. Code, Subtitle C: Water Pollution, Chapter I, Pollution Control Board, Parts 301, 302, 305, and 309. The Clerk of the Board is directed to file these proposed amendments with the Secretary of State. This Order is supported by a separate Opinion adopted this day.

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

PART 301
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APPENDIX A References to Previous Rules

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1013 and 1027).

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; amended at 5 Ill. Reg. 6384, effective May 28, 1981; codified at 6 Ill. Reg. 7818; amended in R88-1 at 13 Ill. Reg. 5984, effective April 18, 1989; amended in R88-21 at ____ Ill. Reg. _____, effective _____.

Section 301.106 Incorporations by Reference

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

"ASTM" means American Society for Testing and Materials

"GPO" means Superintendent of Documents, U.S.

Government Printing Office

"NTIS" means National Technical Information Service

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

"USEPA" means United States Environmental Protection Agency

b) The Board incorporates the following publications by reference:

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

Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19013 (215) 299-5400

ASTM Standard D 1126-86 "Standard Test Method for Hardness in Water", approved August 29, 1986

ASTM Standard D 1253-86 "Standard Test Method for Residual Chlorine in Water", approved February 28, 1986

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

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

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

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

GPO. Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402 (202) 783-3238

Quality Criteria for Water 1986, Document Number 1986-159-300-50472

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

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

c) The Board incorporates the following federal regulations by reference:

40 CFR 302.4 (1988)

40 CFR 141 (1988)

d) This Section incorporates no future editions or amendments.

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

Section 301.107 Severability

If any provision of this Subtitle is adjudged invalid, or if the application thereof to any person or in any circumstance is adjudged invalid, such invalidity shall not affect the validity of this Subtitle as a whole, or any Part, Subpart, Section, subsection, sentence or clause thereof not adjudged invalid.

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

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

PART 302
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APPENDIX B Sources of Codified Sections

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1013 and 1027).

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, effective June 22, 1982; 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 in R87-27 at 12 Ill. Reg. 9911, effective May 27, 1988; amended in 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 at Ill. Reg. _____, effective _____.

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section 302.100 Definitions

Unless otherwise specified, the definitions of the Act and 35 Ill. Adm. Code 301 apply to this Subpart. As used in this Subpart, the following definitions of this Section shall have the specified meaning.

"Acute Toxicity" means the capacity of any substance or combination of substances to cause mortality or other adverse effects in an organism which result from a single or short-term exposure to the substance.

"Chronic Toxicity" means the capacity of any substance or combination of substances to cause injurious or debilitating effects in an organism which result from exposure for a time period representing a substantial portion of the natural life cycle of that organism.

"Criterion" means the numerical concentration of one or more toxic substances derived in accordance with the procedures in Subpart F which, if not exceeded, would assure compliance with the narrative toxicity standard of Section 302.210.

"Hardness" means a water quality parameter consisting of the sum of calcium and magnesium concentrations in terms of equivalent milligrams per liter calcium carbonate. Hardness is measured as specified in ASTM D 1126 or Standard Methods 314B, incorporated by reference in 35 Ill. Adm. Code 301.106.

"Total Residual Chlorine" or "TRC" means those substances which include combined and uncombined forms of both chlorine and bromine and are expressed, by convention, as an equivalent concentration of molecular chlorine. TRC is measured as specified in ASTM D 1253 or Standard Methods 408A through 408F, incorporated by reference in 35 Ill. Adm. Code 301.106.

"Toxic substance" means a chemical substance which causes harmful physiological or behavioral effects in humans, or in aquatic or terrestrial animal or plant life. Toxic substances include, but are not limited to those substances listed in 40 CFR 302.4, incorporated by reference in 35 Ill. Adm. Code 301.106, and any "chemical substance" as defined by the Illinois Chemical Safety Act (Ill. Rev. Stat. 1987, ch. 111½, pars. 951 et seq.)

"ZID" or "Zone of Initial Dilution" means an area within the mixing zone where immediate and rapid dispersion/mixing of an effluent takes place.

"Immediate" means an effluent's merging with receiving waters without delay in time after it's discharge and within close proximity of the end of the discharge pipe. "Rapid" means an effluent's quick merging with receiving waters so as to minimize the length of exposure time of aquatic life to undiluted effluent.

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

Section 302.101 Scope and Applicability

a) ~~Part 302~~This Part contains schedules of water quality standards which are applicable throughout the State as designated in Part 35 Ill. Adm. Code 303. Site specific water quality standards are found with the water use designations in ~~Part~~ 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 (~~Section~~ 35 Ill. Adm. Code 303.201).

c) Subpart C contains the public and food processing water supply standards. These are cumulative with Subpart B and must be met by all designated waters at the point at which water is drawn for treatment and distribution as a potable supply or for food processing (~~Section~~ 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 ~~Section~~ 35 Ill. Adm. Code 303.204 and 303.441.

e) Subpart E contains the Lake Michigan water quality standards. These are cumulative with the Subpart B and C standards and must be met by the waters of Lake Michigan and such other waters as may be designated in ~~Part~~ 35 Ill Adm. Code 303 (~~Section~~ 35 Ill. Adm. Code 303.443).

f) Subpart F contains the procedures for determining each of the criteria designated in Section 302.210.

~~f)~~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 _____ Ill. Reg. _____, effective _____)

Section 302.102 Mixing Zones and ZIDs

a) ~~In the application of this Chapter, whenever a water quality standard is more restrictive than its corresponding effluent standard then an opportunity shall be allowed for the mixture of an effluent with its receiving waters.~~ The Agency may, by condition in an NPDES permit, grant a mixing zone for the mixture of an effluent with its receiving waters in accordance with the conditions of subsection (b). Water quality standards must be met at every point outside of the mixing zone. ~~The size of the mixing zone cannot be uniformly prescribed. The governing principle is that the proportion of any body of water or segment thereof within mixing zones must be quite small if the water quality standards are to have any meaning. This principle shall be applied on a case-by-case basis to ensure that neither any individual source nor the aggregate of sources shall cause excessive zones to exceed the standards. The water quality standards must be met in the bulk of the body of water, and no body of water may be used totally as a mixing zone for a single outfall or combination of outfalls. Moreover, except as otherwise provided in this Chapter, no single mixing zone shall exceed the area of a circle with a radius of 183 m (600 feet). Single sources of effluents which have more than one outfall shall be limited to a total mixing area no larger than that allowable if a single outfall were used.~~

b) In determining the ~~size~~ nature of the mixing zone for any discharge, the following ~~must be considered~~ conditions must be met:

1) ~~The character of the body of water,~~The mixing zone must encompass an area or volume no larger than the area or volume of the mixing zone which would result after incorporation of design measures to attain optimal mixing efficiency of effluent and receiving waters. Such measures include, but are not limited to engineered location and configuration of discharge points and use of diffusers.

2) ~~the present and anticipated future use of the body of water,~~A mixing zone must not occlude tributary stream entrances or restrict the movement of aquatic life into or out of the tributary.

3) ~~the present and anticipated water quality of the body of water,~~A mixing zone must not infringe upon bathing beaches, bank fishing areas, boat ramps or dockages or any other public access area.

4) ~~the effect of the discharge on the present and anticipated future water quality;~~A mixing zone must not encompass mussel beds, endangered species habitat, fish spawning areas, areas of important aquatic life habitat, or any other natural features vital to the well being of aquatic life.

5) ~~the dilution ratio; and~~A mixing zone must not encompass intake structures of public or food processing water supplies, watering areas routinely accessed by wild or domestic animals, or points of irrigation withdrawal.

6) ~~the nature of the contaminant.~~A mixing zone must be so configured as to assure a reasonable zone of passage for aquatic life in which the water quality standards are met.

7) A mixing zone alone or in combination with other mixing zones must not intersect any area of any body of water in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected.

8) A mixing zone alone or in combination with other mixing zones must not contain more than 25% of the cross-sectional area or volume of flow of a stream except for those streams where the dilution ratio is less than 3:1.

9) No body of water may be used totally as a mixing zone for a single outfall or combination of outfalls.

10) Single sources of effluents which have more than one outfall shall be limited to a total mixing zone no larger than that allowable if a single outfall were used.

11) The mixing zone must be as small as is practicable under the limitations prescribed in this subsection, and in no circumstances may the mixing zone encompass a surface area larger than 26 acres.

c) ~~In addition to the above, the mixing zone shall be so designed as to assure a reasonable zone of passage for aquatic life in which the water quality standards are met. The mixing zone shall not intersect any area of any such waters in such a manner that the maintenance of aquatic life in the body of water as a whole would be adversely affected, nor shall any mixing zone contain more than 25% of the cross-sectional area or volume of flow of a stream except for those streams where the dilution ratio is less than 3:1.~~The Agency may, by

condition in an NPDES permit, grant a ZID as a component area within the mixing zone, where, at a minimum, and in addition to the mixing zone requirements of subsection (b), the following conditions are met:

1) Effluent dispersion is immediate and rapid.

2) The maximum allowable area of the ZID is proportional to the width of the receiving waterbody but in no case shall the ZID exceed 1,000 square feet.

3) Conditions in the ZID shall not cause actual impairment of the aquatic environment.

d) A permittee may apply for, and the Agency may grant, a mixing zone or a ZID pursuant to the procedures of Section 39 of the Act and 35 Ill. Adm. Code 309. A permittee may appeal Agency decisions concerning a mixing zone or ZID pursuant to the procedures of Section 40 of the Act and 35 Ill. Adm. Code 309.181.

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

Section 302.103 Stream Flows

Except as otherwise provided in this Chapter ~~with respect to temperature~~, the water quality standards in this Part shall apply at all times except during periods when flows are less than the average minimum seven day low flow which occurs once in ten years.

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

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.203 ~~Unnatural Sludge~~Offensive Conditions

Waters of the State shall be free from ~~unnatural~~ sludge or bottom deposits, floating debris, visible oil, odor, ~~unnatural~~ plant or algal growth, ~~unnatural~~ color or turbidity of other than natural origin.~~, or matter of other than natural origin in concentrations or combinations toxic or harmful to human, plant or aquatic life.~~ The mixing zone provisions of Section 302.102 shall not be used to comply with the provisions of this Section.

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

Section 302.208 Chemical Constituents

~~The following levels of chemical constituents shall not be~~

~~exceeded:~~

~~CONSTITUENT~~	~~STORET NUMBER~~	~~CONCENTRATION (mg/l)~~
~~Arsenic (total)~~	~~01002~~	~~1.0~~
~~Barium (total)~~	~~01007~~	~~5.0~~
~~Boron (total)~~	~~01022~~	~~1.0~~
~~Cadmium (total)~~	~~01027~~	~~0.05~~
~~Chloride~~	~~00940~~	~~500.~~
~~Chromium (total hexavalent)~~	~~01032~~	~~0.05~~
~~Chromium (total trivalent)~~	~~01033~~	~~1.0~~
~~Copper (total)~~	~~01042~~	~~0.02~~
~~Cyanide~~	~~00720~~	~~0.025~~
~~Fluoride~~	~~00951~~	~~1.4~~
~~Iron (total)~~	~~01045~~	~~1.0~~
~~Lead (total)~~	~~01051~~	~~0.1~~
~~Manganese (total)~~	~~01055~~	~~1.0~~
~~Mercury (total)~~	~~71900~~	~~0.0005~~
~~Nickel (total)~~	~~01067~~	~~1.0~~
~~Phenols~~	~~32730~~	~~0.1~~
~~Selenium (total)~~	~~01147~~	~~1.0~~
~~Silver (total)~~	~~01077~~	~~0.005~~
~~Sulfate~~	~~00945~~	~~500.~~
~~Total Dissolved Solids~~	~~70300~~	~~1000.~~
~~Zinc~~	~~01092~~	~~1.0~~

a) The Acute Standard (AS) shall not be exceeded at any time except as provided in subsection (c).

b) The Chronic Standard (CS) shall not be exceeded by the average of at least four samples collected over any period of at least four consecutive days. The samples used to demonstrate compliance or lack of compliance with a CS must be collected in a manner which assures an average representative of the four day period.

c) Where a mixing zone has been delineated pursuant to Section 302.102, the following apply:

1) The AS shall not be exceeded in the mixing zone except in a ZID;

2) The CS shall not be exceeded outside the mixing zone.

d) Concentrations of chemical constituents shall not exceed the following standards, measured in micrograms per liter (ug/l):

Constituent	STORET Number	AS	CS

Arsenic (total)	01002	360	190
Cadmium (total)	01027	exp[A + Bln(H)], but not to exceed 50 ug/l, where A = -2.918 and B = 1.128	exp[A + Bln(H)], where A = -3.490 and B = 0.7852
Chromium (total hexavalent)	01032	16	11
Chromium (total) trivalent)	01033	exp[A + Bln(H)], where A = 3.688 and B = 0.8190	exp[A + Bln(H), where A = 1.561 and B = 0.8190
Copper (total)	01042	exp[A + Bln(H)], where A = -1.464 and B = 0.9422	exp[A + Bln(H)], where A = -1.465 and B = 0.8545
Cyanide	00718	22	5.2
Lead (total)	01051	exp[A + Bln(H)], but not to exceed 50 ug/l, where A = -1.460 and B = 1.273	Not Applied
Mercury	71900	0.5	Not Applied
TRC	50060	19	11

where: ug/l = microgram per liter

exp(x) = base of natural logarithms raised to the x-power

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

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e) Concentrations of the following chemical constituents shall not be exceeded outside of a mixing zone:

Constituent	Units	STORET Number	Standard
Barium (total)	mg/l	01007	5.0

Boron (total)	mg/l	01022	1.0
Chloride (total)	mg/l	00940	500
Fluoride	mg/l	00951	1.4
Manganese (total)	mg/l	01055	1.0
Nickel (total)	mg/l	01067	1.0
Phenols	mg/l	32730	0.1
Selenium (total)	mg/l	01147	1.0
Silver (total)	ug/l	01077	5.0
Sulfate	mg/l	00945	500
Total Dissolved Solids	mg/l	70300	1000
Zinc (total)	mg/l	01092	1.0

where: mg/l = milligrams per liter

ug/l = micrograms per liter

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

Section 302.210 ~~Substances Toxic to Aquatic Life~~ Other Toxic Substances

~~Any substance toxic to aquatic life shall not exceed one-tenth of the 96-hour median tolerance limit (96-hr. TLm) for native fish or essential fish food organisms, except for~~

Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life. Individual chemical substances listed in Section 302.208 are not subject to this Section.

a) Any substance or combination of substances shall be presumed to be toxic or harmful to aquatic life if present in concentrations that exceed the following:

1) An Acute Aquatic Toxicity Criterion (AATC) developed pursuant to procedures set forth in Sections 302.612 through 302.618 or in Section 302.621; or

2) A Chronic Aquatic Toxicity Criterion (CATC) developed pursuant to procedures set forth in Sections 302.627 or 302.630.

b) Any substance or combination of substances shall be presumed to be toxic or harmful to wild or domestic animal life if present in concentrations that exceed any Wild and Domestic Animal Protection Criterion (WDAPC) pursuant to Section 302.633.

c) Any substance or combination of substances shall be

presumed toxic or harmful to human health if present in concentrations that exceed criteria based on either of the following:

1) Disease or functional impairment due to a physiological mechanism for which there is a threshold dose below which no damage occurs calculated pursuant to Sections 302.642 through 302.648 (Human Threshold Criterion); or

2) Disease or functional impairment due to a physiological mechanism for which any dose may cause some risk of damage calculated pursuant to Sections 302.651 through 302.658 (Human Nonthreshold Criterion).

d) The most stringent criterion of subsections (a), (b), and (c) shall apply at all points outside of any mixing zone consistent with Section 302.102. In addition, subsection (a)(1) shall apply within any mixing zone except in the portion of such mixing zone where the Agency has approved a ZID pursuant to Section 302.102.

e) Subpart F provides the procedures for setting forth minimum data requirements, appropriate test protocols and data assessment methods for establishing criteria pursuant to subsections (a), (b), and (c).

f) A person may challenge the validity of a criterion developed by the Agency pursuant to this Section at the time such criterion is applied in an NPDES permit pursuant to 35 Ill. Adm. Code 309.152 or in an enforcement action pursuant to Title VIII of the Act for violation of the toxicity water quality standard. If a criterion is included as, or is used to derive, a condition of an NPDES discharge permit, a person may challenge the criterion in a permit appeal pursuant to Section 309.181. In any such action, the Agency shall have the burden of going forward with proof and of persuading the Board of the general validity and correctness of application of the criterion. In an enforcement action where alleged violation of the toxicity water quality standard is based on alleged excursion of a criterion, the person bringing such action shall have the burden of going forward with proof and of persuading the Board of the general validity and correctness of application of the criterion. No enforcement action may be brought alleging excursion of a criterion as the basis for violation of the toxicity water quality against a person if the criterion has not either been applied in that person's NPDES permit or been published in the Illinois Register pursuant to 35 Ill. Adm. Code 302.669.

g) Subsections (a) through (e) do not apply to USEPA registered pesticides approved for aquatic application and applied pursuant to the following conditions:

a1) Application shall be made in strict accordance with label directions;

b2) Applicator shall be properly certified under the provisions of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 135 et seq. (1972));

c3) 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, among which are included the Illinois Department of Agriculture and the Illinois Department of Public Health pursuant to Ill. Rev. Stat. 1979 ch. 5, pars. 256 through 267; and the Department of Energy and Natural Resources pursuant to Ill. Rev. Stat. 1979 ch. 96 1/2, par. 7403.

d4) 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: Amended at _____ Ill. Reg. _____, effective _____)

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section 302.601 Scope and Applicability

This Subpart contains the procedures for determining the water quality criteria set forth in Section 302.210(a), (b) and (c).

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

Section 302.603 Definitions

As used in this Subpart, the following terms shall have the meanings specified.

"Bioconcentration" means an increase in concentration of a chemical and its metabolites in an organism (or specified tissues thereof) relative to the concentration of the chemical in the ambient water acquired through contact with the water alone.

"Carcinogen" means a chemical which causes an increased incidence of benign or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasms in at least one mammalian species or man through epidemiological or clinical studies.

"EC-50" means the concentration of a substance or effluent which causes a given effect to 50% of the exposed organisms in a given time period.

"LC-50" means the concentration of a toxic substance or effluent which is lethal to 50% of the exposed organisms in a given time period.

"LOAEL" or "Lowest Observable Adverse Effect Level" means the lowest tested concentration causing a statistically significant increased incidence in the occurrence of an injurious or debilitating effect.

"MATC" or "Maximum Acceptable Toxicant Concentration" means the value obtained by calculating the geometric mean of the lower and upper chronic limits from a chronic test. A lower chronic limit is the highest tested concentration which did not cause the occurrence of a specified adverse effect. An upper chronic limit is the lowest tested concentration which did cause the occurrence of a specified adverse effect and above which all tested concentrations caused such an occurrence.

"NOAEL" or "No Observable Adverse Effect Level" means

the highest tested concentration that does not cause a statistically significant increased incidence in the occurrence of an injurious or debilitating effect and below which no lower test concentrations caused the same effect.

"Resident or Indigenous Species" means species which currently live a substantial portion of their lifecycle or reproduce in a given body of water, or which are native species whose historical range includes a given body of water.

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

Section 302.604 Mathematical Abbreviations

The following mathematical abbreviations have been used in this Subpart:

exp(x)	base of the natural logarithm, e, raised to x-power
lnx	natural logarithm of x
logx	logarithm to the base 10 of x
A**B	A raised to the B-power
SUM(x)	summation of the values of x

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

Section 302.606 Data Requirements

The Agency shall review, for validity, applicability and completeness, data used in calculating criteria. 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 organizations, including but not limited to methods found in "Standard Methods", or methods approved by the American Society for Testing and Materials. See Section 301.106.

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

Section 302.612 Determining the Acute Aquatic Toxicity Criterion for an Individual Substance - General Procedures

a) A chemical specific Acute Aquatic Toxicity Criterion (AATC) is calculated using procedures specified in Sections 302.615 and 302.681 if acute toxicity data are available for at least five (5) resident or indigenous species from five (5) different North American genera of

freshwater organisms including representatives of the following taxa:

1) Representatives of two families in the Class Osteichthyes (Bony Fishes).

2) The family Daphnidae.

3) A benthic aquatic macroinvertebrate.

4) A vascular aquatic plant or a third family in the Phylum Chordata which may be from the Class Osteichthyes.

b) If data are not available for resident or indigenous species, data for non-resident species may be used if the non-resident species is of the same family or genus and has a similar habitat and environmental tolerance. The procedures of Section 302.615 must be used to obtain an AATC for individual substances whose toxicity is unaffected by ambient water quality characteristics. The procedures of Section 302.618 must be used if the toxicity of a substance is dependent upon some other water quality characteristic.

c) If data are not available that meet the requirements of subsection (a), an AATC is calculated by obtaining at least one EC-50 or LC-50 value from both a daphnid species and either fathead minnow or bluegill. If there are data available for any other North American freshwater species, they must also be included. An AATC is calculated by dividing the lowest Species Mean Acute Value (SMAV), as determined according to Section 302.615, by 10.

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

Section 302.615 Determining the Acute Aquatic Toxicity Criterion - Toxicity Independent of Water Chemistry

If the acute toxicity of the chemical has not been shown to be related to a water quality characteristic, including but not limited to, hardness, pH, temperature, etc., the AATC is calculated by 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.

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 obtained through the ranking procedures of subsections (c) and (d). "T" is the number of GMAV's which are to used in the calculations of subsection (g). T is equal to 4 when the data set includes at least one representative from each of the five families in Section 302.612 and a representative from each of the three families listed below. T is equal to 3 when the data includes at least one representative from each of the five families in Section 302.612 and from one or two of the families listed below. T is equal to 2 when the data set meets the minimum requirements of Section 302.612 but does not include representatives from any of the three families listed below. When toxicity data on the three families listed are available, they must be used along with the data sets obtained for Subsection (a).

1) A benthic crustacean, unless such was used pursuant to Section 302.612(a)(3), in which case an insect must be utilized.

2) A member of a family from a phylum not used in subsections (a), (b) or f(1).

3) An insect from an order not already represented.

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

S**2 = [SUM((ln GMAV)**2) - ((SUM(ln GMAV))**2)/T]/[SUM(P) - ((SUM(P**0.5))**2)/T]

L = [SUM(ln GMAV) - S(SUM(P**0.5))]/T

A = L + 0.2236 S

FAV = exp(A)

AATC = FAV/2

h) If a resident or indigenous species necessary to maintain the commercial, recreational or ecological integrity of the waterbody will not be protected by the calculated FAV, then the EC-50 or LC-50 for that species is used as the FAV.

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

Section 302.618 Determining the Acute Aquatic Toxicity Criterion - Toxicity Dependent on Water Chemistry

If data are available to show that acute toxicity to two or more species is dependent upon a water quality characteristic, an AATC 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 least squares regression of the acute toxicity values on the corresponding values of the water quality characteristic is performed to obtain the slope of the curve that describes the relationship. Because the best documented relationship is that between hardness and acute toxicity of metals and a log-log relationship fits these data, geometric means and natural logarithms of both toxicity and water quality characteristic are used in the rest of this procedure to illustrate the method. For relationships based on other water quality characteristics, such as pH or temperature, no transformation or a different transformation may fit the data better, and corresponding changes must be made as necessary throughout this method.

b) Each acute slope is evaluated as to whether or not it is statistically meaningful, 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, the AATC is calculated using the procedures in Section 302.615.

c) For each species the geometric mean, W, of the available acute values is calculated and then each of the acute values for a species is divided by the mean for the species. This normalizes the acute values so that the

geometric mean of the normalized values for each species individually and for any combination of species is 1.0.

d) The values of the water quality characteristic, X, are similarly normalized for each species.

e) All the normalized data are treated as if they were for the same species and a least squares regression of all the normalized acute values on the corresponding normalized values of the water quality characteristic is performed to obtain the pooled acute slope, V.

f) For each species the logarithmic intercept, Y, is calculated using the equation:

$Y = \ln W - V(\ln X - \ln Z)$.

Where: Z is the SMAV at a selected value of the water quality characteristic and W and X are as specified in subsections (c) and (d).

g) For each species the species mean acute intercept is calculated as the antilog of Y.

h) The Final Acute Intercept (FAI) is obtained by using the procedures described in Section 302.615(b) through (g), replacing "Value" with "Intercept".

i) The Aquatic Acute Intercept (AAI) is obtained by dividing the FAI by two.

j) Using the value of V from subsection (e) and the value of AAI from subsection (i), the AATC is calculated as:

$AATC = \exp(V \ln x + \ln AAI - V (\ln Z))$.

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

Section 302.621 Determining the Acute Aquatic Toxicity Criterion - Procedure for Combinations of Substances

An AATC for any combination of substances (including effluent mixtures) must be determined by the following toxicity testing procedures:

a) Not more than 50% of test organisms from the most sensitive species tested may exhibit mortality or immobility after a 48-hour test for invertebrate or a 96-hour test for fishes.

b) Three resident or indigenous species of ecologically diverse taxa must be tested initially. If data are not available for resident or indigenous species, data for non-resident species may be used if the non-resident species is of the same family or or genus and has a similar habitat and environmental tolerance.

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

Section 302.627 Determining the Chronic Aquatic Toxicity Criterion for an Individual Substance - General Procedures

a) A chemical-specific Chronic Aquatic Toxicity Criterion (CATC) is calculated using procedures specified in subsections (b) and (c) when chronic toxicity data are available for at least five species from five different North American genera of freshwater organisms, including representatives from the following taxa:

1) Representatives of two families in the Class Osteichthyes (Bony Fishes).

2) The family Daphnidae.

3) A benthic aquatic macroinvertebrate.

4) An alga (96-hour test) or a vascular aquatic plant.

b) A CATC is derived in the same manner as the FAV in Sections 302.615 or 302.618 by substituting CATC for FAV or FAI, chronic for acute, MATC for LC-50, SMCV (Species Mean Chronic Value) for SMAV, and GMCV (Genus Mean Chronic Value) for GMAV.

c) If data are not available to meet the requirements of subsection (a), a CATC is calculated by dividing the FAV by the highest acute-chronic ratio obtained from at least one fish and one invertebrate species. The acute-chronic ratio for a species equals the acute toxicity concentration from data considered under Sections 302.612 through 302.618, divided by the chronic toxicity concentration from data calculated under Section 302.627 subject to the following conditions.

1) If the toxicity of a substance is related to any water quality parameter, the acute-chronic ratio must be based on acute and chronic toxicity data obtained from organisms exposed to test water with similar, if not identical, values of those water quality parameters. Preference under this subsection must be given to data from acute and chronic tests done by the same author or in the

same reference in order to increase the likelihood of comparable test conditions.

2) If the toxicity of a substance is unrelated to water quality parameters, the acute-chronic ratio may be derived from any acute and chronic test on a species regardless of the similarity in values of those water quality parameters. Preference under this subsection must be given to data from acute and chronic tests done on the same organisms or their descendants.

3) If there is more than one acute-chronic ratio for a species, a geometric mean of the ratio is calculated, corrected for the relationship of toxicity to water quality parameters.

4) If the acute and chronic toxicity data indicate that the acute-chronic ratio varies with changes in water quality parameters, the acute-chronic ratio used over specified values of the water quality parameters must be based on the ratios at water quality parameter values closest to those specified.

d) If acute-chronic ratios are unavailable for at least two North American freshwater species, the CATC must be calculated by dividing the FAV by a factor of 25.

e) If a resident or indigenous species necessary to maintain the commercial, recreational or ecological integrity of the water body will not be protected by the calculated CATC, then the MATC for that species is used as the CATC.

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

Section 302.630 Determining the Chronic Aquatic Toxicity Criterion - Procedure for Combinations of Substances

A CATC for any combination of substances (including effluent mixtures) may be determined by toxicity testing procedures pursuant to the following:

a) No combination of substances may exceed concentrations greater than a NOAEL as determined for the most sensitive of the species tested.

b) Three resident or indigenous species of ecologically diverse taxa must be tested initially. If data are not available for resident or indigenous species, data for non-resident species may be used if the non-resident

species is of the same family or genus and has a similar habitat and environmental tolerance.

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

Section 302.633 The Wild and Domestic Animal Protection Criterion

The Wild and Domestic Animal Protection Criterion (WDAPC) is the concentration of a substance which if not exceeded protects Illinois wild and domestic animals from adverse effects, such as functional impairment or pathological lesions, resulting from ingestion of surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State.

a) For those substances for which a NOAEL has been derived from studies of mammalian or avian species exposed to the substance via oral routes including gavage, the lowest NOAEL among species must be used in calculating the WDAPC. Additional considerations in selecting NOAEL include:

1) If the NOAEL is given in milligrams of toxicant per liter of water consumed (mg/l), prior to calculating the WDAPC, the NOAEL must be multiplied by the daily average volume of water consumed by the test animals in liters per day (l/d) and divided by the average weight of the test animals in kilograms (kg).

2) If the NOAEL is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the WDAPC, the NOAEL must be multiplied by the average amount of food in kilograms consumed daily by the test animals (kg/d) and divided by the average weight of the test animals in kilograms (kg).

3) If the animals used in a study were not exposed to the toxicant each day of the test period, the NOAEL must be multiplied by the ratio of days of exposure to the total days in the test period.

4) If more than one NOAEL is available for the same animal species, the geometric mean of the NOAELs must be used to calculate the WDAPC.

b) For those substances for which a NOAEL is not available but the lowest observed adverse effect level (LOAEL) has been derived from studies of animal species exposed to the substance via oral routes including gavage, one-tenth of the LOAEL may be substituted for the NOAEL.

c) The LOAEL must be selected in the same manner as that specified for the NOAEL in subsection (a).

d) The WDAPC, measured in milligrams per liter (mg/l), is calculated according to the equation:

$$WDAPC = [0.1 \text{ NOAEL} \times Wt]/[W + (F \times BCF)]$$

Where: NOAEL is derived from mammalian or avian studies as specified in subsection (a) and (b), and is measured in units of milligrams of substance per kilogram of body weight per day (mg/kg-d).

Wt = Average weight in kilograms (kg) of the test animals.

W = Average daily volume of water in liters consumed per day (l/d) by the test animals.

F = Average daily amount of food consumed by the test animals in kilograms (kg/d).

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

The 0.1 represents an uncertainty factor to account for species variability.

e) If no studies pertaining to the toxic substance in question can be found by the Agency, no criterion can be determined.

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

Section 302.642 The Human Threshold Criterion

The Human Threshold Criterion (HTC) is the concentration of a substance which protects humans from adverse effects resulting from incidental exposure to, or ingestion of, surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State. HTCs are derived for those toxic substances for which there exists a threshold dosage or concentration below which no adverse effect or response is likely to occur.

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

Section 302.645 Determining The Human Threshold Criterion -

General Procedures

The Acceptable Daily Intake (ADI) represents the maximum amount of a substance which, if ingested daily for a lifetime, results in no adverse effects to humans. Subsections (a) through (e) list, in the order of preference, methods for determining the acceptable daily intake.

a) The lowest of the following ADI values:

1) For those substances which are listed with a maximum contaminant level in 40 CFR 141, incorporated by reference in 35 Ill. Adm. Code 301.106, or in 35 Ill. Adm. Code 611, the ADI equals the product of multiplying the maximum contaminant level given in milligrams per liter (mg/l) by 2 liters per day (l/d).

2) For those substances which are listed with a maximum allowable concentration standard in 35 Ill. Adm. Code.Subtitle F, the acceptable daily intake equals the product of multiplying the public health enforcement standard given in milligrams per liter (mg/l) by 2 liters per day (l/d).

b) For those substances for which a no observed adverse effect level (NOAEL-H) for humans exposed to the substance in drinking water has been derived, the acceptable daily intake equals the product of multiplying one-tenth of the NOAEL-H given in milligrams of toxicant per liter of water consumed (mg/l), by 2 liters per day (l/d). The lowest NOAEL-H must be used in the calculation of the acceptable daily intake.

c) For those substances for which the lowest observed adverse effect level (LOAEL-H) for humans exposed to the substance in drinking water has been derived, one-hundredth of the LOAEL-H may be substituted for the NOAEL-H in subsection (b).

d) For those substances for which a no observed adverse effect level (NOAEL-A) has been derived from studies of mammalian test species exposed to the substance via oral routes including gavage, the acceptable daily intake equals the product of multiplying 1/100 of the NOAEL-A given in milligrams toxicant per day per kilogram of test species weight (mg/kg-d) by the average weight of an adult human of 70 kilograms (kg). The lowest NOAEL-A among animal species must be used in the calculation of the acceptable daily intake. Additional considerations in selecting the NOAEL-A include:

1) If the NOAEL-A is given in milligrams of toxicant per liter of water consumed (mg/l) then, prior to

calculating the acceptable daily intake, the NOAEL-A must be multiplied by the daily average volume of water consumed by the mammalian test species in liters per day (l/d) and divided by the average weight of the mammalian test species in kilograms (kg).

2) If the NOAEL-A is given in milligrams of toxicant per kilogram of food consumed (mg/kg), prior to calculating the acceptable daily intake the NOAEL-A must be multiplied by the average amount in kilograms of food consumed daily by the mammalian test species (kg/d) and divided by the average weight of the mammalian test species in kilograms (kg).

3) If the mammalian test species were not exposed to the toxicant each day of the test period, the NOAEL-A must be multiplied by the ratio of days of exposure to the total days of the test period.

4) If more than one NOAEL-A is available for the same mammalian test species, the geometric mean of the NOAEL-As must be used.

e) For those substances for which a NOAEL-A is not available but the lowest observed adverse effect level (LOAEL-A) has been derived from studies of mammalian test species exposed to the substance via oral routes including gavage, one-tenth of the LOAEL-A may be substituted for the NOAEL-A in subsection (d). The LOAEL-A must be selected in the same manner as that specified for the NOAEL-A in subsection d.

f) If no studies pertaining to the toxic substance in question can be found by the Agency, no criterion can be determined.

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

Section 302.648 Determining The Human Threshold Criterion

The HTC is calculated according to the equation:

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

Where: HTC = Human health protection criterion in milligrams per liter (mg/l).

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

W = Per capita daily water consumption equal to 2 liters per day (l/d) for surface waters at the point of intake of a public water supply, or equal to 0.01 liters per day (l/d) which represents incidental exposure through body contact or ingestion of small volumes of water while swimming or during other recreational activities in other General Use waters.

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

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

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

Section 302.651 The Human Nonthreshold Criterion

The Human Nonthreshold Criterion (HNC) is the concentration of a substance which protects humans from an unreasonable risk of disease caused by a nonthreshold toxic mechanism resulting from incidental exposure to or ingestion of surface waters of the State and from ingestion of aquatic organisms taken from surface waters of the State. HNCs are derived for those toxic substances for which any exposure, regardless of extent, carries some risk of damage. Most substances regulated under this section cause cancer (carcinogen) or mutations (mutagen), however, other deleterious effects may be identified in the future.

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

Section 302.654 Determining The Human Nonthreshold Criterion - General Procedures

The Risk Associated Intake (RAI) represents the maximum amount of a substance which if ingested daily for a lifetime is expected to result in the risk of one additional case of human cancer in a population of one hundred thousand. The risk associated intake must be derived as specified in subsections a through c.

a) For those substances for which a human epidemiologic study has been performed, the RAI equals the product of the exposure level that results in a 70-year lifetime cancer probability of one in one hundred thousand, times the average weight of an adult human of 70 kilograms (kg). The result is expressed in milligrams toxicant per kilogram body weight per day (mg/kg-d). If more than one human epidemiologic study is available, the lowest exposure level resulting in a 70-year lifetime probability of cancer equal to a ratio of one in one

hundred thousand must be used in calculating the RAI.

b) In the absence of an epidemiologic study, for those toxic substances for which a carcinogenic potency factor has been derived from studies of mammalian test species the risk associated intake is calculated from the equation:

RAI = 70 kg/(CPF x 100,000)

Where: RAI = Risk associated intake in milligrams per day (mg/d).

70kg = Average weight of an adult human.

1 in 100,000 = Cancer risk level

CPF = Carcinogenic Potency Factor in inverse milligram per kilogram per day (kg-d/mg) as derived in subsections (b)(1) through (b)(5).

1) Only those studies which fulfill the data requirement criteria of Section 302.606 must be used in calculating the CPF.

2) The linear non-threshold dose-response relationship developed in the same manner as in the USEPA document "Mutagenicity and Carcinogenicity Assessment of 1,3-butadiene", incorporated by reference in 35 Ill. Adm. Code 301.106. The carcinogenic potency estimate must be taken as the exposure level where the cancer risk level of one in 100,000 is the 95th percentile upper bound of risk. The Agency must review alternate protocols for scientific equivalency if so requested.

3) If in a study of a single species more than one type of tumor is induced by exposure to the toxic substance, the highest of the CPFs is used:

4) If two or more studies vary in either species, strain or sex of the test animal, or in tumor type, the highest CPF is used.

5) If more than one tumor of the same type is found in some of the test animals, these should be pooled so that the dose response relationship is dose versus number of tumors per animal. The potency estimate for this dose response relationship is used if it is higher than estimates resulting from other methods.

6) If two or more studies are identical regarding

species, strain and sex of the test animal, and tumor type, the highest of the CPFs is used.

7) Calculation of an equivalent dose between animal species and humans using a surface area conversion, and conversion of units of exposure to milligrams of toxicant per day (mg/d) must be performed as specified in GPO document "Quality Criteria for Water 1986", incorporated by reference in 35 Ill. ADm. Code 301.106.

8) If more than one carcinogenic chemical is present in an effluent, the total additive risk allowed is one in 10,000.

c) If both a human epidemiologic study and a study of mammalian test species meet the criteria specified in subsections (a) and (b), the risk associated intake is determined as follows:

1) When the human epidemiologic study predicts a carcinogenic effect to humans, the risk associated intake calculated from the human epidemiology study as specified in subsection (a) is used to calculate the human cancer protection criterion as specified in Section 302.657.

2) When the mammalian study predicts a carcinogenic effect to humans, but the human epidemiologic study does not, a cancer risk to humans is assumed and the risk associated intake is calculated as specified in subsection (b).

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

Section 302.657 Determining The Human Nonthreshold Criterion

The HNC is calculated according to the equation:

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

Where: HNC = Human Nonthreshold protection Criterion in milligrams per liter (mg/l).

RAI = Risk Associated Intake of substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 100,000 as derived in Section 302.654(b).

W = Per capita daily water consumption equal to 2 liters per day (l/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (l/d)

which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for surface waters classified for primary contact recreational use.

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

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

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

Section 302.658 Stream Flow for Application of Human Nonthreshold Criterion

The HNC shall apply at all times except during periods when flows are less than the harmonic mean flow, as determined by:

$$Qhm = N / SUM(1/Qi)$$

Where: Qhm = harmonic mean flow

N = number of daily values for stream flows

Qi = daily streamflow value on day i.

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

Section 302.660 Bioconcentration Factor

A Bioconcentration Factor is used to relate substance residue in aquatic organisms to the concentration of the substance in the waters in which the organisms reside.

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

Section 302.663 Determination of Bioconcentration Factors

A Bioconcentration Factor equals the concentration of a substance in all or part of an aquatic organism in milligrams per kilogram of wet tissue weight (mg/kg), divided by the concentration of the substance in the water to which the organism is exposed in milligrams of the substance per liter of water (mg/l).

a) The Bioconcentration Factor is calculated from a field study if the following conditions are met:

1) Data are available to show that the concentration

of the substance in the water to which the organism was exposed remained constant over the range of territory inhabited by the organism and for a period of time exceeding 28 days;

2) Competing mechanisms for removal of the substance from solution did not affect the bioavailability of the substance; and

3) The concentration of the substance to which the organism was exposed is less than the lowest concentration causing any adverse effects on the organism.

b) In the absence of a field-derived Bioconcentration Factor, the Bioconcentration Factor is calculated from a laboratory test if the following conditions are met:

1) The Bioconcentration Factor was calculated from measured concentrations of the toxic substance in the test solution;

2) The laboratory test was of sufficient duration to have reached steady-state which is defined as a less than 10 percent change in the calculated Bioconcentration Factor over a 2-day period or 16 percent of the test duration whichever is longer. In the absence of a laboratory test which has reached steady-state, the Bioconcentration Factor may be calculated from a laboratory test with a duration greater than 28 days if more than one test is available for the same species of organism;

3) The concentration of the toxic substance to which the test organism was exposed is less than the lowest concentration causing any adverse effects on the organism;

4) If more than one Bioconcentration Factor for the same species is available, the geometric mean of the Bioconcentration Factors is used; and

5) The Bioconcentration Factor is calculated on a wet tissue weight basis. A Bioconcentration Factor calculated using dry tissue weight may be converted to a wet tissue weight basis by multiplying the dry weight bioconcentration value by 0.1 for plankton and by 0.2 for individual species of fishes and invertebrates.

c) In the absence of any Bioconcentration Factors measured from field studies as specified in subsection (a) or laboratory studies which have reached steady-state as specified in subsection (b), the Bioconcentration Factor

is calculated according to the equation:

log BCF = (0.79 log Kow) - 0.40

Where: BCF = Bioconcentration Factor

Kow = The octanol/water partition coefficient measured as specified in ASTM E 1147, incorporated by reference in 35 Ill. Adm. Code 301.106. If the Kow is not available from laboratory testing, it may be calculated from structure-activity relationships or available regression equations.

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

Section 302.666 Utilizing the Bioconcentration Factor

The Bioconcentration Factor derived in Section 302.663 is used to calculate water quality criteria for a substance as specified below:

a) When calculating a WDAPC as described in Section 302.633, the geometric mean of all available steady-state whole body Bioconcentration Factors for fish and shellfish species which constitutes or represents a portion of the diet of indigenous wild and domestic animal species is used. Additional considerations in deriving a Bioconcentration Factor include:

1) An edible portion Bioconcentration Factor is converted to a whole body Bioconcentration Factor for a fish or shellfish species by multiplying the edible portion Bioconcentration Factor by the ratio of the percent lipid in the whole body to the percent lipid in the edible portion of the same species.

2) A Bioconcentration Factor calculated as described in Section 302.663(c) is converted to a whole body Bioconcentration Factor by multiplying the calculated Bioconcentration Factor by the ratio of the percent lipid in the whole body to 7.6.

b) When calculating either a human threshold criterion or a human nonthreshold criterion as described in Sections 302.642 through 302.648 and Sections 302.651 through 302.657, respectively, the geometric mean of all available edible portion Bioconcentration Factors for fish and shellfish species consumed by humans is used. Additional considerations in deriving a Bioconcentration

Factor include:

1) Edible portions include:

A) Decapods -- muscle tissue.

B) Bivalve molluscs -- total living tissue.

C) Scaled fishes -- boneless, scaleless filets including skin except for bloater chubs in which the edible portion is the whole body excluding head, scales and visera.

D) Smooth-skinned fishes -- boneless, skinless filets.

2) A whole body Bioconcentration Factor is converted to an edible portion Bioconcentration Factor by multiplying the whole body Bioconcentration Factor of a species by the ratio of the percent lipid in the edible portion to the percent lipid in the whole body of the same species.

3) A Bioconcentration Factor calculated as described in Section 302.663 is converted to an edible portion Bioconcentration Factor by multiplying the calculated Bioconcentration Factor by the ratio of the percent lipid in the edible portion to 7.6.

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

Section 302.669 Listing of Derived Criteria

The Agency shall develop and maintain a listing of toxicity criteria derived under 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.

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

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

PART 303
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APPENDIX A References to Previous Rules
APPENDIX B Sources of Codified Sections

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1013 and 1027).

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 R88-21 at ____ Ill. Reg. _____, effective _____.

SUBPART C: SPECIFIC USE DESIGNATIONS AND SITE SPECIFIC WATER QUALITY STANDARDS

Section 303.362 Horseshoe Lake Mixing Zone and ZID

This Section applies to discharge from Granite City Division of National Steel Corporation into Horseshoe Lake. Such dischage shall have a mixing zone of 26 acres and a ZID of 1,000 square feet for purposes of determining the application of standards, limits and criteria in 35 Ill. Adm. Code Part 302.

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

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE C: WATER POLLUTION
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PART 305
MONITORING AND REPORTING

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305.103 Effluent Measurement

APPENDIX A References to Previous Rules

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 $\frac{1}{2}$, pars. 1013 and 1027).

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 8 Ill. Reg. 1600, effective January 18, 1984; amended in R88-1 at 13 Ill. Reg. 5989, effective April 18, 1989; amended in R88-21 at ____ Ill. Reg. _____, effective _____.

Section 305.102 Reporting Requirements

a) Every person within this State operating a pretreatment works, treatment works, or wastewater source shall submit operating reports to the Agency at a frequency to be determined by the Agency. "Agency" means the Illinois Environmental Protection Agency. Such reports shall contain information regarding the quantity of influent and of effluent discharged, of wastes bypassed and of combined sewer overflows; the concentrations of those physical, chemical, bacteriological and radiological parameters which shall be specified by the Agency; information concerning the biological impact of the discharge as specified by the Agency; and any additional information the Agency may reasonably require. This reporting requirement for pretreatment works shall only apply to those pretreatment works which are required to have a pretreatment permit or authorization to discharge pursuant to 35 Ill. Adm. Code 310.

~~1) Discharge toxic pollutants, as defined in Section 502(13) of the Clean Water Act, or pollutants which may interfere with the treatment process, into the receiving treatment works or are subject to regulations promulgated under Section 307 of the Clean Water Act (CWA); (33 U.S.C. 1251 et seq.); or~~

~~2) Discharge 15% or more of the total hydraulic flow~~

~~received by the treatment works; or~~

~~3) Discharge 15% or more of the total biological loading received by the treatment works as measured by 5-day biochemical oxygen demand.~~

b) Every holder of an NPDES (National Pollutant Discharge Elimination System) permit is required to comply with the monitoring, sampling, recording and reporting requirements set forth in the permit and this cChapter.

c) Compliance with the reporting requirements of 35 Ill. Adm. Code 310 satisfies this reporting requirement.

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

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

PART 309
PERMITS

SUBPART A: NPDES PERMITS

SUBPART B: OTHER PERMITS

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APPENDIX A References to Previous Rules

AUTHORITY: Implementing Section 13 and 13.3 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 ½ , pars. 1013, 1013.3 and 1027).

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

SUBPART A: NPDES PERMITS

Section 309.103 Application -- General

a) Application Forms

1) An applicant for an NPDES Permit shall file an application, in accordance with 35 Ill. Adm. Code 309.223 hereof, on forms provided by the Agency. Such forms shall comprise the NPDES application forms promulgated by the U.S. Environmental Protection Agency for the type of discharge for which an NPDES Permit is being sought and such additional information as the Agency may reasonably require in order to determine that the discharge or proposed discharge will be in compliance with applicable state and federal requirements.

2) In addition to the above application forms, the Agency may require the submission of plans and specifications for treatment works and summaries of design criteria.

3) In addition to the above application forms, the Agency may require the installation, use, maintenance and reporting of results from monitoring equipment and methods, including biological monitoring. The Agency may require effluent toxicity testing to show compliance with Sections 302.621 and 302.630. Should aquatic toxicity be apparent, the Agency may require further testing and identification of the toxicant(s) pursuant to Section 302.210(a).

b) Animal Waste Facilities. An applicant for an NDPES Permit in connection with the operation of an animal waste facility shall complete, sign, and submit an NPDES application in accordance with the provisions of ~~Part~~ 35 Ill. Adm. Code 500 et seq.

c) Mining Activities

1) If, as defined by ~~Section~~ 35 Ill. Adm. Code 402.101, mining activities are to be carried out on a facility for which an NPDES Permit is held or required, the applicant must submit a permit application as required by ~~Section~~ 35 Ill. Adm. Code 403.103, 403.104 and 405.104. If the facility will have a discharge other than a mine discharge or non-point source mine discharge as defined by ~~Section~~ 35 Ill. Adm. Code 402.101, the applicant shall also submit an NPDES Permit application in accordance with Section 309.223 on forms supplied by the Agency.

2) As provided by ~~Section~~ 35 Ill. Adm. Code 403.101, except to the extent contradicted in 35 Ill. Adm. Code Subtitle D, Chapter I, the rules contained in

this Subpart A ~~of 35 Ill. Adm. Code~~ 309 apply to 35 Ill Adm. Code Subtitle D, Chapter ~~I~~I NPDES Permits.

3) As provided by ~~Section~~ 35 Ill. Adm. Code 406.100, except to the extent provided in 35 Ill. Adm. Code Subtitle D, Chapter I, the effluent and water quality standards of ~~Parts~~ 35 Ill. Adm. Code 302, 303 and 304 are inapplicable to mine discharges and non-point source mine discharges.

d) New Discharges

Any person whose discharge will begin after the effective date of this Subpart A or any person having an NPDES Permit issued by the U.S. Environmental Protection Agency for an existing discharge which will substantially change in nature, or increase in volume or frequency, must apply for an NPDES Permit either:

1) No later than 180 days in advance of the date on which such NPDES Permit will be required; or

2) In sufficient time prior to the anticipated commencement of the discharge to insure compliance with the requirements of Section 306 of the CWA, or with any applicable zoning or siting requirements established pursuant to Section 208(b)(2)(C) of the CWA, and any other applicable water quality standards and applicable effluent standards and limitations.

e) Signatures

An application submitted by a corporation shall be signed by a principal executive officer of at least the level of vice president, or his duly authorized representative, if such representative is responsible for the overall operation of the facility from which the discharge described in the application form originates. In the case of a partnership or a sole proprietorship, the application shall be signed by a general partner or the proprietor, respectively. In the case of a publicly owned facility, the application shall be signed by either the principal executive officer, ranking elected official, or other duly authorized employee.

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

Section 309.152 Toxic Pollutants

a) Any NPDES Permit issued shall include as a condition

that if a toxic effluent standard~~,~~ ~~or~~ prohibition, or criterion (including any schedule of compliance specified in such effluent standard or prohibition) is established under ~~Section 307(a) of the~~ CWA 35 Ill. Adm. Code 302.Subpart F for a toxic pollutant which is present in the permittee's discharge and such standard or prohibition is more stringent than any limitation upon such pollutant in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

b) A permittee shall be deemed in compliance with its NPDES Permit limitations or prohibitions established under the narrative toxic standards of 35 Ill. Adm. Code 302.210 for a toxic pollutant which is limited in the permittee's discharge permit for the duration of the permit or until such time as the permit is revised or modified.

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

IT IS SO ORDERED

J.D. Dumelle concurs.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Order was adopted on the 31st day of August, 1989, by a vote of 6-0

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board