96-148

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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STATE OF WISCONSIN)
) ss
DEPARTMENT OF NATURAL RESOURCES)

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETINGS:

I, George E. Meyer, Secretary of the Department of Natural Resources and custodian of the official records of said Department, do hereby certify that the annexed copy of Natural Resources Board Order No. WT-50-96 was duly approved and adopted by this Department on March 26, 1997. I further certify that said copy has been compared by me with the original on file in this Department and that the same is a true copy thereof, and of the whole of such original.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the official seal of the Department at the Natural Resources Building in the City of Madison, this 9th day of June, 1997.

George E. Meyer

George E. Meyer, Secretary

(SEAL)

9-1-97

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
REPEALING, RENUMBERING, AMENDING, REPEALING AND RECREATING
AND CREATING RULES

The Wisconsin Natural Resources Board proposes an order to repeal NR 102.04(3)(a), 105.06(5)(d), 105.07(6)(a), 105.09(6), 106.03(7), 106.06(2)(d), (3)(c)7. and 8., (d)2.and (e)7., 106.09(1)(c)1.; to renumber NR 102.04(3)(b) to (f), 105.03(5) to (19), 105.04(5) and (6), 105.06(1)(a)6., (3)(h), (4)(a)6., (b), (5)(e) to (i), 105.07(6)(b) and (c), 105.08(2) to (4), 106.03(1) to (6), (8) and (9), 106.05(1), 106.06(1)(b), (2)(a) to (c), (3)(a) to (c)6. and 9., (d)1. and 3., (e)1. to 6 and (4) to (8), 106.07(2) to (5), 106.09(1)(a), (b), (c)(intro.), and 2. and (2), 106.14, 207.03(1) to (7), 207.04(1)(a)1.a. to d.; to amend NR 102.04(3)(intro.), 102.04(6) and (7), 102.05(1)(b)3., (3)(intro.) and (d), 102.12(title) and (2), 102.14(title), (2)(b) and (c), ch. NR 105(title), 105.01, 105.02, 105.04(3), 105.05(title) and (1)(a)1. to 5., 105.05(1)(b) and (2)(a) to (f), (3)(a) and (f) to (L), 105.06(title), (1)(a)1., 2., 4., and 5., (b) and (3)(intro.), (a) to (g), (4)(a)1., 7. to 13., (5)(c), 105.07(title), (1), (2)(a) and (b) and (6)(intro.), 105.08(title), (5)(intro.), (a), (b)(intro.), 1.(intro.), d., e., 2.(intro.), 3.(intro.) and (c), 105.09(title), (1) and (3), (4)(a) and (b), (5)(intro.), (a), (b), (c)(intro.) and 2., 106.04(3), 106.05(3)(a) to (c), (4)(a) to (c), (5)(b), (6)(a) and (b) and (8), 106.06(1)(a), 106.06(3)(b), (c)(intro.) and 4. to 6., (4)(a), (b)(intro.), 1., 2., (c)4., 5., 12. and (d)1., (e)1., (6)(a) to (c), (e) and (11), 106.07(title), 106.08(title) and (1), 106.09(title), 106.10(1)(a) and (b), 106.10(2), 106.11, 207.01, 207.02(5), (6)(b) and (12) , 207.04(2)(c) (intro.), 1. and (d), 207.05(1)(b) and (4)(b); to repeal and recreate NR 102.12(1), 105.05(1)(a)6., NR 105 Tables 1 to 2a, 3 to 6, 105.07(2)(c) and (5), NR 105 Table 8 and 9, 105.10; and to create NR 105.02(3), 105.03(5) to (7), (9), (10), (12), (16), (18), (25), (28) and (29), 105.04(5), 105.05(1)(a)7. to 10., (4) and (5), 105.06(1)(a)6. to 9. and 11., (3)(h), (4)(a)6.b., (b), (5)(b)3., (6) to (8), NR 105 Table 2B, 105.07(2)(d) and (e) and (3)(intro.), 105.08(2), 105.11, 106.03(1), (5), (6), (10), (11) and (13), 106.04 (5), 106.05(1)(b) and (c), 106.06(1)(b)2., (2), (3)(d), (4)(c)7. to 11., (d)2., (e)3., (5)(a)4., (6)(title), (c)2. and (d) and (7), 106.07(2), (6)(d) to (f) and (7) to (9), 106.08(2)(title), (3)(title), (4)(title) and (5), 106.09(1), (2)(d) and (e) and (3)(c), 106.10(1)(d), 106.14(2) and (3), 106.16 and 106.17, 207.02(6)(c), 207.03(1) and (2), 207.04(1)(a)1.a. and c. and (d)1.e. relating to surface water quality standards, criteria and their implementation procedures

WT-50-96

Authorizing statutes:	ss. 281.11, 281.12(1), 281.15, 281.19(1), 283.001 and 227.11(2)(a), Stats.
Statutes interpreted:	ss. 281.11, 281.12(1), 281.15, 281.19(1), 283.001, 283.11(5), 283.13(5), 283.31(3) to (6), 283.37(4) to (6), 283.55 and 283.83, Stats.

The proposed revisions to chs. NR 102, 105, 106 and 207 establish revised surface water quality standards and implementation procedures to protect aquatic life, wildlife and human health in a manner that is consistent with the most advanced science. These revisions are proposed to be consistent with and as protective as the U.S. Environmental Protection Agency's Water Quality Guidance for the Great Lakes system, published on March 23, 1996 (40 CFR Pars 9, 122, 123, 131 and 132) and are part of the triennial review process required by U.S. EPA. States have two years (until March 23, 1997) during which to promulgate regulations that are as protective as and consistent with the Guidance. The purpose of the Guidance is to ensure consistency in environmental protection, regulation and enforcement among the eight Great Lakes States in the basin. The proposed changes, which are consistent with the Guidance, will help assure consistency with the other states in the Great Lakes Basin. Some additional housekeeping revisions to these codes have been made simply to clarify existing code language, correct typographical errors and incorporate specific program policies.

Specifically, some of the changes include:

Chapter NR 102 - *Water Quality Standards for Wisconsin Surface Waters*. This chapter contains only a few amendments needed to maintain consistency with changes to chs. NR 105 and 207.

Chapter NR 105 - *Surface Water Quality Criteria for Toxic Substances*. Amendments to this chapter, including the criteria tables, are predominantly due to inclusion of more recent scientific information and improved methodologies that are used in the established procedures. New specific procedures have been added which would allow for the determination of temporary secondary values for toxic substances until database

requirements are fulfilled to calculate water quality criteria. Also, new procedures have been added that allow aquatic life criteria for heavy metals to be expressed as dissolved concentrations.

Chapter NR 106 - *Procedures for Calculating Water Quality Based Effluent Limitations for Toxic and Organoleptic Substances Discharged to Surface Waters*. Proposed amendments include:

a. Elimination of mixing zones for highly bioaccumulative substances when they are for new or increased discharges within the Great Lakes Basin.

b. Provisions for including new permit limits based on temporary, secondary values for substances with reasonable potential to impact water quality.

c. Allowing for implementation of pollution minimization programs as alternatives to attaining effluent limitations in circumstances where data are lacking or where measurement of compliance is not possible.

d. Modification of the default receiving water design flows.

e. Inclusion of both a mass and a concentration water quality based limit in permits.

f. Inclusion of alternative wet weather mass limitations.

g. Refinement of whole effluent toxicity data evaluation and permit limitations.

h. Procedures for calculating and applying both dissolved and total recoverable metal limitations.

i. Other minor revisions to incorporate Great Lake Initiative requirements and to incorporate some housekeeping items.

Chapter NR 207 - *Water Quality Antidegradation*. A few amendments were proposed regarding increased discharges of BCCs and increased limits due to changed criteria, secondary values and dissolved metals. In addition, several modifications are proposed as minor housekeeping additions.

SECTION 1. NR 102.04(3)(intro.) is amended to read:

NR 102.04(3) FISH AND OTHER AQUATIC LIFE USES. (intro.) The department shall classify all surface waters into one of the fish and other aquatic life subcategories described in this subsection. Only those use subcategories identified in pars. (a) to ~~(d)~~ (c) shall be considered suitable for the protection and propagation of a balanced fish and other aquatic life community as provided in the federal water pollution control act amendments of 1972, P.L. 92-500; 33 USC 1251 et seq.

SECTION 2. NR 102.04(3)(a) is repealed.

SECTION 3. NR 102.04(3)(b) to (f) are renumbered 102.04(3)(a) to (e), and 102.04(3)(a), as renumbered, is amended to read:

NR 102.04(3)(a) Cold water communities. This subcategory includes surface waters ~~except those in par. (a),~~ capable of supporting a community of cold water fish and other aquatic life, or serving as a spawning area for cold water fish species. This subcategory includes, but is not restricted to, surface waters identified as trout water by the department of natural resources (Wisconsin Trout Streams, publication 6-3600 (80)).

SECTION 4. NR 102.04 (6) and (7) are amended to read:

NR 102.04(6) STANDARDS FOR PUBLIC HEALTH AND WELFARE. All surface waters shall meet the human threshold and human cancer criteria specified in or developed pursuant to ss. NR 105.08 and 105.09, respectively. The applicable criteria vary depending on whether the surface water is used for public

drinking water supplies and vary with the type of fish and other aquatic life subcategory. All surface waters providing public drinking water supplies or classified as ~~great lakes,~~ cold water~~,~~ or warm water sport fish communities as described in sub. (3) shall meet the taste and odor criteria specified in or developed pursuant to s. NR 102.14.

(7)(title) STANDARDS FOR WILDLIFE. All surface waters shall be classified for ~~wild and domestic animal~~ wildlife uses and meet the ~~wild and domestic animal~~ wildlife criteria specified in or developed pursuant to s. NR 105.07.

SECTION 5. NR 102.05(1)(b)3. is amended to read:

NR 102.05(1)(b)3. Great Lakes system waters as listed in s. NR 102.12(1),

SECTION 6. NR 102.05(3)(intro.) and (d) are amended to read:

NR 102.05(3) MIXING ZONES. (intro.) Water quality standards shall be met at every point outside of a mixing zone. The size of the mixing zone cannot be uniformly prescribed, but shall be based on such factors as effluent quality and quantity, available dilution, temperature, current, type of outfall, channel configuration and restrictions to fish movement. For toxic and organoleptic substances with water quality criteria or secondary values specified in or developed pursuant to chs. NR 102 and 105, allowable dilution shall be determined as specified in ch. NR 106 in addition to the requirements specified in this subsection. As a guide to the delineation of a mixing zone, the following shall be taken into consideration:

(d) Final acute criteria and secondary values specified in or developed pursuant to s. NR 105.05 for the fish and aquatic life subcategory for which the receiving water is classified not being exceeded at any point in the mixing zone.

SECTION 7. NR 102.12(title) is amended to read:

NR 102.12(title) GREAT LAKES SYSTEM.

SECTION 8. NR 102.12(1) is repealed and recreated to read:

NR 102.12(1) The Great Lakes system includes all the surface waters within the drainage basin of the Great Lakes.

SECTION 9. NR 102.12(2) is amended to read:

NR 102.12(2) For the purpose of administering ch. NR 207 and consistent with chs. NR 105 and 106, the waters identified in sub. (1) ~~and their tributaries~~ are to be protected from the impacts of persistent, bioaccumulating toxic substances by avoiding or limiting to the maximum extent practicable increases in these substances.

SECTION 10. NR 102.14(title), (2)(b) and (c) are amended to read:

NR 102.14(title) TASTE AND ODOR CRITERIA.

(2)(b) For substances which impart tastes or odors to aquatic organisms, the taste and odor criterion shall be calculated as follows:

$$TOC = \frac{TC^1}{BAF}$$

Where: TOC = Taste and odor criterion in milligrams per liter (mg/L).

TC = Threshold concentration in milligrams of substance per kilogram of wet tissue weight (mg/kg) of the aquatic organism being consumed below which undesirable taste and odor is not detectable to human consumers as derived in par. (d).

BAF = Aquatic life ~~bioconcentration~~ bioaccumulation factor with units of liter per kilogram (L/kg) as derived in s. NR 105.10.

(c) The lower of the taste and odor criteria derived as specified in pars. (a) and (b) is applicable to surface waters classified as public water supplies. The taste and odor criteria derived as specified in par. (b) ~~is~~ are applicable to ~~Great Lakes,~~ cold water~~,~~ and warm water sport fish communities.

SECTION 11. Chapter NR 105(title) is amended to read:

Chapter NR 105

SURFACE WATER QUALITY CRITERIA AND SECONDARY VALUES FOR TOXIC SUBSTANCES

SECTION 12. NR 105.01 is amended to read:

NR 105.01 PURPOSE. The purpose of this chapter is to establish water quality criteria, and methods for developing criteria and secondary values for toxic substances to protect public health and welfare, the present and prospective use of all surface waters for public and private water supplies, and the propagation of fish and aquatic life and ~~wild and domestic animal life~~ wildlife. This chapter also establishes how bioaccumulation factors used in deriving water quality criteria and secondary values for toxic and organoleptic substances shall be determined. Water quality criteria are a component of surface water quality standards. This chapter and chs. NR 102 to 104 constitute quality standards for the surface waters of Wisconsin.

SECTION 13. NR 105.02 is amended to read:

NR 105.02 APPLICABILITY. ~~(1) EXISTING AND SITE-SPECIFIC CRITERIA.~~ (intro.) The provisions of this chapter are applicable to surface waters of Wisconsin as specified in chs. NR 102 to 104 and in this chapter.

(1) SITE-SPECIFIC CRITERIA AND SECONDARY VALUES. A criterion contained within this chapter or a secondary value calculated pursuant to this chapter may be modified for a particular surface water segment or body. A criterion or secondary value may be modified if specific information is provided which shows that the data used to derive the criterion ~~does~~ or secondary value do not apply and if additional information is provided to derive a site-specific criterion or secondary value. Site-specific criteria are intended to be applicable to a specific surface water segment. Criteria may be modified for site-specific considerations according to the USEPA "Water Quality Standards Handbook" ~~(USEPA, Office of Water Regulations and Standards, Dec. 1983)~~, Second Edition, revised 1994. Any criterion modified for site-specific conditions shall be promulgated in ch. NR 104 before it can be applied on a site-specific basis. Site-specific modifications of criteria and secondary values shall be consistent with the procedures described in 40 CFR Part 132, Appendix F, Procedure 1: Site-specific modifications to criteria and values. 40 CFR Part 132, Appendix F, Procedure 1 as stated on the effective date of this rule ... [revisor insert date] is incorporated by reference.

Note: Copies of 40 CFR Part 132 Appendix F, Proc. 1 are available for inspection in the offices of the department of natural resources, secretary of state and the revisor of statutes, Madison, WI or may be purchased from the superintendent of documents, US government printing office, Washington, D.C. 20402.

(2)(title) STATEWIDE CRITERIA. (a) The department may promulgate a less stringent criterion or remove a criterion from this chapter when the department determines that the previously promulgated criterion is more stringent than necessary, or unnecessary for the protection of humans, fish and other aquatic life or ~~wild and domestic animal life~~ wildlife. ~~Such~~ The modification shall assure that the designated uses are protected and water quality standards continue to be attained.

(b) The department may promulgate a more stringent criterion in this chapter when the department determines that the previously promulgated criterion is inadequate for the protection of humans, fish and other aquatic life or ~~wild and domestic animal life~~ wildlife.

SECTION 14. NR 105.02(3) is created to read:

NR 105.02(3) DETERMINATION OF SECONDARY VALUES FOR EFFLUENT LIMITATIONS. If a discharge contains a toxic substance, and if data to calculate a water quality criterion for that substance are not available, then, on a case-by-case basis, the department may calculate a secondary value as defined in this chapter and establish an effluent limitation for the toxic substance if the conditions contained in s. NR 106.05 (1) (b) are met.

SECTION 15. NR 105.03(5) to (19) are renumbered NR 105.03(8), (11), (13) to (15), (17), (19) to (24), (26), (27) to (30) and 105.03(8), (11) and (24), as renumbered, are amended to read:

NR 105.03(8) "Bioaccumulation factor" ~~means the ratio of the concentration of a substance in an aquatic organism to the concentration of the substance in water to which the organism is exposed regardless of whether the concentration in an organism results solely from body contact with the water or from body contact plus ingestion of food contaminated with the substance.~~ or "BAF" means 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 to the substance and where the ratio does not change substantially over time.

(11) "Bioconcentration factor" ~~means the ratio of the concentration of a substance in an aquatic organism to the concentration of the substance in water to which the organism is exposed when the concentration in the organism results solely from body contact with the water.~~ or "BCF" means the ratio (in L/kg) of a substance's concentration in the tissue of an aquatic organism to its concentration in the ambient water, in situations where the organism is exposed through the water only and where the ratio does not change substantially over time.

(24) "Octanol/water partition coefficient" or "K_{ow}" means the ratio of the concentration of a substance in the octanol phase to its concentration in the aqueous phase ~~of a 2-phase octanol/water system after equilibrium of the substance between the 2 phases has been achieved.~~ in an equilibrated 2-phase octanol-water system. For log K_{ow}, the log of the octanol-water partition coefficient is a base 10 logarithm.

SECTION 16. NR 105.03(5) to (7), (9), (10), (12), (16), (18), (25), (28) and (29) are created to read:

NR 105.03(5) "Baseline BAF" means for organic chemicals, a bioaccumulation factor normalized to 100% lipid that is based on the concentration of a freely dissolved chemical in the ambient water and takes into account the partitioning of the chemical within the organism. For inorganic chemicals, a bioaccumulation factor is based on the wet weight of the tissue.

(6) "Baseline BCF" means for organic chemicals, a bioconcentration factor normalized to 100% lipid 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 bioconcentration factor is based on the wet weight of the tissue.

(7) "Bioaccumulation" means the net accumulation of a substance by an organism as a result of uptake from all environmental sources.

(9) "Bioaccumulative chemical of concern" or "BCC" means any substance that has the potential to cause adverse effects which, upon entering the surface waters, accumulates in aquatic organisms by a human health or wildlife bioaccumulation factor greater than 1000.

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

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

(16) "Depuration" means the loss of a substance from an organism as a result of any active or passive process.

(18) "Food-chain multiplier" or "FCM" means the ratio of a BAF to an appropriate BCF.

(25) "Secondary value" means a temporary value that represents the concentration of a substance which ensures adequate protection of sensitive species of aquatic life, wildlife or human health from the toxicity of that substance and will adequately protect the designated use of the surface water until database requirements are fulfilled to calculate a water quality criterion.

(28) "Trophic level" means a functional classification of taxa within a community that is based on feeding relationships (e.g., aquatic plants comprise the first trophic level, herbivores comprise the second, small fish comprise the third, predatory fish the fourth, etc.).

(29) "Uptake" means the acquisition of a substance from the environment by an organism as a result of any active or passive process.

SECTION 17. NR 105.04 (3) is amended to read:

NR 105.04(3) A substance shall be deemed to have adverse effects on ~~wild or domestic animal life~~ wildlife if it exceeds the ~~wild and domestic animal~~ wildlife criterion as specified in s. NR 105.07.

SECTION 18. NR 105.04(5) and (6) are renumbered NR 105.04(6) and (7) and (6)(intro.) and (7)(intro.), as renumbered, are amended to read:

NR 105.04(6)(intro.) The determination of the criteria or secondary values for substances as calculated under ss. NR 105.05 to 105.09 shall be based upon the available scientific data base. References to be used in obtaining scientific data may include, but are not limited to:

(7)(intro.) When reviewing any of the references in sub. ~~(5)~~ (6) to determine the effect of a substance, the department:

SECTION 19. NR 105.04(5) is created to read:

NR 105.04(5) A substance shall be deemed to have adverse effects or the reasonable potential to have adverse effects on aquatic life, wildlife or human health, if it exceeds a secondary value determined according to the procedures in ss. NR 105.05 to 105.08.

SECTION 20. NR 105.05(title) and (1)(a)1. to 5. are amended to read:

NR 105.05(title) ACUTE TOXICITY CRITERIA AND SECONDARY ACUTE VALUES FOR AQUATIC LIFE.

(1)(a) 1. At least one is a salmonid fish in the family Salmonidae in the class Osteichthyes,

2. At least one is a non-salmonid fish from another family in the class Osteichthyes, preferably a commercially or recreationally important warmwater species,

3. At least one is a planktonic crustacean (e.g., cladoceran, copepod),

4. At least one is a benthic crustacean (e.g., ostracod, isopod, amphipod, crayfish), ~~and~~

5. At least one is an insect (e.g., mayfly, dragonfly, damselfly, stonefly, caddisfly, mosquito, midge)~~.~~

SECTION 21. NR 105.05(1)(a)6. is repealed and recreated to read:

NR 105.05(1)(a)6. At least one is a fish or amphibian from a family in the phylum Chordata not already represented in one of the other subdivisions,

SECTION 22. NR 105.05(1)(a)7. to 10. are created to read:

NR 105.05(1)(a)7. At least one is an organism from a family in a phylum other than Arthropoda or Chordata (e.g., Rotifera, Annelida, Mollusca), and

8. At least one is an organism from a family in any order of insect or any other phylum not already represented in subds. 1. to 7.

9. If all 8 of the families in subds. 1. to 8. are represented, an acute toxicity criterion may be developed for surface waters classified as cold water using information on all of those families. If an acute toxicity criterion is developed for surface waters classified as cold water, acute toxicity criteria may also be developed for any of the surface water classifications in s. NR 102.04 (3)(b) to (e) using the procedure in sub. (2) or (3) and data on families in subds. 1. to 8. which are representative of the aquatic life communities associated with those classifications. For each substance, in no case may the criterion for a lower quality fish and aquatic life subcategory as defined in s. NR 102.04 be less than the criterion for a higher quality fish and aquatic life subcategory.

10. For a substance, if all of the families in subds. 1. to 8. are not represented, an acute toxicity criterion may not be developed for that substance. Instead, any available data may be used to develop a secondary acute value (SAV) for that substance according to s. NR 105.02(3) and sub.(4).

SECTION 23. NR 105.05(1)(b) and (2)(a) to (f), (3)(a) and (f) to (L) are amended to read:

NR 105.05(1)(b) The acceptability of acute toxicity test results shall be judged according to the guidelines ~~set forth~~ in section IV of the United States environmental protection agency's 1985 "Guidelines for Deriving National Numerical Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" or 40 CFR Part 132, Appendix A. II, IV and V, as stated on the effective date of this rule ... [revisor insert date] is incorporated by reference.

Note: Copies of 40 CFR Part 132, Appendix A Sections II, IV and V are available for inspection in the offices of the department of natural resources, secretary of state and the revisor of statutes, Madison, WI or may be purchased from the superintendent of documents, US government printing office, Washington, D.C. 20402.

(2)(a)1. For each species for which at least one acute value is available, the species mean acute value (SMAV) is calculated as the geometric mean of all ~~available acute values~~ acceptable acute toxicity tests using the guidelines in sub. (1)(b).

2. 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.

(b) The ~~SMAVs~~ GMAVs are ordered from high to low.

(c) Ranks (R) are assigned to the ~~SMAVs~~ GMAVs from 1 for the lowest to N for the highest. If 2 or more ~~SMAVs~~ GMAVs are identical, successive ranks are arbitrarily assigned.

(d) The cumulative probability (P) is calculated for each ~~SMAVs~~ GMAVs as $P=R/(N+1)$. ~~If N is 19 or more, J=0.05. If N is less than 19 and greater than 9, J=1/(N+1). If N is 9 or less, J=0.1.~~

(e) The ~~(T)~~ ~~SMAVs~~ 4 GMAVs ~~(T=3 for N=6 or 7; T=4 for N=8 or greater)~~ are selected which have P closest to ~~J~~ 0.05. If there are less than 59 ~~SMAVs~~ GMAVs these will always be the lowest ~~SMAVs~~ GMAVs.

(f) Using the selected ~~SMAVs~~ GMAVs and Ps, the ATC is calculated using the following:

1. Let EV = sum of the ~~(T)~~ 4 ln ~~SMAVs~~ GMAVs
EW = sum of the ~~(T)~~ 4 squares of the ln ~~SMAVs~~ GMAVs
EP = sum of the ~~(T)~~ 4 P values,
EPR = sum of the ~~(T)~~ 4 square roots of P, and
JR = square root of ~~J~~ 0.05.

2. $S = ((EW - (EV)^2/T\ /4)/(EP-(EPR)^2/T\ /4))^{0.5}$.

3. $L = (EV - S(EPR))/T\ /4$.

4. $A = (JR)(S) + L$.

5. Final Acute Value (FAV)= e^A.

6. ATC = FAV/2.

(3)(a) For each species for which ~~comparable acute toxicity values~~ acceptable acute toxicity tests using the guidelines in sub. (1)(b) are available at 2 or more different values of the water quality parameter, a least squares regression of the acute toxicity values on the corresponding values of the water quality parameter is performed to obtain the slope of the curve that best describes the relationship. Because the most commonly 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 are used in the rest of this subsection to illustrate this method. For relationships based on other water quality parameters, no transformation or a different transformation might fit the data better, and appropriate changes shall be made as necessary throughout this subsection.

(f)1. For each species the species mean acute intercept (SMAI) is calculated as e^Y.

2. For each genus for which one or more SMAIs are available, the genus mean acute intercept (GMAI) is calculated as the geometric mean of the SMAIs available for the genus.

(g) The ~~SMAIs~~ GMAIs are ordered from high to low.

(h) Ranks (R) are assigned to the ~~SMAIs~~ GMAIs from 1 for the lowest to N for the highest. If 2 or more ~~SMAIs~~ GMAIs are identical, successive ranks are arbitrarily assigned.

(i) The cumulative probability (P) is calculated for each ~~SMAIs~~ GMAIs as P=R/(N + 1). ~~If N is 19 or more, J=0.05. If N is less than 19 and greater than 9, J=1/(N+1). If N is 9 or less, J=0.1.~~

(j) The ~~(T)~~ 4 SMAIs ~~(T=3 for N=6 or 7; T=4 for N=8 or greater)~~ are selected which have P closest to ~~J~~ 0.05. If there are less than 59 ~~SMAIs~~ GMAIs, these will always be the lowest ~~SMAIs~~ GMAIs.

(k) Using the selected ~~SMAIs~~ GMAIs and Ps, the ATC is calculated using the following:

1. Let EV = sum of the ~~(T)~~ 4 ln ~~SMAIs~~ GMAIs
EW = sum of the ~~(T)~~ 4 squares of the ln ~~SMAIs~~ GMAIs,
EP = sum of the ~~(T)~~ 4 P values,
EPR = sum of the ~~(T)~~ 4 square roots of P, and
JR = square root of ~~J~~ 0.05.

2. $S = ((EW-(EV)^2/T/4)/(EP-(EPR)^2/T/4))^{0.5}$.

3. $L = (EV-S(EPR))/T$ 4.

4. $A = (JR)(S) + L$.

5. Final Acute Intercept (FAI) = e^A.

6. Acute Criterion Intercept (ACI) = FAI/2.

(L) The acute toxicity equation (ATE) is written as:

$$ATC = {}_e(V \ln(\text{water quality parameter}) + \ln ACI).$$

The ATE shall be applicable only over the range of water quality parameters equivalent to the mean plus or minus 2 standard deviations using the entire fresh water acute toxicity data base and the water quality parameter transformation employed in par. (a). If the value at a specific location is outside of that range, the endpoint of the range nearest to that value shall be used to determine the criterion. Additional information may be used to modify those ranges.

SECTION 24. NR 105.05(4) and (5) are created to read:

NR 105.05(4) SECONDARY ACUTE VALUES. If all 8 minimum data requirements for calculating acute toxicity criteria in sub. (1)(a) are not met, secondary acute values (SAVs) shall be determined using the procedure in this subsection.

(a) In order to calculate a SAV, the database shall contain, at a minimum, a genus mean acute value (GMAV) for one of the following 3 genera in the family Daphnidae - *Ceriodaphnia sp.*, *Daphnia sp.*, or *Simocephalus sp.* To calculate a SAV, the lowest GMAV in the database is divided by the Secondary Acute Factor (SAF). The SAF is an adjustment factor corresponding to the number of satisfied minimum data requirements, listed in sub. (1)(a). SAFs are listed in Table 2B.

(b) Whenever appropriate, the effects of variable water quality parameters shall be considered when calculating a SAV, consistent with the procedures described in sub. (3).

(c) Whenever, for a commercially, recreationally or ecologically important species, the SMAV is lower than the calculated SAV, that SMAV shall be used as the SAV instead of the calculated SAV.

(5) ACUTE TOXICITY CRITERIA EXPRESSED IN THE DISSOLVED FORM. Acute water quality criteria may be expressed as a dissolved concentration. The conversion of an acute water quality criterion expressed as a total recoverable concentration, to an acute water quality criterion expressed as a dissolved concentration, the portion of the substance which will pass through a 0.45 um filter, shall be done using the equations in pars. (a) and (b). Substances which may have criteria expressed as a dissolved concentration are listed in par. (a) with corresponding conversion factors.

(a) The conversion of the water quality criterion expressed as total recoverable ($WQC_{Total\ R}$) to the water quality criterion expressed as dissolved (WQC_D) shall be performed as follows:

$$WQC_D = (CF)(WQC_{Total\ R})$$

Where: $WQC_{Total\ R}$ = Criteria from NR 105, Table 1 or 2.

CF = Conversion factor for total recoverable to dissolved.

Conversion factors are as follows:	
Arsenic	1.000
Cadmium	0.850
Chromium (III)	0.316
Chromium (VI)	0.982
Copper	0.960
Lead	0.875
Mercury	0.850
Nickel	0.998
Selenium	0.922
Silver	0.850
Zinc	0.978

(b) The translation of the WQC_D into the water quality criterion which accounts for site-specific conditions (WQC_{TRAN}) shall be performed as follows:

$$WQC_{TRAN} = (\text{Translator})(WQC_D)$$

Where: $\text{Translator (unitless)} = ((M_P)(TSS) + M_D)/M_D$

M_P = Particle-bound concentration of the pollutant (ug/g) in receiving water.

M_D = Dissolved concentration of the pollutant in receiving water (ug/L).

TSS = Total Suspended Solids (g/L) concentration in receiving water.

(c) The procedures in pars. (a) and (b) may also be used for the conversion of secondary values from total recoverable to dissolved.

SECTION 25. NR 105.06(title), (1)(a)1. , 2., 4., and 5. are amended to read:

NR 105.06(title) CHRONIC TOXICITY CRITERIA AND SECONDARY CHRONIC VALUES FOR FISH AND AQUATIC LIFE.

(1)(a) 1. At least one is a salmonid fish, in the family Salmonidae in the class Osteichthyes,

2. At least one is a non-salmonid fish, from another family in the class Osteichthyes, preferably a commercially or recreationally important warmwater species,

4. At least one is a benthic crustacean (e.g., ostracod, isopod, amphipod, crayfish), ~~and~~

5. At least one is an insect (e.g., mayfly, dragonfly, damselfly, stonefly, caddisfly, mosquito, midge)~~.~~,

SECTION 26. NR 105.06(1)(a)6. is renumbered NR 105.06(1)(a)10. and amended to read:

NR 105.06(1)(a)10. For a substance, if all ~~of~~ the ~~above~~ families in subds. 1. to 8. are not represented, acute-chronic ratios as calculated in sub. (5) may be used to generate the chronic toxicity values necessary to calculate a chronic toxicity criterion.

SECTION 27. NR 105.06(1)(a)6. to 9. and 11. are created to read:

NR 105.06(1)(a)6. At least one is a fish or amphibian from a family in the phylum Chordata not already represented in one of the other subdivisions,

7. At least one is an organism from a family in a phylum other than Arthropoda or Chordata (e.g., Rotifera, Annelida, Mollusca), and

8. At least one is an organism from a family in any order of insect or any other phylum not already represented in subds. 1. to 7.

9. If all 8 of the families in subds. 1. to 8. are represented, a chronic toxicity criterion may be developed for surface waters classified as cold water using information on all of those families. If a chronic toxicity criterion is developed for surface waters classified as cold water, chronic toxicity criteria may also be developed for any of the surface water classifications in s. NR 102.04 (3)(b) to (e) using the procedure in sub. (2) or (3) and data on families in subds. 1. to 8. which are representative of the aquatic life communities associated with those classifications. For each substance, in no case may the criterion for a lower quality fish and aquatic life subcategory as defined in s. NR 102.04 be less that the criterion for a higher quality fish and aquatic life subcategory.

11. For a substance, if all of the families in subds. 1. to 8. are not represented, a chronic toxicity criterion may not be developed for that substance except as provided in subd. 10. Instead, any available data may be used to develop a secondary acute value (SAV) for that substance according to sub. (4).

SECTION 28 . NR 105.06(1)(b) and (3)(intro.), (a) to (g) are amended to read:

NR 105.06(1)(b) The acceptability of chronic toxicity test results shall be judged according to the guidelines ~~set forth~~ in section IV of the United States environmental protection agency's 1985 "Guidelines for Deriving National Numerical Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" or 40 CFR Part 132 Appendix A, sections VI and VII as stated on the effective date of this rule ...[revisor insert date] is incorporated by reference.

Note: Copies of 40 CFR Part 132, Appendix A, Sections VI and VII are available for inspection in the offices of the department of natural resources, secretary of state and the revisor of statutes, Madison, WI or may be purchased from the superintendent of documents, US government printing office, Washington, D.C. 20402.

(3) CHRONIC TOXICITY CRITERIA FOR SUBSTANCES WITH TOXICITY UNRELATED TO WATER QUALITY PARAMETERS. (intro.) If the chronic toxicity of a substance has not been adequately shown to be related to a water quality parameter, ~~(~~i.e., hardness, pH, temperature, etc.~~)~~, the chronic toxicity criterion (CTC) is calculated using the procedures specified in this subsection.

(a) 1. For each species for which at least one chronic value is available, the species mean chronic value (SMCV) is calculated as the geometric mean of all ~~available chronic values~~ acceptable chronic toxicity tests using the guidelines in sub. (1)(b).

2. For each genus for which one or more SMCVs are available, the genus mean chronic value (GMCV) is calculated as the geometric mean of the SMCVs available for the genus.

(b) The ~~SMCVs~~ GMCVs are ordered from high to low.

(c) Ranks (R) are assigned to the ~~SMCVs~~ GMCVs from 1 for the lowest to N for the highest. If 2 or more ~~SMCVs~~ GMCVs are identical, successive ranks are arbitrarily assigned.

(d) The cumulative probability (P) is calculated for each ~~SMCVs~~ GMCVs as P=R/(N + 1). ~~If N is 19 or more, J=0.05. If N is less than 19 and greater than 9, J=1/(N + 1). If N is 9 or less, J=0.1.~~

(e) The ~~(T)~~ 4 ~~SMCVs~~ GMCVs ~~(T=3 for N=6 or 7; T=4 for N=8 or greater)~~ are selected which have P closest to ~~J~~ 0.05. If there are less than 59 ~~SMCVs~~ GMCVs these will always be the lowest ~~SMCVs~~ GMCVs.

(f) Using the selected ~~SMCVs~~ GMCVs and Ps, the ~~CTC~~ final chronic value (FCV) is calculated using the following:

1. Let EV = sum of the ~~(T)~~ 4 ln ~~SMCVs~~ GMCVs
EW = sum of the ~~(T)~~ 4 squares of the ln ~~SMCVs~~ GMCVs
EP = sum of the ~~(T)~~ 4 P values,
EPR = sum of the ~~(T)~~ 4 square roots of P, and
JR = square root of ~~J~~ 0.05.

2. $S = ((EW-(EV)^2/~~T~~\ /4)/(EP-(EPR)^2/~~T~~\ /4))^{0.5}$

3. $L = (EV - S(EPR))/~~T~~\ /4$.

4. $A = (JR)(S) + L$.

5. ~~CTC~~ FCV = e^A.

(g) If, for a commercially, recreationally or ecologically important species, the geometric mean of the chronic values is lower than the calculated ~~CTC~~ FCV then that geometric mean is used as the ~~CTC~~ FCV instead of the calculated one.

SECTION 29. NR 105.06(3)(h) is renumbered NR 105.06(3)(i).

SECTION 30. NR 105.06(3)(h) is created to read:

NR 105.06(3)(h) The chronic toxicity criterion (CTC) equals the lower of the FCV and the final plant value calculated using the procedure in s. NR 105.11.

SECTION 31. NR 105.06(4)(a)1. is amended to read:

NR 105.06(4)(a)1. For each species for which ~~comparable chronic toxicity values~~ acceptable chronic toxicity tests using the guidelines in sub. (1)(b) are available at 2 or more different values of the water quality parameter, a least squares regression of the chronic toxicity values on the corresponding values of the water quality parameter is performed to obtain the slope of the curve that best describes the relationship. Because the most commonly documented relationship is that between hardness and the chronic toxicity of metals and a log-log relationship fits these data, geometric means and natural logarithms of both toxicity and water quality are used in the rest of this subsection to illustrate this method. For relationships based on other water quality parameters, no transformation or a different transformation might fit the data better, and appropriate changes shall be made as necessary throughout this subsection.

SECTION 32. NR 105.06(4)(a)6. is renumbered NR 105.06(4)(a)6.a.

SECTION 33. NR 105.06(4)(a)6.b. is created to read:

NR 105.06(4)(a)6.b. For each genus for which one or more SMCIs are available, the genus mean chronic intercept (GMCI) is calculated as the geometric mean of the SMCIs available for the genus.

SECTION 34. NR 105.06(4)(a)7. to 13. are amended to read:

NR 105.06(4)(a)7. The ~~SMCIs~~ GMCIs are ordered from high to low.

8. Ranks (R) are assigned to the ~~SMCIs~~ GMCIs from 1 for the lowest to N for the highest. If 2 or more ~~SMCIs~~ GMCIs are identical, successive ranks are arbitrarily assigned.

9. The cumulative probability (P) is calculated for each ~~SMCIs~~ GMCIs as P=R/(N+1). ~~If N is 19 or more, J=0.05. If N is less than 19 and greater than 9, J=1/(N+1). If N is 9 or less, J=0.1.~~

10. The ~~(T)~~ 4 ~~SMCIs~~ GMCIs ~~(T=3 for N=6 or 7; T=4 for N=8 or greater)~~ are selected which have P closest to ~~J~~ 0.05. If there are less than 59 ~~SMCIs~~ GMCIs these will always be the lowest ~~SMCIs~~ GMCIs.

11. Using the selected ~~SMCIs~~ GMCIs and Ps, the ~~CTC~~ final chronic value (FCV) is calculated using the following:

a. Let EV = sum of the ~~(T)~~ 4 ln ~~SMCIs~~ GMCIs
EW = sum of the ~~(T)~~ 4 squares of the ln ~~SMCIs~~ GMCIs
EP = sum of the ~~(T)~~ 4 P values,
EPR = sum of the ~~(T)~~ 4 square roots of P, and
JR = square root of ~~J~~ 0.05.

b. $S = ((EW-(EV)^2/T\ /4)/(EP-(EPR)^2/T\ /4))^{0.5}$

c. $L = (EV - S(EPR))/T\ /4$.

d. $A = (JR)(S)+L$.

e. Final Chronic ~~Criterion~~ Intercept (~~CCI~~ FCI) = e^A.

12. The final chronic ~~toxicity~~ equation (~~CTE~~ FCE) is written as:
~~CTC~~ FCV = $_e$(V ln(water quality parameter)+ln ~~CCI~~ FCI).

The ~~CTE~~ FCE shall be applicable only over the range of water quality parameters equivalent to the mean 2 standard deviations using the entire freshwater chronic toxicity data base and the water quality parameter transformation employed in subd. 1. If the value at a specific location is outside of that range, the endpoint of the range nearest to that value shall be used to determine the criterion. Additional information may be used to modify those ranges.

13. If, for a commercially, recreationally or ecologically important species, the SMCI is lower than the calculated ~~CCI~~ FCI, then that SMCI is used as the ~~CCI~~ FCI instead of the calculated one.

SECTION 35. NR 105.06(4)(b) is renumbered (4)(c).

SECTION 36. NR 105.06(4)(b) and (5)(b)3. are created to read:

NR 105.06(4)(b) At a value of the water quality parameter, the chronic toxicity criterion (CTC) equals the lower of the FCV and the final plant value calculated using the procedure in s. NR 105.11.

(5)(b)3. If the acute 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 parameters. Preference under this paragraph shall be given to data from acute and chronic tests done by the same author or reference to increase the likelihood of comparable test conditions.

SECTION 37. NR 105.06(5)(c) is amended to read:

NR 105.06(5)(c) A ~~chronic toxicity criterion~~ final chronic value shall be calculated for a substance under this subsection only if at least one acute-chronic ratio is available for at least one species of aquatic animal in at least 3 different families, provided that of the 3 species, one is a ~~freshwater vertebrate and a freshwater~~ fish, one is an invertebrate, and ~~if at least one is~~ the third is a relatively sensitive freshwater species on an acute toxicity basis. The other 2 may be saltwater species.

SECTION 38. NR 105.06(5)(d) is repealed.

SECTION 39. NR 105.06(5)(e) to (i) are renumbered (5)(d) to (h) and (5)(e) to (g), as renumbered, are amended to read:

NR 105.06(5)(e) For a given substance, if the SMACR appears to increase or decrease as the species or genus mean acute values (~~SMAV~~ SMAVs or GMAVs) calculated for that substance using the procedure described in s. NR 105.05 increase, the final acute-chronic ratio (FACR) shall be equal to the geometric mean of the SMACRs for species with SMAVs closest to the final acute value.

(f) For a given substance, if no trend is apparent regarding changes in SMACRs and ~~SMAVs~~ GMAVs, the FACR shall be equal to the geometric mean of all ~~freshwater~~ SMACRs available for that substance.

(g) For a given substance, the ~~chronic toxicity criterion (CTC)~~ final chronic value (FCV) shall be equal to the final acute value (FAV) divided by the final acute-chronic ratio (FACR). The chronic toxicity criterion shall be equal to the lower of the FCV and the final plant value as calculated using the procedure in s. NR 105.11, if available.

SECTION 40. NR 105.06(6) to (8) are created to read:

NR 105.06(6) SECONDARY CHRONIC VALUES. If all 8 minimum data requirements for calculating FCVs in sub. (1)(a) are not met for a substance, secondary chronic values (SCVs) shall be calculated for that substance using the procedure in this subsection.

(a) If any one of the combinations of information in subds. 1. to 3. is available, a SCV may be calculated. To calculate a SCV for a substance, the acute value from subds. 1. to 3. is divided by the applicable acute-chronic ratio in the same subdivision.

1. Calculate a FAV using the procedure in s. NR 105.05(2) and divide it by a secondary acute-chronic ratio (SACR) using the procedure in sub. (7).

2. Calculate a SAV using the procedure in s. NR 105.05 (4) and divide it by a final acute-chronic ratio (FACR) using the procedure in sub. (5).

3. Calculate a SAV using the procedure in s. NR 105.05 (4) and divide it by a SACR using the procedure in sub. (7).

(b) If appropriate, the SCV shall be made a function of a water quality characteristic in a manner similar to that described in sub. (4) (a).

(c) If, for a commercially, recreationally or ecologically important species, the SMCV is lower than the calculated SCV, that SMCV shall be used as the SCV instead of the calculated SCV.

(d) If there is an FPV available using the procedure in s. NR 105.11 which is lower than the calculated SCV, that FPV shall be used as the SCV instead of the calculated SCV.

(7) SECONDARY ACUTE-CHRONIC RATIOS. (a) If a FACR cannot be calculated using the procedure in sub. (5) because SMACRs are not available for a fish, an invertebrate or an acutely sensitive freshwater species, a secondary acute-chronic ratio (SACR) may be calculated using the procedure in this subsection.

(b) The SACR shall be equal to the geometric mean of 3 acute-chronic ratios. Those ratios consist of the SMACRs available for the species in sub. (5)(c). When SMACRs are not available for the species in par. (a), the default acute-chronic ratio to be used is 18. Use of a SACR will result in the calculation of a secondary chronic value.

(8) CHRONIC TOXICITY CRITERIA EXPRESSED IN THE DISSOLVED FORM. Chronic water quality criteria may be expressed as a dissolved concentration. The conversion of a chronic water quality

criterion expressed as a total recoverable concentration to a chronic water quality criterion expressed as a dissolved concentration, the portion of the substance which will pass through a 0.45 um filter, shall be done using the equations in pars. (a) and (b). Substances which may have criteria expressed as a dissolved concentration are listed in par. (a) with corresponding conversion factors.

(a) The conversion of the water quality criterion expressed as total recoverable ($WQC_{Total\ R}$) to the water quality criterion expressed as dissolved (WQC_D) shall be performed as follows:

$$WQC_D = (CF)(WQC_{Total\ R})$$

Where: $WQC_{Total\ R}$ = Criteria from NR 105, Table 5 or 6.
CF = Conversion factor for total recoverable to dissolved.

Conversion factors are as follows:

Arsenic	1.000
Cadmium	0.850
Chromium (III)	0.860
Chromium (VI)	0.962
Copper	0.960
Lead	0.792
Nickel	0.997
Selenium	0.922
Zinc	0.986

(b) The translation of the WQC_D into the water quality criterion which accounts for site-specific conditions (WQC_{TRAN}) shall be performed as follows:

$$WQC_{TRAN} = (Translator)(WQC_D)$$

Where: $Translator\ (unitless) = ((M_P)(TSS) + M_D)/M_D$

M_P = Particle-bound concentration of the pollutant (ug/g) in receiving water.

M_D = Dissolved concentration of the pollutant in receiving water (ug/L).

TSS = Total Suspended Solids (g/L) concentration in receiving water.

(c) The procedures in pars. (a) and (b) may also be used for the conversion of secondary values from total recoverable to dissolved.

SECTION 41. NR 105 Tables 1 to 2a are repealed and recreated to read:

Table 1
Acute Toxicity Criteria for Substances With Toxicity Unrelated to Water Quality
(in ug/L except where indicated)

Substance	Cold Water	Warm Water Sportfish, Warm Water Forage, and Limited Forage Fish	Limited Aquatic Life
Arsenic (+3)*	339.8	339.8	339.8
Chromium (+6)*	16.02	16.02	16.02
Mercury (+2)*	0.83	0.83	0.83
Cyanide, free	22.4	45.8	45.8
Chlorine*	19.03	19.03	19.03
Gamma - BHC	0.96	0.96	0.96
Dieldrin	0.24	0.24	0.24
Endrin	0.086	0.086	0.12
Toxaphene	0.73	0.73	0.73
Chlorpyrifos	0.041	0.041	0.041
Parathion	0.057	0.057	0.057

Note:* - Criterion listed is applicable to the "total recoverable" form except for chlorine which is applicable to the "total residual" form.

Table 2
Acute Toxicity Criteria for Substances
With Toxicity Related to Water Quality
(all in ug/L)

Water Quality Parameter: Hardness (in ppm as CaCO3)

$ATC = e^{(V \text{ in (hardness)} + \ln ACI)}$

Substance	V	ln ACI	ATC at Various Hardness (ppm) Levels 50	100	200
Total Recoverable Cadmium:					
Cold Water	1.147	-3.8104	1.97	4.36	9.65
Warm Water Sportfish, Warm Water Forage and Limited Forage Fish	1.147	-2.9493	4.65	10.31	22.83
Limited Aquatic Life	1.147	-1.9195	13.03	28.87	63.92
Total Recoverable Chromium (+3):	0.819	3.7256	1022	1803	3181
All Surface Waters	0.8561	-1.1199	9.29	16.82	30.45
Total Recoverable Copper:					
All Surface Waters	0.9662	0.2226	54.73	106.92	208.90
Total Recoverable Lead:					
All Surface Waters	1.083	2.2289	642.7	1361	2434
Total Recoverable Nickel:					
All Surface Waters	0.8745	0.7634	65.66	120.4	220.7
Total Recoverable Zinc:					
All Surface Waters					

Water Quality Parameter: pH

$ATC = e^{(V(pH) + \ln ACI)}$

Substance	V	In ACI	ATC at Various pH (s.u.) Levels 506.5	7.8	8.8
Pentachlorophenol:					
All Surface Waters	1.0054	-4.877	5.25	19.40	53.01

Table 2A
Water Quality Parameter Ranges for Substances With Acute Toxicity Related to Water Quality

Substance	Parameter	Applicable Range
Cadmium	Hardness (ppm)	6 - 457
Chromium (+3)	Hardness (ppm)	13 - 301
Copper	Hardness (ppm)	14 - 427
Lead	Hardness (ppm)	12 - 356
Nickel	Hardness (ppm)	19 - 157
Zinc	Hardness (ppm)	12 - 333
Pentachlorophenol	pH (s.u.)	6.6 - 8.8

SECTION 42. NR 105 Table 2B is created to read:

Table 2B
Secondary Acute Factors

Number of minimum data requirements satisfied	Adjustment Factor
1	21.9
2	13.0
3	8.0
4	7.0
5	6.1
6	5.2
7	4.3

SECTION 43. NR 105 tables 3 to 6 are repealed and recreated to read:

Table 3
Chronic Toxicity Criteria for Substances With Toxicity Unrelated to Water Quality (all in ug/L)

Substance	Cold Water	Warm Water Sportfish, Warm Water Forage and Limited Forage Fish	Limited Aquatic Life
	(Reserved)		

Note: This table is reserved for criteria that USEPA has indicated may be available in the near future.

Table 4
Chronic Toxicity Criteria for Substances
With Toxicity Related to Water Quality
(all in ug/L)

Water Quality Parameter: Hardness (in ppm as $CaCO_3$)

$CTC = e^{(V \ln(\text{hardness}) + \ln CCI)}$

Substance	V	ln CCI	CTC at Various Hardness (ppm) Levels 50	100	200
Total Recoverable Cadmium: All Surface Waters	0.7852	-2.7150	1.43	2.46	3.82

Table 4A
Water Quality Parameter Ranges for Substances
With Chronic Toxicity Related to Water Quality

Substance	Parameter	Applicable Range
Cadmium	Hardness (ppm)	18-175

Table 6
Chronic Toxicity Criteria
Using Acute-Chronic Ratios for Substances
With Toxicity Related to Water Quality
(all in ug/L)

Water Quality Parameter: Hardness (in ppm) as $CaCO_3$)

$CTC = e^{(V \text{ in (hardness)} + \ln CCI)}$

Substance	V	ln CCI	CTC at Various Hardness (ppm) Levels 50	100	200
Total Recoverable Chromium (+3):					
Cold Water	0.819	0.6851	48.86	86.21	152.1
Warm Water Sportfish, Warm Water Forage, Limited Forage Fish, and Limited Aquatic Life	0.819	1.112	74.88	132.1	233.1
Total Recoverable Copper:					
All Surface Waters	0.8561	-1.4647	6.58	11.91	21.57
Total Recoverable Lead:					
All Surface Waters	0.9662	-1.1171	14.33	28.01	54.71
Total Recoverable Nickel:					
All Surface Waters	1.083	0.033	71.50	151.5	270.8
Total Recoverable Zinc:					
All Surface Waters	0.8745	0.7634	65.66	120.4	220.7

Water Quality Parameter: pH

$CTC = e^{(V(pH) + \ln CCI)}$

Substance	V	ln CCI	CTC at Various pH (s.u.) Levels 6.5	7.8	8.8
Pentachlorophenol:					
Cold Water	1.0054	-5.1468	4.43	14.81	40.48
All Other Surface Waters	1.0054	-4.9617	5.33	12.82	48.70

SECTION 44. NR 105.07(title), (1), (2)(a) and (b) are amended to read:

NR 105.07(title) WILDLIFE CRITERIA. (1) The ~~wild and domestic animal~~ wildlife criterion is the concentration of a substance which if not exceeded protects Wisconsin's ~~wild and domestic animals~~ wildlife from adverse effects resulting from ingestion of surface waters of the state and from ingestion of aquatic organisms taken from surface waters of the state.

(a) For any substance not shown in Table 7, the ~~wild and domestic animal~~ wildlife criterion (~~WDAC~~ WC) is the ~~lowest~~ lower of the ~~species~~ available mammalian or avian wildlife ~~and domestic animal value~~ values (~~WDAVs~~ WVs) calculated pursuant to sub. (2). A wildlife criterion protective of Wisconsin's reptile fauna may be calculated pursuant to sub. (2) whenever data specific to reptiles are available.

(b) Table 7 contains the ~~wild and domestic animal~~ wildlife criteria calculated according to the procedures of this chapter.

Table 7
Wildlife ~~and Domestic Animal~~ Criteria

Substance	Criteria (~~all~~ in ng/L, except where indicated)
DDT & Metabolites	~~0.015~~ 0.011
Mercury	~~2.0~~ 1.3
Polychlorinated Biphenyls	~~3.0~~ 0.12
2,3,7,8 - TCDD	0.003 (pg/L)

(2)(a) ~~The species wild and domestic animal value~~ Mammalian and avian wildlife values shall be calculated as follows using information available from scientifically acceptable studies of animal species exposed repeatedly to the substance via oral routes including gavage:

$$\text{~~WDAV~~ WV} = \frac{\text{NOAEL} \times Wt_A \times \text{SSF}}{W_\star + \Sigma[F_{TLi\star} \times BAF_{TLi}]}$$

Where:

~~WDAV~~ WV = ~~Wild and domestic animal~~ Wildlife value in milligrams per liter (mg/L).

NOAEL = No observed adverse effect level in milligrams of substance per kilogram of body weight per day (mg/kg-d) as derived from subchronic or chronic mammalian or avian studies or as specified in subs. (3) to (5).

$Wt_\star$ = Average weight in kilograms (kg) of the ~~test animals~~ representative species.

$W_\star$ = Average daily volume of water in liters consumed per day (L/d) by the ~~test animals~~ representative species or as specified in sub. (6).

SSF = ~~An uncertainty factor~~ Species sensitivity factor, ranging between 0.01 and 1 to account for interspecies differences in ~~species~~ sensitivity.

$F_{TLi\star}$ = Average daily amount of food consumed from trophic level i by the ~~test animals~~ representative species in kilograms per day (kg/d) or as specified in sub. (6).

BAF_{TLi} = ~~Aquatic life bioaccumulation~~ Bioaccumulation factor for wildlife food in trophic level i with units of liter per kilogram (L/kg) as derived in s. NR 105.10. For consumption of piscivorous birds by other birds (e.g., herring gull by eagles), the BAF is derived by multiplying the trophic level 3 BAF for

fish by a biomagnification factor to account for the biomagnification from fish to the consumed birds.

(b) The selection of the species sensitivity factor (SSF) shall be based on the available toxicological data base and available physicochemical and toxicokinetic properties of the substance ~~in question~~ and the amount and quality of available data.

SECTION 45. NR 105.07(2)(c) is repealed and recreated to read:

NR 105.07(2)(c) The bald eagle, kingfisher, herring gull, mink and otter are representative of avian and mammalian species to be protected by wildlife criteria. A NOAEL specific to each taxonomic class is used to calculate WVs for each of the 5 representative species. The avian WV is the geometric mean of the WVs calculated for the 3 representative avian species. The mammalian WV is the geometric mean of the WVs calculated for the 2 representative mammalian species.

SECTION 46. NR 105.07(2)(d) and (e) are created to read:

NR 105.07(2)(d) In those cases in which more than one NOAEL is available, the following shall apply:

1. If more than one NOAEL is available within a taxonomic class, based on the same endpoint of toxicity, the NOAEL from the most sensitive species shall be used.

2. If more than one NOAEL is available for a given species, based on the same enpoint of toxicity, the NOAEL for that species shall be calculated using the geometric mean of those NOAELs.

(e) Because wildlife consume fish from both trophic levels 3 and 4, baseline BAFs shall be available for both trophic levels 3 and 4 to calculate either a criterion or secondary value for a chemical. When appropriate, ingestion through consumption of invertebrates, plants, mammals and birds in the diet of wildlife species to be protected shall be included.

SECTION 47. NR 105.07(3)(intro.) is amended to read:

NR 105.07(3)(intro.) In those cases in which a no observed adverse effect level (NOAEL) is available from studies of mammalian or avian species exposed repeatedly to the substance via oral routes including gavage, but is available in units other than mg/kg-d as specified in sub. (2), the following procedures shall be used to express the NOAEL prior to calculating the ~~wild and domestic animal~~ wildlife value:

SECTION 48. NR 105.07(5) is repealed and recreated to read:

NR 105.07(5) In instances where a NOAEL is based on subchronic data, an uncertainty factor may be applied to extrapolate from subchronic to chronic levels. The value of the uncertainty factor may not be less than 0.1 and may not exceed 1.0. This factor is to be used when assessing highly bioaccumulative substances where toxicokinetic considerations suggest that a bioassay of limited length underestimates chronic effects.

SECTION 49. NR 105.07(6)(intro.) is amended to read:

NR 105.07(6) (intro.) If drinking or feeding rates are not ~~given in the study or studies from which a WDAV is being calculated~~ available for representative species, drinking ~~(WA)~~ (W) and feeding rates (~~FA~~ F_{TLi}) shall be calculated for ~~laboratory rodents as specified in par. (a) and for other~~ representative mammalian or avian species by using the allometric equations given in pars. ~~(b)~~ (a) and ~~(c)~~ (b).

SECTION 50. NR 105.07(6)(a) is repealed.

SECTION 51. NR 105.07(6)(b) and (c) are renumbered NR 105.07(6)(a) and (b) and, as renumbered, are amended to read:

NR 105.07(6)(a) For mammalian species the allometric equations are as follows:

1. ~~F_A~~ $F_{TLi} = 0.0687 \times (Wt_A)^{0.82}$

Where: ~~FA~~ F_{TLi} = Feeding rate of mammalian species in kilograms per day (kg/d).

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

2. ~~WA~~ $W = 0.099 \times (Wt_A)^{0.90}$

Where: ~~WA~~ W = Drinking rate of mammalian species in liters per day (L/d).

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

(b) For avian species the allometric equations are as follows:

1. ~~FA~~ $F_{TLi} = 0.0582 \ (Wt_A)^{0.65}$

Where: ~~FA~~ F_{TLi} = Feeding rate of avian species in kilograms per day (kg/d).

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

2. ~~WA~~ $W = 0.059 \times (Wt_A)^{0.67}$

Where: ~~WA~~ = Drinking rate of avian species in liters per day (L/d).

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

Note: Criteria to protect domestic animals will be considered on an as needed basis using a model that accounts for domestic animal exposure through drinking water. Because domestic animals do not regularly consume aquatic organisms, the wildlife exposure model is not appropriate.

SECTION 52. NR 105.08(title) is amended to read:

NR 105.08 HUMAN THRESHOLD CRITERIA.

SECTION 53 NR 105.08 (2) to (4) are renumbered (3) to (5) and NR 105.08(3) and (4)(a), as renumbered, are amended to read:

NR 105.08(3) Human threshold criteria are listed in Table 8. Criteria for the same substance may be different depending on the surface water classification, due to the lipid value of representative fish, a component of the BAF, and whether or not the water may be a source of drinking water. Further application of these criteria to protect drinking water and downstream uses in the Great Lakes system shall be according to s. NR 106.06(1).

(4) (a) The human threshold criterion shall be calculated as follows:

$$HTC = \frac{\text{~~ADI~~ ADE} \times 70kg \times RSC}{W_H + (F_H \times BAF)}$$

Where: HTC = Human threshold criterion in milligrams per liter (mg/L).

~~ADI~~ ADE = Acceptable daily ~~intake~~ exposure in milligrams toxicant per kilogram body weight per day (mg/kg-d) as specified in sub.~~(4)~~ (5).

70 kg = Average weight of an adult male in kilograms (kg).

RSC = Relative source contribution factor used to account for routes of exposure other than consumption of contaminated water and aquatic organisms. In the absence of sufficient data on alternate sources of exposure, including but not limited to non-fish diet and inhalation, the relative source contribution factor shall be set equal to 0.8.

~~WH~~ W_H = Average per capita daily water consumption of 2 liters per day (L/d) for surface waters classified as public water supplies or, for all other surface waters, 0.01 liters per day (L/d) for exposure through body contact or ingestion of small volumes of water during swimming or other recreational activities.

~~FH~~ F_H = Average per capita daily consumption of sport-caught fish by Wisconsin anglers equal to 0.02 kilograms per day (kg/d).

BAF = Aquatic organism bioaccumulation factor with units of liter per kilogram (L/kg) as derived in s. NR 105.10.

SECTION 54. NR 105.08(2) is created to read:

NR 105.08 (2) For noncarcinogenic components of mixtures in effluents, interactions among substances may be additive, antagonistic or synergistic and may be accounted for by a model that is supported by credible scientific evidence. The risks are assumed to be additive when substances are members of the same structural class and cause potential adverse affects via the same mechanism of action, influencing the same kind of endpoint, and shall be accounted for by a model that is supported by credible scientific evidence.

SECTION 55. NR 105 Table 8 is repealed and recreated to read:

Table 8
Human Threshold Criteria
(ug/L unless specified otherwise)

	Public Water Supply		Non-public Water Supply		
Substance	WarmWater Sport Fish Communities	Cold Water[4] Communities	Warm Water Forage, Limited Forage, and Warm Water Sport Fish Communities	Cold Water Communities	Limited Aquatic Life
Acrolein	7.2	3.4	15	4.4	2800
Antimony[2]	10	10	2240	2240	2240
Benzene[2]	5	5	606	264	3980
Bis(2-chloroisopropyl)ether	1100	1090	55100	33900	220000
Cadmium[2]	5	5	1200	1200	2800
*Chlordane (ng/L)	2.4	0.70	2.4	0.70	310000
Chlorobenzene[2]	100	100	4900	1600	109000
Chromium (+3)	28000	28000	2500000	2500000	5600000
Chromium (+6)	140	140	12700	12700	28000
Cyanide, Total[2]	200	200	40000	40000	120000
*4,4'-DDT (ng/L)	3.0	0.88	3.0	0.88	2800000
1,2-Dichlorobenzene[2]	600	600	6360	1930	504000
1,3-Dichlorobenzene	1430	710	3290	985	504000
cis-1,2-Dichloroethene[2]	70	70	14400	9350	56000
trans-1,2-Dichloroethene[2]	100	100	24100	13110	112000
Dichloromethane[2] (methylene chloride)	5	5	94500	71500	328000
2,4-Dichlorophenol	73.6	58	580	180	16800
Dichloropropenes[3] (1,3-Dichloropropene)	8.3	8.2	420	260	1680
*Dieldrin (ng/L)	.59	.17	0.59	0.17	280000
2,4-Dimethylphenol	450	430	11000	45000	93500
Diethyl phthalate[2]	5000	5000	67600	20600	4480
Dimethyl phthalate (mg/L)	241	184	1680	530	56000
4,6-Dinitro-o-cresol	106	96	180	640	22400
Dinitrophenols[3] (2,4-Dinitrophenol)	55	55	2800	1800	11000
2,4-Dinitrotoluene	0.51	0.48	13	5.3	110
Endosulfan	87	41	181	54	33600
Ethylbenzene[2]	700	700	12000	3700	560000
Fluoranthene	890	610	4300	1300	220000
*Hexachlorobenzene	0.075	0.022	0.075	0.022	4500
Hexachlorocyclopentadiene	50	50	980	305	39200
Hexachloroethane	8.7	3.3	13	3.7	5600
*gamma-BHC (lindane)	0.20	0.20	0.84	0.25	1900
Isophorone	5500	5300	180000	80000	1100000
Lead	10	10	140	140	2240
*Mercury[5]	0.0015	0.0015	0.0015	0.0015	336
Nickel[2]	100	100	43000	43000	110000
*Pentachlorobenzene	0.46	0.14	0.47	0.14	4500
Selenium[2]	50	50	2600	2600	28000
Silver	140	140	28000	28000	28000
*2,3,7,8-TCDD (pg/L)	0.11	0.032	0.11	0.032	7300
*1,2,4,5-Tetrachlorobenzene	0.54	0.17	0.58	0.17	1700
Toluene[2]	1000	1000	76100	25800	1200000
1,1,1-Trichloroethane[2]	0.2	0.2	270	110	2000
2,4,5-Trichlorophenol	1600	830	3900	1200	560000

* Indicates substances that are BCCs.

[1] A human threshold criterion expressed in micrograms per liter (ug/L) can be converted to milligrams per liter (mg/L) by dividing the criterion by 1000.

[2] For this substance the human threshold criteria for public water supply receiving water classifications equal the maximum contaminant level pursuant to s. NR 105.08 (3) (b).

[3] The human threshold criteria for this chemical class are applicable to each isomer.

[4] For BCCs, these criteria apply to all waters of the Great Lakes System.

[5] The mercury criteria were calculated using 20 g/day fish consumption and the human non-cancer criteria derivation procedure in 40 CFR Part 132, Appendix C. For these criteria, 40 CFR Part 132, Appendix C as stated on {effective date of this rule} is incorporated by reference.

SECTION 56. NR 105.08(5)(intro.), (a), (b)(intro.), 1.(intro.), d., e., 2.(intro.), 3.(intro.) and (c), as renumbered, are amended to read:

(5)(intro.) The acceptable daily ~~intake~~ exposure (~~ADI~~ ADE) referenced in sub. ~~(3)~~ (4) represents the maximum amount of a substance which if ingested daily for a lifetime results in no adverse effects to humans. Paragraphs (a) to (c) list methods for determining the acceptable daily ~~intake~~ exposure.

(a) The department shall review available references for acceptable daily ~~intake~~ exposure or equivalent values, such as a reference dose (RfD) as used by the U.S. environmental protection agency, and for human or animal toxicological data from which an acceptable daily ~~intake~~ exposure can be derived. Suitable references for review include, but are not limited to, those presented in s. NR 105.04 (5).

(b)(intro.) When human or animal toxicological data ~~is~~ are available, the department may derive an acceptable daily ~~intake~~ exposure by using as guidance procedures presented by the U.S. environmental protection agency in "Water Quality Criteria Documents; Availability" (45 FR 79318, November 28, 1986). Additional guidance for deriving acceptable daily ~~intakes~~ exposures from toxicological data are given in subds. 1 to 4. Alternate procedures may be used if supported by credible scientific evidence.

1.(intro.) No observable adverse effect levels (NOAELs) and lowest observable adverse effect levels (LOAELs) from studies of humans or mammalian test species shall be divided by an uncertainty factor to derive an acceptable daily ~~intake~~ exposure. Uncertainty factors reflect uncertainties in predicting acceptable exposure levels for the general human population based upon experimental animal data or limited human data. Factors to be considered when selecting an uncertainty factor include, but are not limited to, interspecies and individual variations in response and susceptibility to a toxicant, and the quality and quantity of the available data. The following guidelines shall be considered when selecting an uncertainty factor:

d. Use an additional uncertainty factor of between 1 and 10 depending on the severity of the adverse effect when deriving an acceptable daily ~~intake~~ exposure from a lowest observable adverse effect level (LOAEL). This uncertainty factor reduces the LOAEL into the range of a no observable adverse effect level (NOAEL).

e. Use an additional uncertainty factor of 10 when deriving an acceptable daily ~~intake~~ exposure for a substance which the U.S environmental protection agency classifies as a "group C" carcinogen, but which is not defined as a carcinogen in s. NR 105.03 ~~(7)~~ (13).

2.(intro.) Results from studies of humans or mammalian test species used to derive acceptable daily ~~intakes~~ exposures shall have units of milligrams of toxicant per kilogram of body weight per day (mg/kg-d). When converting study results to the required units, a water consumption of 2 liters per day (L/d) and a body weight of 70 kilograms (kg) is assumed for humans. The following examples and procedures illustrate the conversion of units:

3.(intro.) When assessing the acceptability and quality of human or animal toxicological data from which an acceptable daily ~~intake~~ exposure can be derived, the department may use the following documents as guidance:

(c) Using sound scientific judgment, the department shall select an acceptable daily ~~intake~~ exposure as derived in pars. (a) and (b) for calculation of the human threshold criterion. When selecting an acceptable daily ~~intake~~ exposure, the department shall adhere to the following guidelines unless a more appropriate procedure is supported by credible scientific evidence:

1. Acceptable daily ~~intakes~~ exposures based on human studies are given preference to those based on animal studies.

2. When deriving an acceptable daily ~~intake~~ exposure from animal studies preference is given to chronic studies involving oral routes of exposure, including gavage, over a significant portion of the animals'

life span. If acceptable studies using oral exposure routes are not available, acceptable daily ~~intakes~~ exposures derived from studies using alternate exposure routes, such as inhalation, may be used.

3. When 2 or more acceptable daily ~~intake~~ exposure values are available and have been derived from studies having equal preference as defined in subds. 1 and 2., the lowest acceptable daily ~~intake~~ exposure is generally selected. If the acceptable daily ~~intake~~ exposure values differ significantly, the department may consult with experts outside of the department for guidance in the selection of the more appropriate acceptable daily ~~intake~~ exposure.

SECTION 57. NR 105.09(title), (1) and (3) are amended to read:

NR 105.09(title) HUMAN CANCER CRITERIA (1) The human cancer criterion (HCC) is the maximum concentration of a substance or mixture of substances established to protect humans from an unreasonable incremental risk of cancer resulting from contact with or ingestion of surface waters of the state and from ingestion of aquatic organisms taken from surface waters of the state. Human cancer criteria are derived for those toxic substances which are carcinogens as defined in s. NR 105.03 ~~(7)~~ (13).

(3) Human cancer criteria are listed in Table 9. Criteria for the same substance may be different depending on the surface water classification, due to the lipid value of representative fish, a component of the BAF, and whether or not the water may be a source of drinking water. Further application of these criteria to protect drinking water and downstream uses in the Great Lakes system shall be according to s. NR 106.06(1).

SECTION 58. NR 105 Table 9 is repealed and recreated to read:

Table 9
Human Cancer Criteria
(ug/L unless specified otherwise[1])

	Public Water Supply		Non-public Water Supply		
Substance	Warm Water Sport Fish Communities	Cold Water[4] Communities	Warm water Forage, Limited Forage, and Warm Water Sport Fish Communities	Cold Water Communities	Limited Aquatic Life
Acrylonitrile	0.57	0.45	4.6	1.5	130
Arsenic[2]	0.185	0.185	50	50	50
*alpha-BHC	0.012	0.0037	0.013	0.0039	11
*gamma-BHC (lindane)	0.052	0.018	0.064	0.019	54
*BHC, technical grade	0.038	0.013	0.047	0.014	39
Benzene[2]	5	5	140	45	1300
Benzidine (ng/L)	1.5	1.5	81	55	300
Beryllium	0.054	0.054	0.33	0.33	16
Bis(2-chloroethyl) ether	0.31	0.29	7.6	3.0	64
Bis(chloromethyl) ether (ng/L)	1.6	1.6	96	79	320
Carbon tetrachloride	2.5	2.1	29	9.5	540
*Chlordane (ng/L)	0.41	0.12	0.41	0.12	54000
Chloroethene(vinylchloride)	0.18	0.18	10	6.8	37
Chloroform(trichloromethane)	55	53	1960	922	11200
*4,4[1]-DDT (ng/L)	0.22	0.065	0.22	0.065	206000
1,4-Dichlorobenzene	14	12	163	54	2940
3,3[1]-Dichlorobenzidine	0.51	0.29	1.5	0.46	154
1,2-Dichloroethane	3.8	3.8	217	159	770
Dichloromethane[2] (methylene chloride)	5	5	2700	2100	9600
*Dieldrin (ng/L)	0.0091	0.0027	0.0091	0.0027	4400
2,4-Dinitrotoluene	0.51	0.48	13	5.3	110
1,2-Diphenylhydrazine	0.38	0.31	3.3	1.04	88
Halmomethanes[3]	55	53	1960	922	11200
*Hexachlorobenzene(ng/L)	0.73	0.22	0.73	0.22	44000
*Hexachlorobutadiene	0.59	0.19	0.69	0.2	910
Hexachloroethane	7.7	2.9	11	3.3	5000
N-Nitrosodiethylamine(ng/L)	2.3	2.3	150	140	460
N-Nitrosodimethylamine	0.0068	0.0068	0.46	0.46	1.4
N-Nitrosodi-n-butylamine	0.063	0.062	2.5	1.3	13
N-Nitrosodiphenylamine	44	23	116	34	13
N-Nitrosopyrrolidine	0.17	0.17	11	11	34
*Polychlorinated biphenyls (ng/L)	0.01	0.003	0.01	0.003	9100
*2,3,7,8-Tetrachlorodibenzo-p-dioxin(pg/L)	0.014	0.0041	0.014	0.0041	930
1,1,2,2-Tetrachloroethane	1.7	1.6	52	22	350
Tetrachloroethene	5.8	4.6	46	15	1300
*Toxaphene(ng/L)	0.11	0.034	0.14	0.034	63600
1,1,2-Trichloroethane[2]	6.0	6.0	195	87	1200
Trichloroethene[2]	5	5	539	194	6400
2,4,6-Trichlorophenol	29	24	30	97	6400

* Indicates substances that are BCCs.

[1] A human cancer criterion expressed in micrograms per liter (ug/L), nanograms per liter (ng/L) or picograms per liter (pg/L) can be converted to milligrams per liter (mg/L) by dividing the criterion by 1000, 1,000,000 or 1,000,000,000, respectively.

[2] For this substance the human cancer criteria for public water supply receiving water classifications equal the maximum contaminant level pursuant to s. NR 105.09 (4) (b).

[3] Human cancer criteria for halomethanes are applicable to any combination of the following chemicals: bromomethane (methyl bromide), chloromethane (methyl chloride), tribromomethane (bromoform), bromodichloromethane (dichloromethyl bromide), dichlorodifluoromethane (fluorocarbon 12) and trichlorofluoromethane (fluorocarbon 11).

[4] For BCCs, these criteria apply to all waters of the Great Lakes System.

SECTION 59. NR 105.09(4)(a) and (b) are amended to read:

NR 105.09(4)(a) The human cancer criterion shall be calculated as follows:

$$HCC = \frac{\text{~~RAI~~ RAD} \times 70\ kg}{W_H + (F_H \times BAF)}$$

Where: HCC = Human cancer criterion in milligrams per liter (mg/L).

~~RAI~~ RAD = Risk associated ~~intake~~ dose in milligrams toxicant per kilogram body weight per day (mg/kg-d) that is associated with a lifetime incremental cancer risk equal to one in 100,000 as derived in sub. (5).

70 kg = Average weight of an adult male in kilograms (kg).

W_H = Average per capita daily water consumption of 2 liters per day (L/d) for surface waters classified as public water supplies or, for other surface waters, 0.01 liters per day (L/d) for exposure through contact or ingestion of small volumes of water during swimming or during other recreational activities.

FH = Average per capita daily consumption of sport-caught fish by Wisconsin anglers equal to 0.02 kilograms per day (kg/d).

BAF = Aquatic life bioaccumulation factor with units of liter per kilogram (L/kg) asderived in s. NR 105.10.

(b) For surface waters classified as public water supplies, if the human ~~threshold~~ cancer criterion for a toxic substance as calculated in par. (a) exceeds the maximum contaminant level (MCL) for that substance as specified in ch. NR 809 or the July 8, 1987 Federal Register (52 FR 25690), the MCL shall be used as the human ~~threshold~~ cancer criterion.

SECTION 60. NR 105.09(5)(intro.), (a), (b), (c)(intro.) and 2. are amended to read:

NR 105.09(5)(intro.) The risk associated ~~intake~~ dose (~~RAI~~ RAD) referenced in sub. (4) represents the maximum amount of a substance which if ingested daily for a lifetime of 70 years has an incremental cancer risk equal to one case of human cancer in a population of 100,000. Methods for deriving the risk associated ~~intake~~ dose are specified in pars. (a) to (d).

(a) The department shall review available references for acceptable human and animal studies from which the risk associated ~~intake~~ dose can be derived. The department shall use sound scientific judgment when determining the acceptability of a study and may use the U.S. environmental protection agency's "Guidelines for Carcinogen Risk Assessment" (FR 51 33992, September 24, 1986) as guidance for judging acceptability. Suitable references for review include, but are not limited to, those presented in s. NR 105.04 (5).

(b) If an acceptable human epidemiologic study is available, contains usable exposure data, and indicates a carcinogenic effect, the risk associated ~~intake~~ dose shall be set equal to the lifetime average exposure which would produce an incremental cancer risk of one in 100,000 based on the exposure information from the study and assuming the excess cancer risk is proportional to the lifetime average exposure. If more than one human epidemiologic study is judged to be acceptable, the most protective risk associated ~~intake~~ dose derived from the studies is generally used to calculate the human cancer criterion. If the risk associated ~~intake~~ dose values differ significantly, the department may consult with experts outside of the department for guidance in the selection of the more appropriate value.

(c)(intro.) In the absence of an acceptable human epidemiologic study, the risk associated ~~intake~~ dose shall be derived from available studies which use mammalian test species and which are judged acceptable. Methods for deriving the risk associated ~~intake~~ dose are specified in subds. 1. to 4.

2. When a linear, non-threshold dose-response relationship is assumed, the risk associated ~~intake~~ dose shall be calculated using the following equation:

$$\text{~~RAI~~ RAD} = \frac{1}{q_1^*} \times 0.00001$$

Where: ~~RAI~~ RAD = Risk associated ~~intake~~ dose in milligrams toxicant per kilogram body weight per day (mg/kg-d).

0.00001 = Incremental risk of human cancer equal to one in 100,000.

q1* = Upper 95% confidence limit (one-sided) of the carcinogenic potency factor in days per milligram toxicant per kilogram body weight (d-kg/mg) as derived from the procedures referenced in subd. 1 and the guidance presented in subd. 3.

SECTION 61. NR 105.09(6) is repealed

SECTION 62. NR 105.10 is repealed and recreated to read:

NR 105.10 BIOACCUMULATION FACTOR. (1) The bioaccumulation factor used to derive wildlife, human threshold, human cancer and taste and odor criteria or secondary values is determined from a baseline BAF using the methodology provided in Appendix B to 40 CFR part 132. 40 CFR part 132, Appendix B as stated on the effective date of this rule ... [revisor insert date] is incorporated by reference. BAFs shall be used to calculate criteria and secondary values for human health and wildlife. Use of a BAF greater than 1000, as determined from either of the methods referred to in sub. (2)(c) or (d) for organic substances, will result in the calculation of a secondary value. The baseline BAF is based on the concentration of freely dissolved substances in the ambient water to facilitate extrapolation from one water to another.

(2) Baseline BAFs shall be derived using one of the following 4 methods, which are listed from most preferred to least preferred.

(a) A measured baseline BAF for an organic or inorganic substance derived from a field study of acceptable quality;

(b) A predicted baseline BAF for an organic substance derived using field-measured BSAFs of acceptable quality;

(c) A predicted baseline BAF for an organic or inorganic substance derived from a BCF measured in a laboratory study of acceptable quality and a food-chain multiplier. Food-chain multipliers are provided in 40 CFR part 132, Appendix B; or

(d) A predicted baseline BAF for an organic substance derived from a K_{ow} of acceptable quality and a food-chain multiplier.

(3) REVIEW AND SELECTION OF DATA. Measured BAFs, BSAFs and BCFs shall meet the quality assurance requirements provided in 40 CFR part 132, Appendix B and shall be obtained from available sources including the following:

(a) EPA Ambient Water Quality Criteria documents issued after January 1, 1980.
(b) Published scientific literature.
(c) Reports issued by EPA or other reliable sources.
(d) Unpublished data.

(4) HUMAN HEALTH AND WILDLIFE BAFs FOR ORGANIC SUBSTANCES. (a) To calculate human health and wildlife BAFs for organic substances, the K_{OW} of the substance shall be used with a POC concentration of 0.00000004 kg/L and a DOC concentration of 0.000002 kg/L to yield the fraction freely dissolved:

$$f_{fd} = \frac{1}{1 + \frac{(DOC)(K_{ow}) + (POC)(K_{ow})}{10}}$$

$$= \frac{1}{1 + \frac{(0.000002\ kg/L)(K_{ow}) + (0.00000004\ kg/L)(K_{ow})}{10}}$$

$$= \frac{1}{1 + (0.00000024\ kg/L)(K_{ow})}$$

Where:

DOC = concentration of dissolved organic carbon, kg of dissolved organic carbon/L of water.

POC = concentration of particulate organic carbon, kg of particulate organic carbon/L of water.

(b) The human health BAFs for an organic substance shall be calculated using the following equations:

For warm water communities:
Human Health BAF = [(baseline BAF)(0.013)+ 1](f_{fd})

For cold water communities:
Human Health BAF = [(baseline BAF)(0.044)+ 1](f_{fd})

Where: 0.013 and 0.044 are the fraction lipid values for warm and cold water fish and aquatic life communities, respectively, that are required to derive human health criteria and secondary values.

baseline BAF = the baseline BAF calculated according to 40 CFR part 132, Appendix B.

(c) The wildlife BAFs for an organic substance shall be calculated using the following equations:

1. For trophic level 3:
Wildlife BAF = [(baseline BAF)(0.0646)+ 1](f_{fd})

2. For trophic level 4:
Wildlife BAF = [(baseline BAF)(0.1031)+ 1](f_{fd})

Where: 0.0646 and 0.1031 are the standardized fraction lipid values for dietary consumption from trophic level 3 and 4 fish taxa, respectively, that are required to derive wildlife criteria and secondary values.

baseline BAF = the baseline BAF calculated according to 40 CFR part 132, Appendix B.

(5) HUMAN HEALTH AND WILDLIFE BAFs FOR INORGANIC SUBSTANCES. (a) Human health. 1. Measured BAFs and BCFs used to determine human health BAFs for inorganic substances shall be based on edible tissue (e.g., muscle) of freshwater fish. If it is demonstrated that whole-body BAFs or BCFs are similar to edible-tissue BAFs or BCFs, then these data are acceptable. BCFs and BAFs based on measurements of aquatic plants and invertebrates may not be used in the derivation of human health criteria and values.

2. If one or more field-measured baseline BAFs for an inorganic substance are available from studies conducted in the Great Lakes system with the muscle of fish, the geometric mean of the species mean baseline BAFs shall be used as the human health BAF for that substance.

3. If an acceptable measured baseline BAF is not available for an inorganic substance and one or more acceptable edible-portion BCFs are available for the substance, a predicted baseline BAF shall be calculated by multiplying the geometric mean of the BCFs times a FCM. The FCM will be 1.0 unless chemical-specific biomagnification data support using a multiplier other than 1.0. The predicted baseline BAF shall be used as the human health BAF for that substance.

(b) Wildlife. 1. Measured BAFs and BCFs used to determine wildlife BAFs for inorganic substances shall be based on whole-body freshwater fish and invertebrate data. If it is demonstrated that edible-tissue BAFs or BCFs are similar to whole-body BAFs or BCFs, then these data are acceptable.

2. If one or more field-measured baseline BAFs for an inorganic substance is available from studies conducted in the Great Lakes system with whole body of fish or invertebrates, then the following apply:

a. For each trophic level, a species mean measured baseline BAF shall be calculated as the geometric mean if more than one measured BAF is available for a given species.

b. For each trophic level, the geometric mean of the species mean measured baseline BAFs shall be used as the wildlife BAF for that substance.

3. If an acceptable measured baseline BAF is not available for an inorganic substance and one or more acceptable whole-body BCFs are available for the substance, a predicted baseline BAF shall be calculated by multiplying the geometric mean of the BCFs times a FCM. The FCM shall be 1.0 unless chemical-specific biomagnification data support using a multiplier other than 1.0. The predicted baseline BAF shall be used as the wildlife BAF for that substance.

Note: Copies of 40 CFR Part 132, Appendix B are available for inspection in the offices of the department of natural resources, secretary of state and the revisor of statutes, Madison, WI or may be purchased from the superintendent of documents, US government printing office, Washington, D.C. 20402.

SECTION 63. NR 105.11 is created to read:

NR 105.11 FINAL PLANT VALUES. (1) A Final Plant Value (FPV) is the lowest plant value that was obtained with an important aquatic plant species in an acceptable toxicity test for which the concentrations of the test substance were measured and the adverse effect was biologically important. Appropriate measures of the toxicity of the substance to aquatic plants are used to compare the relative sensitivities of aquatic plants and animals.

(2) A plant value is the result of a 96-hour test conducted with an algae or a chronic test conducted with an aquatic vascular plant. A test of the toxicity of a metal to a plant may not be used if the medium contained an excessive amount of a complexing agent, such as EDTA, that might affect the toxicity of the metal. Concentrations of EDTA above 200 μg/L should be considered excessive.

(3) The FPV shall be established by selecting the lowest result from a test with an important aquatic plant species in which the concentrations of test material are measured and the endpoint is biologically important.

Note: Although procedures for conducting and interpreting the results of toxicity tests with plants are not well advanced, results of tests with plants usually indicate that criteria which adequately protect aquatic animals and their uses will, in most cases, also protect aquatic plants and their uses.

SECTION 64. NR 106.03(7) is repealed.

SECTION 65. NR 106.03(1) to (6), (8) and (9) are renumbered 106.03(2) to (4), (7) to (9), (12) and (14), respectively, and 106.03(2), (4), (7) and (12), as renumbered, are amended to read:

NR 106.03(2) "Biologically based design flow" means a receiving water design flow to protect fish and aquatic life for which both the duration of exposure is expressed in days and the allowable frequency of excursion is expressed in years. An example of a biologically based design flow is a 4-day 3-year design flow which corresponds to the lowest 4-day average flow that will limit excursions from any water quality criteria or secondary values to no more than once in 3 years.

(4) "EC50" means the point estimate of the concentration of a toxic substance, wastewater effluent or other aqueous mixture which causes an adverse effect including mortality to 50% of the exposed organisms in a given time ~~of observation~~ period, when compared to an appropriate control.

(7) "LC50" means the point estimate of the concentration of a toxic substance, wastewater effluent or other aqueous mixture which is lethal to 50% of the exposed organisms in a given time period, when compared to an appropriate control.

(12) "Toxicity test" means a test which determines the toxicity of a chemical ~~or an~~ substance, wastewater effluent or other ~~waters~~ aqueous mixture using living organisms. A toxicity test measures the degree of response of ~~an~~ exposed test ~~organism~~ organisms to a ~~specific~~ chemical ~~or~~ substance, wastewater effluent or other ~~waters~~ aqueous mixture.

SECTION 66. NR 106.03(1), (5), (6), (10), (11) and (13) are created to read:

NR 106.03(1) "Bioaccumulative chemical of concern" or "BCC" means any substance that has the potential to cause adverse effects which, upon entering the surface waters, accumulates in aquatic organisms by a human health or wildlife bioaccumulation factor greater than 1000.

(5) "IC25" means the point estimate of the concentration of a toxic substance, wastewater effluent or other aqueous mixture that would cause a 25% reduction in a nonlethal biological measurement, such as reproduction or growth, of the exposed test organisms in a given time period.

(6) "IWC" or "instream waste concentration" means the concentration of a toxicant or the parameter toxicity in the receiving water after mixing.

(10) "NOEC" means the highest tested concentration of a toxic substance, wastewater effluent or other aqueous mixture at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. The NOEC is determined using hypothesis testing.

(11) "rTU_c" or "relative toxic unit chronic" means the IWC divided by the IC25.

(13) "TU_a" or "toxic unit acute" means 100 divided by the LC_{50}.

SECTION 67. NR 106.04(3) is amended to read:

NR 106.04(3) The department shall establish limitations for toxic and organoleptic substances if any of the conditions specified in s. NR 106.05 are met. Limitations shall be established according to the methods provided in s. NR 106.06 and included in WPDES permits according to the conditions provided in s. NR 106.07. The department shall establish limitations for whole effluent toxicity if any of the conditions specified in s. NR 106.08 are met. Whole effluent limitations shall be established and included in WPDES permits according to the methods provided in ~~s.~~ ss. NR 106.08 and 106.09.

SECTION 68. NR 106.04(5) is created to read:

NR 106.04(5) For purposes of this chapter, a cost-effective pollutant minimization program is an activity which has as its goal the reduction of all potential sources of the pollutant for the purpose of maintaining the effluent at or below the water quality based effluent limitation. The pollutant minimization programs specified in ss. NR 106.05(8), 106.06(6)(d) and 106.07(6)(f) shall include investigation of treatment technologies and efficiencies, process changes, wastewater reuse or other pollution prevention techniques that are appropriate for that facility, taking account of the permittee's overall treatment strategies, facilities plans and operational circumstances. Past documented pollution prevention or treatment efforts may be used to satisfy all or part of a pollution minimization program requirement. The permittee shall submit to the department an annual status report on the progress of a pollutant minimization program.

SECTION 69. NR 106.05(1) is renumbered NR 106.05(1)(a) and a (title) is created to read:

NR 106.05(1)(a) General.

SECTION 70. NR 106.05(1)(b) and (c) are created to read:

NR 106.05(1)(b) Determining necessity for limitations based on secondary values. The department may establish water quality based effluent limitations for point source discharges based on secondary values calculated according to ch. NR 105. The department shall calculate secondary values and establish limitations for toxic and organoleptic substances in permits based on secondary values when, in the judgment of the department, one or more of the following factors support the necessity for the values, in conjunction with the procedures in subs. (2) to (8).

1. Whole effluent toxicity or other biomonitoring or bioassay test results indicate toxicity to test or other species.

2. The use designation of the receiving water is or may be impaired.

3. There is other information that the industrial category or subcategory of the point source or the industrial or other sources discharging to a publicly owned treatment works discharges the substance.

4. The substance in the wastewater will not be adequately removed or reduced by the type of wastewater treatment provided.

5. The ecological or environmental risk from the substance may be significant when discharged to surface waters.

6. Other relevant factors which may cause an adverse effect on surface waters as specified in s. NR 105.04(1).

(c) If the department determines that a limitation based on an aquatic life acute or chronic secondary value should be established in a permit according to the provisions in this section, a permittee may request an alternative wet limit in accordance with s. NR 106.07(7).

Note: A toxic or organoleptic substance includes, but is not limited to, those substances in Table 6 of 40 CFR part 132.

SECTION 71. NR 106.05(3)(a) to (c), (4)(a) to (c), (5)(b), (6)(a) and (b) and (8) are amended to read:

NR 106.05(3)(a) The discharge concentration of the substance for any day exceeds the limit of detection and exceeds the limitations based on either the acute toxicity criterion or secondary acute value for the substance as determined in s. NR 106.06~~(2)~~(3) where appropriate.

(b) The arithmetic average discharge concentration of the substance for any 4 consecutive days calculated as described in sub. (7) exceeds the limit of detection and exceeds the limitations based on either the

chronic toxicity criterion or ~~final~~ secondary chronic value for the substance as determined in s. NR 106.06~~(3)~~ (4).

(c) The arithmetic average discharge concentration of the substance for any 30 consecutive days calculated as described in sub. (7) exceeds the limit of detection and exceeds any limitation based on the ~~wild and domestic animal~~ wildlife, human threshold, or human cancer criteria or secondary values, or taste and odor criteria for the substance as determined in s. NR 106.06~~(3)~~ (4).

(4)(a) The upper 99th percentile of daily discharge concentrations of the substance exceeds the limitation based on either the acute toxicity criterion or the secondary acute value for the substance as determined in s. NR 106.06 ~~(2)~~ (3)~~.~~.

(b) The upper 99th percentile of 4-day average discharge concentration of the substance exceeds the limitation based on either the chronic toxicity criterion or the secondary chronic value for the substance as determined in s. NR 106.06~~(3)~~ (4), or

(c) The upper 99th percentile of 30-day average discharge concentration of the substance exceeds any limitation based on the ~~wild and domestic animal~~ wildlife, human threshold, or human cancer criteria or secondary values, or taste and odor criteria for the substance as determined in s. NR 106.06 ~~(3)~~ (4).

(5)(b) When the daily discharge concentrations of any substance are serially correlated, the serially correlated data may be adjusted using appropriate methods such as that presented in Appendix E of "Technical Support Document for Water Quality-based Toxics Control", U.S. environmental protection agency, ~~Sept. 1985~~ March 1991(EPA/505/2-90-001). The equation presented in par. (a) may be used after adjustment of the serially correlated data.

(6)(a) One fifth of the limitation based on the acute toxicity criterion or secondary acute value for the substance, as determined in s. NR 106.06 ~~(2)~~ (3) where appropriate, or

(b) One fifth of any limitation based on chronic toxicity criteria or secondary chronic values or long-term impacts as determined in s. NR 106.06 ~~(3)~~ (4).

(8) ~~If~~ When the provisions of this section cannot be invoked because representative discharge data are not available for a substance, water quality based effluent limitations may be established if, in the judgment of the department, water quality standards will be exceeded if the discharge from the point source is not limited. If, in the judgment of the department, the discharge from a point source may exceed the water quality standards, but the collection of representative discharge data is not possible due to the inability of the most sensitive approved method to quantify discharge levels and, in the judgment of the department the application of numeric effluent limitations in a permit is infeasible or impractical, then the permittee may request an alternative to a numerical effluent limitation. The alternative shall consist of a permit requirement to conduct a cost-effective pollutant minimization program as specified in s. NR 106.04(5). Approved methods are those specified in ch. NR 219 or 40 CFR part 136.

Note: A department guidance document finalized in May 1996, entitled "Wisconsin Strategy for Regulating Mercury in Wastewater", describes how the department evaluates whether an effluent limitation or a pollutant minimization program for mercury is appropriate.

SECTION 72. NR 106.06(1)(a) is amended to read:

NR 106.06(1)(a) The department shall establish water quality based effluent limitations for point source dischargers whenever such limitations are necessary, as determined by any method in this section, to meet the applicable water quality standards ~~and~~ , criteria and secondary values as determined in chs. NR 102 to 105.

SECTION 73. NR 106.06(1)(b) is renumbered NR 106.06(1)(b)1. and, as renumbered, is amended to read:

NR 106.06(1)(b)1. Water quality based effluent limitations for toxic and organoleptic substances shall be determined to attain and maintain water quality standards and criteria ~~for all locations in a receiving water that may be influenced by a discharge~~ or secondary values, specified in or determined according to procedures in ch. NR 105, at the point of discharge. Effluent limitations shall be established to protect downstream waters whenever the department has information to make the determinations.

SECTION 74. NR 106.06(1)(b)2. is created to read:

NR 106.06(1)(b)2. For discharges to Green Bay that are north of 44° 32' 30" north latitude, the cold water community criteria shall apply in effluent limit calculations. For discharges to Green Bay that are south of 44° 32' 30" north latitude, effluent limitations shall be established in accordance with subd. 1.

SECTION 75. NR 106.06(2)(d), (3)(c)7. and 8., (d)2. and (e)7. are repealed.

SECTION 76. NR 106.06(2)(a) to (c), (3)(a) to (c)6. and 9., (d)1. and 3., (e)1. to 6. and (4) to (8) are renumbered 106.06(3)(a) to (c), (4)(a) to (c)6. and 12., (d)1. and 3., (e)1. and 2., (6)(a), (b), (c)1. and (e), (5) and (8) to (11), respectively.

SECTION 77. NR 106.06(2) is created to read:

NR 106.06(2) LIMITATIONS FOR BIOACCUMULATIVE CHEMICALS OF CONCERN (BCCs) (a) Notwithstanding any other provisions in chs. NR 102 and 106, beginning on March 23, 1997, effluent limitations for new or expanded discharges of BCCs into waters of the Great Lakes system as defined in s. NR 102.12 may not exceed the most stringent applicable water quality criteria or secondary values for BCCs. Effluent limitations for expanded discharges of BCCs with permit limitations shall be determined by means of a mass balance where the limitation for the existing portion of a permitted discharge shall be determined using the requirements of sub. (4) and the limitation for the expanded portion of the discharge may not exceed the most stringent criteria or value for that BCC.

(b) For the purposes of par. (a), "expanded discharge" means any change in concentration, level or loading of a substance which would exceed a limitation specified in a current WPDES permit, or which, according to the procedures in s. NR 106.05 would result in the establishment of a new limitation in a reissued or modified WPDES permit. "New discharge" means any point source which has not received a WPDES permit from the department prior to the effective date of this rule...[revisor insert date].

Note: The Great Lakes Water Quality Initiative requires that for existing discharges of BCCs in waters of the Great Lakes system, effluent limitations may not exceed the most stringent criteria or secondary value beginning March 23, 2007, with two exceptions. Prior to that date, DNR will develop additional rules to implement this requirement for existing discharges.

(c) Effluent limitations for discharges of BCCs into waters of the Great Lakes system as defined in s. NR 102.12 that are based on human health criteria or secondary values calculated according to procedures in ch. NR 105, shall be also based on the most protective designated use: cold water, public water supply.

SECTION 78 NR 106.06(3)(b), (c)(intro.) and 4. to 6., as renumbered, are amended to read:

NR 106.06(3)(b) To assure compliance with par. (a) and except as provided in par. (c), water quality based effluent limitations shall equal the final acute value as determined in s. NR 105.05 or the secondary acute value as determined in s. NR 105.05(4) for the respective fish and aquatic life subcategory for which the receiving water is classified. Effluent limitations for substances for which criteria may be expressed as dissolved concentrations may be established according to sub. (7).

(c)(intro.) ~~Water~~ Except as provided in par. (d), water quality based effluent limitations may exceed the final acute value ~~as determined in s. NR 105.05~~ or the secondary acute value within a zone of initial dilution provided that the acute toxicity criteria ~~as determined in s. NR 105.05~~ or secondary acute values are met within

a short distance from the point of discharge. A zone of initial dilution shall only be provided if the discharger demonstrates to the department that mixing of the effluent with the receiving water in the zone of initial dilution is rapid and all the following conditions are met:

4. The acute toxicity criteria or secondary acute values must be met within 10% of the distance from the edge of the outfall structure to the edge of a mixing zone which may be determined in accordance with s. NR 102.05 (3).

5. The acute toxicity criteria or secondary acute values shall be met within a distance of 50 times the discharge length scale in any direction. The discharge length scale is defined as the square root of the cross-sectional area of any discharge outlet. If a multiport diffuser is used, this requirement must be met for each port using the appropriate discharge length scale for that port.

6. The acute toxicity criteria or secondary acute values shall be met within a distance of 5 times the local water depth in any horizontal direction from any discharge outlet. The local water depth is defined as the natural water depth (existing prior to the installation of the discharge outlet) prevailing under the mixing zone design conditions for the site.

SECTION 79. NR 106.06(3)(d) is created to read:

NR 106.06(3)(d)For toxic substances with water quality criteria related to one or more other water quality parameters, effluent limitations shall be calculated using the effluent value for the water quality parameter. Water quality parameters include, but are not limited to, pH, temperature and hardness.

SECTION 80. NR 106.06(4)(a), (b)(intro.), 1., 2., (c)4. and 5., as renumbered are amended to read:

NR 106.06(4)(a)(title) Water quality criteria and secondary values. The department shall calculate water quality based effluent limitations to ensure that the chronic toxicity criteria (CTC), the ~~wild and domestic animal~~ wildlife criteria ~~(WDAC)~~ (WC) the taste and odor criteria (TOC), the human threshold criteria (HTC), and human cancer criteria (HCC) appropriate for the receiving water as specified in chs. NR 102 to 105 and the secondary chronic values determined according to ch. NR 105 will be met after dilution with an appropriate allowable quantity of receiving water flow as specified in this subsection, subs. ~~(4)~~ (5) to ~~(8)~~ (11) and s. NR 106.11. The available dilution shall be determined according to par. (c) unless the conditions specified in s. NR 102.05 (3) or sub. (2) require less dilution or no dilution be allowed. Effluent limitations for substances for which criteria may be expressed as dissolved concentrations may be established according to sub. (7).

(b) Calculation of limits. (intro.) Water quality based effluent limitations to meet the requirements of this subsection shall be calculated using the procedure specified in subd. 1. or 2. except as provided in ~~par. (c) 3. to 6~~ sub. (2) or (6). ~~Chemical specific water quality based effluent limitations may be expressed as a maximum concentration limitation (in units of mg/L or equivalent units), as a maximum load limitation (in units of kg/day or equivalent units), or both~~.

1. For discharges of toxic or organoleptic substances to flowing receiving waters, the water quality based effluent limitation for a substance shall be calculated using the following conservation of mass equation whenever the background concentration is less than the water quality criterion or secondary value:

$$\text{Limitation} = \frac{(WQC)(Q_s + (1-f)Q_e) - (Q_s - fQ_e)(C_s)}{Q_e}$$

Where:

Limitation = Water quality based effluent limitation (in units of mass per unit of volume),

WQC = The water quality criterion concentration or secondary value (in units of mass per unit volume) as ~~specified~~ referenced in sub. (1) ~~and~~ or par. (a),

Q_s = Receiving water design flow (in units of volume per unit time) as specified in par. (c),

Q_e = Effluent flow (in units of volume per unit time) as specified in par. (d).

f = Fraction of the effluent flow that is withdrawn from the receiving water, and

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in par. (e).

Note: In applying this equation, all units for the flow and concentration parameters respectively, shall be consistent.

2. For discharges of toxic or organoleptic substances to receiving waters which do not exhibit a unidirectional flow at the point of discharge, such as lakes or impoundments, the department may calculate, in the absence of specific data, water quality based effluent limitations using the following equation whenever the background concentration is less than the water quality criterion or secondary value:

Limitation = 11 (WQC) - $10C_s$

Where:

Limitation = Water quality based effluent limitation (in units of mass per unit of volume)

WQC = The water quality criterion concentration or secondary value (in units of mass per unit volume) as ~~specified~~ referenced in sub. (1) ~~and~~ or par. (a),

C_s = Background concentration of the substance (in units of mass per unit volume) as specified in par. (e).

On a case-by-case basis other dilutional factors may be used, but in no case may the dilution allowed exceed an area greater than the area where discharge induced mixing occurs. The discharge is also subject to the conditions specified in s. NR 102.05 (3). The discharger may be required to determine the size of the mixing zone using acceptable models or dye studies.

(c)4. Following the determinations under subds. 1. to 3., the value of Q_s of the receiving water for calculating effluent limitations based upon the chronic toxicity criteria specified in s. NR 105.06 or secondary chronic values shall be determined on a case-by-case basis. In no case may Q_s exceed the larger of the average minimum 7-day flow which occurs once in 10 years (7-day Q_{10}) or, if sufficient information is available to calculate a biologically based receiving water design flow, the flow which prevents an excursion from the criterion or secondary value using a duration of 4 days and a frequency of less than once every 3 years (4-day, 3-year biological flow).

5. If the requirements of subds. 2. and 3. are not satisfied, the department shall notify the permittee and identify the deficiencies and allow additional time, if necessary, to complete the demonstration. If the demonstration cannot be completed satisfactorily, the value of Q_s of the receiving water for calculating effluent limitations based upon the chronic toxicity criteria specified in s. NR 105.06 or secondary chronic values shall equal ¼ of the 7-day Q_{10} or ¼ of the 4-day, 3 year biological flow. In no case may the value of Q_s of the receiving water, for calculating effluent limitations based upon the chronic toxicity criteria or secondary chronic values developed according to ch. NR 105, exceed ¼ of the 7-day Q_{10} or ¼ of the 4-day, 3-year biological flow if the department determines that the discharge has a potential to jeopardize the continued existence of any endangered or threatened species listed under ch. NR 27 and conforming to section 7 of the endangered species act, 16 USC 1536.

SECTION 81. NR 106.06(4)(c)7 to 11 are created to read:

NR 106.06(4)(c)7. Following the determinations under subds. 1. to 3., the value of Q_s of the receiving water for calculating effluent limitations based upon the wildlife criteria or secondary values developed according to ch. NR 105 shall be determined on a case-by-case basis. In no case may the Q_s exceed the average minimum 90-day flow which occurs once in 10 years (90-day Q_{10}) or if the 90-day Q_{10} flow is not available, the

average minimum 30-day flow which occurs once in 5 years (30-day Q_5) or 85% of the average minimum 7-day flow which occurs once in 2 years (7-day Q_2).

8. If the requirements of subds. 2. and 3. are not satisfied, the department shall notify the permittee and identify the deficiencies and allow additional time, if necessary, to complete the demonstration. Except as provided in subd. 12, if the demonstration cannot be completed satisfactorily, the value of Q_s of the receiving water for calculating effluent limitations based upon the wildlife criteria specified in s. NR 105.07 shall equal ¼ of the 90-day Q_{10} or ¼ of the 30-day Q_5 or ¼ of 85% of the 7-day Q_2. In no case may the value of Q_s of the receiving water, for calculating effluent limitations based upon the wildlife criteria or secondary values developed according to ch. NR 105, exceed ¼ of the 90-day Q_{10} or ¼ of the 30-day Q_5 or ¼ of 85% of the 7-day Q_2 if the department determines that the discharge has a potential to jeopardize the continued existence of any endangered or threatened species listed under ch. NR 27 and conforming to section 7 of the endangered species act, 16 USC 1536.

9. Except as provided in subd. 12., following the determinations under subds. 1. to 3., the value of Q_s of the receiving water for calculating effluent limitations based upon the human cancer criteria, human threshold criteria or secondary values developed according to ch. NR 105 shall be determined on a case-by-case basis. In no case may Q_s exceed the harmonic mean flow.

10. If the requirements of subds. 2. and 3. are not satisfied, the department shall notify the permittee and identify the deficiencies and allow additional time, if necessary, to complete the demonstration. Subject to subd. 12, if the demonstration cannot be completed satisfactorily, the value of Q_s of the receiving water for calculating effluent limitations based upon the human cancer criteria or secondary values or the human threshold criteria or secondary values specified in ch. NR 105 shall equal ¼ of the harmonic mean flow.

11. Except as provided in subd. 12., the value of Q_s shall equal the mean annual flow of the receiving water for calculating effluent limitations based upon the taste and odor criteria as specified in ch. NR 102.

SECTION 82. NR 106.06(4)(c)12. and (d)1. are amended to read:

NR 106.06(4)(c)12. Q_s may be reduced from those values calculated in subd. ~~8.~~ 9., 10. and 11., whenever the department determines such discharges may directly affect public drinking water supplies.

(d) *Effluent flows (Q_e).* 1. For dischargers subject to ch. NR 210 and which discharge for 24 hours per day on a year-round basis, Q_e shall equal the ~~average day design flow rate~~ maximum effluent flow, expressed as a daily average, that is anticipated to occur for 12 continuous months during the design life of the treatment facility unless it is demonstrated to the department that such a design flow rate is not representative of projected flows at the facility.

SECTION 83. NR 106.06(4)(d)2. is created to read:

NR 106.06(4)(d)2. For all other dischargers not subject to ch. NR 210, Q_e shall equal either subd. 2.a. or b. for effluent limitations based on aquatic life chronic criteria or chronic secondary values, and shall equal either subd. 2.a. or c. for effluent limitations based on wildlife, human threshold, human cancer or taste and odor criteria or secondary values. Whenever calculating Q_e, the department may consider a projected increase in effluent flow that will occur when production is increased or modified, or another wastewater source, including stormwater, is added to an existing wastewater treatment facility. This subdivision does not waive the requirements of ch. NR 207.

a. The maximum effluent flow, expressed as a daily average, that has occurred for 12 continuous months and represents normal operations; or

b. The maximum effluent flow, expressed as a daily average, that has occurred for 7 continuous days and represents normal operations; or

c. The maximum effluent flow, expressed as a daily average, that has occurred for 30 continuous days and represents normal operations.

SECTION 84. NR 106.06 (4)(e)1. is amended to read:

NR 106.06(4)(e)1. The department shall determine representative background concentrations of toxic substances on a case-by-case basis using available data on the receiving water or similar waterbodies in the state, including acceptable and available caged or resident fish tissue data, available or projected pollutant loading data, and best professional judgment.

SECTION 85. NR 106.06(4)(e)3. is created to read:

NR 106.06(4)(e)3. When evaluating background concentration data, commonly accepted statistical techniques shall be used to evaluate data sets consisting of values both above and below the level of detection. When all of the acceptable available data in a data set category, such as water column, caged or resident fish tissue, are below the level of detection for a pollutant, then all the data for that pollutant in that data set shall be assumed to be zero.

SECTION 86. NR 106.06(5)(a)4. is created to read:

NR 106.06(5)(a)4. The receiving water value of the water quality parameter shall be used to determine the effluent limitation. The receiving water value may be modified to account for the mixture of the receiving and effluent flows when any of the following conditions occur:

a. When the value of the water quality parameter in the effluent is significantly greater than or less than the value in the receiving water;

b. When the effluent flow is relatively large in comparison to the receiving water flow used in the calculation of the effluent; or

c. When, as a result of demonstrated or measured physical, chemical or biological reactions, the value of the water quality parameter, after mixing of the receiving water and the effluent, is significantly different than the background value of the water quality parameter in the receiving water.

SECTION 87. NR 106.06(6)(title) is created to read:

NR 106.06(6) ALTERNATIVE EFFLUENT LIMITATIONS BASED UPON BACKGROUND CONCENTRATIONS.

SECTION 88. NR 106.06(6)(a) to (c), as renumbered, are amended to read:

NR 106.06(6)(a) Whenever the representative background concentration for a toxic or organoleptic substance in the receiving water is determined to be greater than any applicable water quality standard or criterion or secondary value for that substance and the source of at least 90% of the wastewater is from groundwater or a public drinking water supply, the effluent limitation for that substance without dilution shall be equal to the lowest applicable water quality standard or criterion or secondary value except as provided by ~~subd.~~ 4 par. (b). ~~Facilities subject to ch. NR 210 and which discharge to the same surface water from which the water supply is withdrawn shall be subject to subd. 5.~~

(b) The department may establish limitations greater than the applicable water quality standard or criterion or secondary value for the substance as required by ~~subd. 3. in a range~~ par. (a) up to~~, but not greater than,~~ the representative background concentration of the substance in the receiving water, or an alternate limitation or requirement may be determined according to par. (d). The limitation, or alternate limitation or requirement determined according to par. (d), shall only be increased above the standard or criterion if it is demonstrated to the department that the concentration of the substance in the groundwater or public drinking water supply or other source water at the point of intake exceeds the applicable standard or criterion for that

substance and that reasonable, practical or otherwise required methods are implemented to minimize the addition of the toxic or organoleptic substance to the wastewater. This subdivision shall not apply where groundwater is withdrawn from a location because of noncompliance with the standards contained in ch. NR 140.

(c)1. Whenever the representative background concentration for a toxic or organoleptic substance in the receiving water is determined to be greater than any applicable water quality standard or criteria for that substance and the source of more than 10% of the wastewater for any discharger is from the same receiving water, the effluent limitation for that substance shall, except as provided in subd. 2., equal the representative background toxicant concentration of that substance in the receiving water as determined by the department, or an alternate limitation or requirement may be determined according to par. (d). ~~In the event the discharger's relative contribution to the mass of the toxic or organoleptic substance in the receiving water is negligible in the best professional judgment of the department, the department shall establish an alternate effluent limitation for the discharger. In making this judgment, consideration shall be given to the type of substance being limited, the uses potentially affected and other relevant factors. The alternate effluent limitation shall represent in the judgment of the department, application of the best demonstrated treatment technology reasonably achievable and shall not exceed the effluent limitation which would otherwise be calculated assuming zero background concentration for that substance. The department may require a discharger to monitor background concentrations of substances limited in accordance with this subdivision.~~

SECTION 89. NR 106.06(6)(c)2. and (d) are created to read:

NR 106.06(6)(c)2. The department may establish an effluent limitation more stringent than the representative background concentration when the existing treatment system has a demonstrated and cost-effective ability to achieve regular and consistent compliance with a limitation more stringent than the representative background concentration.

(d) Where appropriate, for effluent limitations determined under pars. (b) and (c), the department may conduct an analysis for a toxic or organoleptic substance which accounts for all sources of the pollutant impacting a waterbody or stream segment. In the event the discharger's relative contribution to the mass of the toxic or organoleptic substance impacting the waterbody or stream segment is negligible in the best professional judgment of the department, and the concentration of the substance in the discharge exceeds the representatiave background concentration of the substance, the department shall establish an alternative effluent limitation for the discharger. In determining whether the discharger's relative contribution to the mass of the substance is negligible, consideration shall be given to the type of substance being limited, the uses of the receiving water potentially affected and other relevant factors. The alternative effluent limitation or other requirement shall represent in the judgment of the department, application of the best demonstrated treatment technology reasonably achievable. An alternative effluent limitation or other requirement may include one or more of the following permit conditions:

1. A numerical limitation for the substance;

2. A monitoring requirement for the substance; or

3. A cost-effective pollutant minimization program for the substance as defined in s. NR 106.04(5).

Note: The analysis which may be conducted to determine the relative contributions of various sources of pollutants discharged to surface waters is functionally equivalent to the type of analysis described in 40 CFR 130.7.

SECTION 90. NR 106.06(6)(e) is amended to read:

NR 106.06(6)(e) The determination of representative background concentrations for toxic or organoleptic substances in ~~subds. 4. and 5.~~ pars. (b) and (c) shall be statistically ($P \leq 0.01$) or otherwise appropriately determined as the reasonably expected maximum background concentration for that substance.

SECTION 91. NR 106.06(7) is created to read:

NR 106.06(7) APPLICABILITY OF WATER QUALITY CRITERIA EXPRESSED AS DISSOLVED CONCENTRATIONS. Effluent limitations may be established in a permit under this subsection based upon the acute and chronic aquatic life toxicity criteria expressed as dissolved concentrations which are determined using the procedures specified in ss. NR 105.05(5) and 105.06(8).

(a) Determine the effluent limitations according to the procedures specified in this chapter using the water quality criteria expressed as total recoverable from tables 1 to 6 in ch. NR 105. Determine the necessity for water quality based effluent limitations according to s. NR 106.05. If the procedures in s. NR 106.05 do not result in the need for effluent limitations based upon the total recoverable criteria, then no limitations shall be established in the permit and there is no further review. If the procedures in s. NR 106.05 do result in the need for effluent limitations based upon the total recoverable criteria, then the limitations shall be established in the permit or the permittee may request that effluent limitations be established based on criteria expressed as dissolved concentrations according to par. (b).

(b) If, following the procedures in par. (a), the permittee requests that effluent limitations be established based on criteria expressed as dissolved concentrations, the department shall determine the effluent limitations according to the procedures specified in this chapter using WQ_{TRAN}, the water quality criterion expressed as a dissolved concentration, and shall determine the necessity for water quality based effluent limitations according to s. NR 106.05. If the procedures in s. NR 106.05 do not result in the need for effluent limitations based upon the criteria expressed as dissolved concentrations, WQ_{TRAN}, then no limitations shall be established in the permit and the monitoring conditions in par. (c)1. shall be included in the permit. If the procedures in s. NR 106.05 do result in the need for effluent limitations based upon the criteria expressed as dissolved concentrations, then the limitation is established in the permit and the requirements in par. (c) apply.

(c) If, following the procedures in par. (b), effluent limitations are established based upon water quality criteria expressed as dissolved concentrations, then the following shall also be included in the permit:

1. Monitoring requirements which may include, but are not limited to, effluent monitoring, monitoring of effluent toxicity, in-stream monitoring for unfiltered and filtered substances which may be limited in the permit, or other monitoring. Testing methods which allow appropriately sensitive detection limits may also be specified.

2. Conditions which require the permittee to document that reasonable steps have been taken to minimize or eliminate the sources of the substances for which effluent limitations expressed as dissolved concentrations have been established in the permit. The documentation may consist of implementation of a formal pre-treatment program, pollution reduction activities, and other documented efforts which are reasonably likely to reduce or eliminate sources of the substance. The documentation shall be submitted as specified in the permit, unless, prior to issuance of the permit, documented source elimination or reduction efforts have occurred. If reasonable steps have not been taken as specified in the permit, the department may establish effluent limitations based upon a water quality criterion expressed as total recoverable concentrations.

(d) The procedures in pars. (a) to (c) may also be used to establish effluent limits based on aquatic life secondary values.

SECTION 92. NR 106.06(11), as renumbered, is amended to read:

NR 106.06(11) OTHER METHODS OF CALCULATION. In lieu of sub. ~~(3)~~ (4), scientifically defensible technical approaches such as calibrated and verified mathematical water quality models developed or adapted for a particular stream, simplified modeling approaches as outlined in "WATER QUALITY ASSESSMENT" (EPA-600/6-82-004), or dynamic methods may be utilized in developing water quality based effluent limitations such that applicable water quality standards specified in chs. NR 102 to 105 are maintained.

SECTION 93. NR 106.07(title) is amended to read:

NR 106.07 APPLICATION OF AND COMPLIANCE WITH WATER QUALITY BASED EFFLUENT LIMITATIONS IN PERMITS.

SECTION 94. NR 106.07(2) to (5) are renumbered 106.07(3) to (6) and, as renumbered, are amended to read:

NR 106.07(3) Except as provided in sub. ~~(3)~~ (4), effluent limitations based on acute toxicity criteria or secondary acute values shall be expressed in permits as daily maximum limitations; effluent limitations based on aquatic life chronic toxicity criteria ~~and final~~ or secondary chronic values shall be expressed in permits as weekly average limitations; and effluent limitations based on ~~all other criteria~~ wildlife, human threshold or human cancer criteria, or secondary values shall be expressed in permits as monthly average limitations.

(4) If, for a substance, the monitoring frequency determined according to sub. (1) is insufficient to allow calculation of a weekly average, then the water quality based effluent limitation for that substance based on aquatic life chronic toxicity criteria or ~~final~~ secondary chronic values ~~shall~~ may be established in a permit as a daily maximum limitation. If, for a substance, the monitoring frequency determined according to sub. (1) is insufficient to allow calculation of a monthly average, then the water quality based effluent limitation for that substance ~~shall~~ may be established in a permit as a daily maximum limitation.

(5) If application of sub. ~~(3)~~ (4) results in multiple daily maximum limitations for a substance, the most stringent of the daily maximum, limitations for that substance shall be established in the permit as the limitation.

(6) When the water quality based effluent limitation for any substance in a permit is less than the limit of detection or the limit of quantitation ~~normally achievable and determined to be appropriate for that substance in the effluent~~, the following conditions shall apply:

(a) The permittee shall perform monitoring required in the permit using an acceptable analytical methodology for that substance in the effluent ~~shall be used to produce~~ which produces the lowest limit of detection and limit of quantitation.

(b) The permittee shall determine the limit of detection and limit of quantitation using a method specified by the department.

(c) Compliance with concentration and mass limitations shall be determined as follows:

~~(a)~~1. When the water quality based effluent limitation is less than the limit of detection, ~~the permit may include conditions which provide that~~ effluent ~~concentrations~~ levels less than the limit of detection ~~or reported as "not detected"~~ are in compliance with the effluent limitation.

~~(b)~~2. When the water quality based effluent limitation is less than the limit of detection, ~~the permit may include conditions which provide that~~ effluent ~~concentrations~~ levels greater than the limit of detection, but less than the limit of quantitation ~~determined to be appropriate for that substance in the effluent,~~ are in compliance with the effluent limitation except when analytically confirmed and statistically confirmed by a sufficient number of analyses of multiple samples and use of appropriate statistical techniques. The department may require in a permit additional monitoring when effluent levels are between the limit of detection and the limit of quantitation.

~~(c)~~3. When the water quality based effluent limitation is greater than the limit of detection, but less than the limit of quantitation ~~determined to be appropriate for that substance in the effluent, the permit may include conditions which provide that~~ effluent ~~concentrations reported as "not detected" or "not quantified"~~ levels less than the limit of detection or less than the limit of quantitation are in compliance with the effluent limitation.

SECTION 95. NR 106.07(2), (6)(d) to (f) and (7) to (9) are created to read:

NR 106.07(2) A chemical specific water quality based effluent limitation that is established according to this chapter shall be expressed in the permit as both a concentration limitation (in units of mg/L or equivalent units) and a mass limitation (in units of kg/day or equivalent units).

(a) For dischargers subject to ch. NR 210, an acute toxicity based concentration limitation that is derived by the procedure in s. NR 106.06 shall be converted to a mass limitation by using the discharger's maximum effluent flow, expressed as a daily average, that is anticipated to occur for 24 continuous hours during the design life of the treatment facility.

(b) For all other dischargers not subject to ch. NR 210, an acute toxicity based concentration limitation that is derived by the procedures in s. NR 106.06 shall be converted to a mass limitation by using the discharger's maximum effluent flow, expressed as a daily average, that has occurred for 24 continuous hours and represents normal operations. When calculating a mass limitation, the department may consider a projected increase in effluent flow that will occur when production is increased or modified, or another wastewater source, including stormwater, is added to an existing wastewater treatment facility. This paragraph does not waive the requirements of ch. NR 207.

(c) An aquatic life chronic, human health or wildlife-based concentration limitation that is determined by the procedures in s. NR 106.06 shall be converted to a mass limitation by using the same effluent flow rate that was used in s. NR 106.06 (4)(d) to calculate the chronic toxicity concentration limitation. Also, see sub. (9) for alternate wet weather limitations.

(d) A chronic toxicity based mass limitation that is determined by the procedures in s. NR 106.11 shall be converted to a concentration limitation by using an effluent flow rate from s. NR 106.06 (4)(d).

Note: The method of allocating the combined allowable load in to s. NR 106.11 does not have to be based on the effluent flow rates specified in s. NR 106.06 (4)(d).

(6)(d) When the water quality based effluent limitation is expressed in the permit as a daily maximum or average mass limitation, compliance is determined according to par. (c) after converting the limit of detection and limit of quantitation to mass values using appropriate conversion factors and the actual daily effluent flow, or actual average effluent flow for the averaging period.

(e) Except as provided in this paragraph, when calculating an average or mass discharge level for determining compliance with an effluent limitation according to the provisions of par. (c), a monitoring result less than the limit of detection may be assigned a value of zero. If the effluent limitation is less than the limit of detection, the department may substitute a value other than zero for results less than the limit of detection, after considering the number of monitoring results that are greater than the limit of detection and if warranted when applying appropriate statistical techniques.

(f) Unless the permittee can demonstrate continuous compliance with the limit, the department shall include a condition in the permit requiring the permittee to develop and implement or update and implement a cost-effective pollutant minimization program as specified in s. NR 106.04(5).

(7) The department may establish a whole effluent toxicity limitation according to s. NR 106.09 as an alternative to a chemical specific water quality-based effluent limitation based on a fish and aquatic life secondary acute or secondary chronic value determined according to ss. NR 105.05(4) and 105.06(6). The alternative whole effluent toxicity limitation shall meet all the following conditions:

1. The fathead minnow (*Pimephales promelas*) or the cladoceran *Ceriodaphnia dubia* were represented in the toxicological database used to generate the secondary value;

2. The permittee has requested the alternative whole effluent toxicity limitation; and

3. Whole effluent toxicity testing required in the permit shall be conducted at a frequency to be determined by the department, but at least once every 3 months during the entire term of the permit.

(8) If the effluent limitation based on a secondary value is established in a permit, the permittee may request that additional time be added to the compliance schedule, according to s. NR 106.17(2), for the permittee to conduct studies, other than studies for site-specific criteria pursuant to s. NR 105.02 (1), that are needed to propose a revision to the secondary value upon which the effluent limitation is based. During this time, the permittee may provide additional data necessary to either refine the secondary value or calculate a water quality criterion.

(9) In addition to the mass limitation calculated under sub. (2)(c), for a discharger subject to ch. NR 210 and which discharges on a year-around basis, the department shall include in the permit an alternative wet weather mass limitation. For purposes of compliance, this alternative wet weather mass limitation shall apply when the mass discharge level exceeds the mass limitation calculated under sub. (2)(c) and when the permittee demonstrates to the satisfaction of the department that the discharge exceedance is caused by and occurs during a wet weather event. For purposes of this subsection, a wet weather event occurs during and immediately following periods of precipitation or snowmelt, including but not limited to rain, sleet, snow, hail or melting snow, during which water from the precipitation, snowmelt or elevated groundwater enters the sewerage system through infiltration or inflow, or both. In calculating this alternative wet weather mass limitation, the department shall use the concentration limit determined by the procedures in s. NR 106.06, the appropriate conversion factor and the appropriate effluent flow given in either par. (a) or (b).

(a) For effluent limitations based on aquatic life chronic toxicity criteria or secondary chronic values, the maximum effluent flow, expressed as a daily average, that is anticipated to occur for 7 continuous days during the design life of the treatment facility.

(b) For effluent limitations based on wildlife, human threshold or human cancer criteria or secondary values, or taste and odor criteria, the maximum effluent flow, expressed as a daily average, that is anticipated to occur for 30 continuous days during the design life of the treatment facility.

SECTION 96. NR 106.08(title) and (1) are amended to read:

NR 106.08 DETERMINATION OF THE NECESSITY FOR WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS AND LIMITATIONS. (1)(title) GENERAL. The department shall establish whole effluent toxicity testing requirements and limitations whenever necessary to meet applicable water quality standards as specified in chs. NR 102 to 105 as measured by exposure of aquatic organisms to an effluent ~~or~~ and specified effluent dilutions. When considering the necessity ~~of~~ for whole effluent toxicity testing requirements and limitations, the department shall consider in-stream biosurvey data and data from ambient toxicity analyses, whenever such data are available.

SECTION 97. NR 106.08(2)(title), (3)(title), (4)(title) and (5) are created to read

NR 106.08(2)(title) DETERMINATION OF NECESSITY.

(3)(title) NO REPRESENTATIVE DATA.

(4)(title) OTHER CONSIDERATIONS.

(5) REASONABLE POTENTIAL TO RECEIVE AN ACUTE OR CHRONIC WHOLE EFFLUENT TOXICITY LIMIT. (a) General. Whole effluent toxicity limits are established in a permit according to s. NR 106.09 whenever representative, facility-specific whole effluent toxicity data demonstrate that the effluent is or may be discharged at a level that will cause, have the potential to cause, or contribute to an excursion of a water quality standard. In evaluating the potential of a water quality standard to be exceeded, a reasonable potential factor (RPF) shall be calculated for a discharger with 5 or more representative toxicity tests according to par. (b). Whole effluent toxicity limits shall be imposed in a WPDES permit whenever the RPF calculated according to par. (b) exceeds 0.3. Whole effluent toxicity limits may be imposed, on a case-by-case basis,

whenever facility-specific whole effluent toxicity test data indicate toxicity to aquatic life as determined in s. NR 106.09. Whole effluent toxicity limits may also be imposed in the absence of facility-specific whole effluent toxicity test data, on a case by-case-basis, whenever facility-specific or site-specific data or conditions indicate toxicity to aquatic life that is attributable to the discharger.

(b) Reasonable potential factor. The percentage of failures and the severity of those failures for the most sensitive species shall be used to determine when a whole effluent toxicity limit is established in a permit.

1. When a zone of initial dilution has not been approved by the department, a RPF for acute toxicity shall be calculated as follows for toxicity test data with a calculated LC_{50}:

RPF = Geometric Mean TU_a x Failure Rate

Where: Failure Rate = (Representative Tests Failed/Representative Tests Conducted)

2. When a zone of initial dilution has not been approved by the department, a RPF for acute toxicity shall be calculated as follows for toxicity test data without a calculated LC_{50}:

RPF = Geometric Mean S x Failure Rate

Where: $S = (50 \div X)^{1/2}$

Where: X = 50 if the percent survival in 100% effluent is greater than or equal to 50%,
X = 5 if the percent survival in 100% effluent is less than or equal to 5%,
X = the percent survival in 100% effluent when the percent survival is less than 50% and greater than 5%.

Failure Rate = (Representative Tests Failed/Representative Tests Conducted)

3. When a zone of initial dilution has been approved by the department, according to s. NR 106.06(3)(c), a RPF for acute toxicity shall be calculated as follows:

RPF = Failure Rate

Where: Failure Rate = (Representative Tests Failed/Representative Tests Conducted)

4. The RPF for chronic toxicity shall be calculated as follows:

RPF = Geometric Mean of rTU_c values x Failure Rate

Where: $rTU_c = IWC/IC_{25}$

If an IC_{25} is not available for a given toxicity test, a NOEC value may be used.

Failure Rate = (Representative Tests Failed/Representative Tests Conducted)

(c) Representative data. Toxicity test data available to the department shall be considered representative when those data meet the following conditions:

1. Data are representative of normal discharge conditions;

2. Data were produced by a lab certified or registered under ch. NR 149;

3. Data were produced from toxicity test procedures specified in the WPDES permit;

4. Data were produced from toxicity tests that met all applicable quality assurance/quality control requirements specified in the WPDES permit; and

5. Data represent the geometric mean of all whole effluent toxicity test failures for the most sensitive species.

(d) Use of other data when determining reasonable potential. Data from toxicity tests not required in a WPDES permit and other empirical data may be considered when making judgments regarding reasonable potential. This may include data from split samples, toxicity testing evaluations, screening tests, single species tests and other information.

SECTION 98. NR 106.09(title) is amended to read:

NR 106.09(title) WHOLE EFFLUENT TOXICITY DATA EVALUATION AND LIMITATIONS.
(1)(title) DATA EVALUATION.

SECTION 99. NR 106.09(1)(a), (b), (c)(intro.) and 2. and (2) are renumbered NR 106.09(2)(a) to (c) and (3) and (2)(title), (b) and (c) and (3)(title), (a), (b)(intro.) and 1., as renumbered are amended to read:

NR 106.09(2)(title) ACUTE WHOLE EFFLUENT TOXICITY.

(b) To assure compliance with par. (a), ~~an~~ a whole effluent toxicity test, ~~as discharged and without dilution, shall~~ may not ~~be lethal or cause immobilization to more than 50% of the test organism population~~ produce a statistically valid LC_{50} less than 100% with the following taxa-specific exposure periods:

1. 48 hours for aquatic invertebrate organisms (including *Ceriodaphnia dubia)*;

2. 96 hours for aquatic vertebrate organisms (including fathead minnows (*Pimephales promelas*));

3. Any other exposure period deemed appropriate by the department for ~~the~~ a specific test organism.

(c) If a zone of initial dilution is determined appropriate in accordance with the provisions of s. NR 106.06(3)(c), whole effluent acute toxicity limitations determined by this subsection shall be adjusted such that the effluent meets ~~either of~~ the following ~~conditions:~~ condition. The adjustment shall insure that

~~2. After~~ after dilution of the effluent with the receiving water at a concentration equal to 3.3 times the percent dilution value calculated through application of the zone of initial dilution, the test solution of effluent and receiving water ~~shall not be lethal to more than 50% of the test organism population~~ produce a statistically valid LC_{50} less than 3.3 times the percent dilution value determined through application of the zone of initial dilution with the exposure periods as provided in par. (b).

(3)(title) CHRONIC WHOLE EFFLUENT TOXICITY. (a) The department shall establish chronic whole effluent toxicity limitations to ensure that ~~unauthorized~~ concentrations of substances are not discharged from a point source that alone or in combination with other materials present are toxic to fish or other aquatic life as required by s. NR 102.04(4)(d).

(b)(intro.) To assure compliance with par. (a), an effluent, after dilution with an appropriate allowable quantity of receiving water flow equivalent to that provided by receiving water flows specified in s. NR 106.06~~(3)~~ (4)(c) or implied in s. NR 106.06~~(3)~~ (4)(b)2., ~~shall~~ may not cause a significant adverse effect, as determined by subds. 1. and 2., to a test organism population when compared to an appropriate control.

1. Using statistical interpretation methods appropriate to the toxicity test protocol, an adverse effect will be determined to be significant if ~~$P \leq 0.05$~~ the statistically derived IC_{25}, from the whole effluent toxicity test, is less than the calculated IWC.

SECTION 100. NR 106.09(1)(c)1. is repealed.

SECTION 101. NR 106.09(1) is created to read:

NR 106.09(1) DATA EVALUATION. Data evaluation procedures are specified in the "State of Wisconsin Aquatic Life Toxicity Testing Manual, 1st Edition", Wisconsin Department of Natural Resources, 1996. The "Aquatic Life Testing Methods Manual, 1st Edition (1996) is incorporated by reference. In the event of a WET test failure, facility specific requirements shall be established in the WPDES permit which specify required follow-up actions.

Note: This publication is available at the office of the department of natural resources, the secretary of state and the revisor of statutes. Copies are available from the Department of Natural Rsources, Bureau of Integrated Science Services, P.O. Box 7921, Madison, WI 53707

SECTION 102. NR 106.09(2)(d) and (e) are created to read:

NR 106.09(2)(d) If, in the judgment of the department, the statistical interpretation methods used to test for LC_{50} is not appropriate for a specific data set, empirical interpretation methods may be used to determine the significance of an effect.

(e) Compliance with an acute whole effluent toxicity water quality based limitation shall be determined as follows:

1. For dischargers without an approved zone of initial dilution, a TU_a of 1.0 may not be exceeded.

2. For dischargers with an approved zone of initial dilution determined according to s. NR 106.06(3)(c), a TU_a of X may not be exceeded.

Where: $X = 100 \div (3.3 \times \text{Dilution Factor})$

Dilution Factor = The Approved Zone of Initial Dilution Concentration

SECTION 103. NR 106.09(3)(c) is created to read:

NR 106.09(3)(c) Compliance with a chronic whole effluent toxicity water quality based limitation shall be determined as a calculated rTU_c less than or equal to 1.0.

SECTION 104. NR 106.10(1)(a) and (b) are amended to read:

NR 106.10(1)(a) If at least one 48-hour LC_{50} or EC_{50} value is available for ~~daphnia magna~~ *Daphnia magna or Ceriodaphnia dubia* and at least one 96-hour LC_{50} or EC_{50} value is available for either fathead minnow, rainbow trout or bluegill, the geometric mean LC_{50} or EC_{50} for each of these species shall be divided by 5 if rainbow trout are represented in the data base or divided by 10 if rainbow trout are not represented in the data base. The limitation for purposes of this section shall be equal to the lowest resultant value. A limitation can be calculated for an additive only if both LC_{50} and EC_{50} data for ~~daphnia magna~~ at least one of the invertebrate species and at least one of the fish species listed above are available.

(b) Effluent limitations based on chronic toxicity to aquatic life shall be established using the procedures described in this paragraph for additives whenever chronic toxicity criteria are not available from s. NR 105.06. The calculation of limitations shall be in accordance with the requirements of s. NR 106.06 ~~(3)~~(4)(b). In this calculation, the water quality criterion concentration shall be equal to the final acute value for that additive as provided in s. NR 105.05, or the effluent limitation as determined in par. (a), divided by the geometric mean of all the vertebrate and invertebrate species mean acute-chronic ratios determined in accordance with s. NR 105.06 (5) for that additive. A water quality criterion concentration may be calculated for an additive only if a final acute value, as provided in s. NR 105.05 or an effluent limitation as determined in par. (a), and an acute-chronic ratio for a vertebrate species and an acute-chronic ratio for an invertebrate species are available.

SECTION 105. NR 106.10(1)(d) is created to read:

NR 106.10(1)(d) Regardless of the results of the analysis conducted under this section, the department may, whenever determined necessary, require whole effluent toxicity testing for a point source discharge.

SECTION 106. NR 106.10(2) is amended to read:

NR 106.10(2) INTERMITTENT DISCHARGES. Effluent limitations derived as specified in s. NR 106.06 ~~(2)~~(3) and ~~(3)~~(4) for substances which rapidly degrade and which are discharged for less than 24 hours per day shall be calculated as specified in those subsections, unless the discharger demonstrates to the department that, as a result of the duration and frequency of the discharge, adverse effects will not occur when limitations are increased.

SECTION 107. NR 106.11 is amended to read:

NR 106.11 MULTIPLE DISCHARGES. Whenever the department determines that more than one discharge may be affecting the water quality of the same receiving water for one or more substances, ~~a total maximum load may be calculated and the~~ the provisions of this chapter shall be used to calculate the combined allowable load from the discharges. The resultant combined allowable load shall be divided among the various discharges using an allocation method based on site-specific considerations. Whenever the department makes a determination under this section, the department shall notify all permittees who may be affecting the water quality of the same receiving water of the determination and any limitations developed under this section. Permittees shall be given the opportunity to comment to the department on any determination made under this section.

SECTION 108. NR 106.14 is renumbered NR 106.14(1) and amended to read:

NR 106.14 ANALYTICAL METHODS AND LABORATORY REQUIREMENTS. (1) Methods used for analysis of samples shall be those specified in ch. NR 219 unless alternative methods are specified in the WPDES discharge permits. Where more than one approved analytical method for a pollutant exists, the department may specify in the permit which method shall be used.

SECTION 109. NR 106.14(2) and (3) are created to read:

NR 106.14(2) The permittee shall submit, with all monitoring results, appropriate quality control information, as specified by the department.

(3) The permittee shall report numerical values for all monitoring results greater than the limit of detection, as determined by a method specified by the department, unless analyte-specific instructions in the WPDES permit specify otherwise. The permittee shall appropriately identify all results greater than the limit of detection but less than the limit of quantitation.

SECTION 110. NR 106.16 and 106.17 are created to read:

NR 106.16 ADDITIVITY OF DIOXINS AND FURANS. (1) The 2,3,7,8-TCDD toxicity equivalence concentration in effluent shall be used when developing waste load allocations and for purposes of establishing water quality based effluent limits.

(1) For the chlorinated dibenzo-p-dioxins (CDDs) listed in Tables 7, 8 and 9 in ch. NR 105, the potential adverse additive effects of all dioxin (CDD) and chlorinated dibenzofuran (CDF) congeners in effluents shall be accounted for as specified in this section.

(2) The Toxicity Equivalency Factors (TEFs) in Table 1 and Bioaccumulation Equivalency Factors (BEFs) in Table 2 shall be used when calculating a 2,3,7,8-TCDD toxicity equivalence concentration in effluent to be used when implementing both human health noncancer and cancer criteria. The chemical concentration of

each CDD and CDF in effluent shall be converted to a 2,3,7,8-TCDD toxicity equivalence concentration in effluent by using the following equation:

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

where:

$(TEC)_{tcdd}$ = 2,3,7,8-TCDD toxicity equivalence concentration in effluent

$(C)_x$ = concentration of total chemical x in effluent

$(TEF)_x$ = TCDD toxicity equivalency factor for x from table 1

$(BEF)_x$ = TCDD bioaccumulation equivalency factor for x from table 2

Table 1
Toxicity Equivalency Factors for CDDS and CDFs

Congener	TEF
2,3,7,8-TCDD	1.0
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
OCDD	0.001
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDF	0.001

Table 2

Bioaccumulation Equivalency Factors for CDDs and CDFs

Congener	BEF
2,3,7,8-TCDD	1.0
1,2,3,7,8-PeCDD	0.9
1,2,3,4,7,8-HxCDD	0.3
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.05
OCDD	0.01
2,3,7,8-TCDF	0.8
1,2,3,7,8-PeCDF	0.2
2,3,4,7,8-PeCDF	1.6
1,2,3,4,7,8-HxCDF	0.08
1,2,3,6,7,8-HxCDF	0.2
2,3,4,6,7,8-HxCDF	0.7
1,2,3,7,8,9-HxCDF	0.6
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,7,8,9-HpCDF	0.4
OCDF	0.02

NR 106.17 SCHEDULES FOR COMPLIANCE. (1) Any point source which has not received a WPDES permit from the department prior to March 23, 1997 or which commenced construction after that date may not receive a schedule for compliance to meet an effluent limitation that is established under the provisions of this chapter. The department may allow a brief period, not to exceed 90 days from the beginning of discharge, for the discharger to correct pollution control equipment start-up problems.

(2) A reissued or modified permit may include a schedule for compliance with new or more stringent effluent limitations that are established by this chapter. The schedule for compliance shall meet the following conditions:

(a) Be as short as reasonably possible;

(b) May not extend beyond 5 years from the date that the permit is reissued or modified to include the new or more stringent effluent limitation, except as provided in par. (c);

(c) If the effluent limitation is based on a secondary value, the compliance schedule may allow the permittee additional time to conduct studies, other than those for site-specific criteria developed under s. NR 105.02 (1), that are needed to propose a revision to the secondary value upon which the effluent limitation is based. In no case may the compliance schedule for an effluent limitation that is based on a secondary value extend beyond 7 years from the date that the permit is reissued or modified to include the effluent limitation;

(d) May not allow more than one year between interim compliance dates;

(e) May require the permittee to evaluate pollution and waste minimization measures as a means for complying with the effluent limitation; and

(f) May extend beyond the expiration date of the permit if an interim permit limit which is effective upon the permit's expiration date is included in the permit.

Note: An interim permit limit is not necessarily a numerical effluent limitation.

SECTION 111. NR 207.01 is amended to read:

NR 207.01 PURPOSE AND APPLICABILITY. (1) PURPOSE. The purpose of this chapter is to establish implementation procedures for the antidegradation policy in s. NR 102.05 (1) (a). This chapter sets procedures applicable to proposed new or increased discharges to outstanding resource waters, exceptional resource waters, Great Lakes system waters, fish and aquatic life waters, and waters listed in tables 3 through 8 in ss. NR 104.05 to 104.10.

SECTION 112. NR 207.02(5) and (6)(b) are amended to read:

NR 207.02(5) "Great Lakes ~~waters~~ system" means any surface water in s. NR 102.12 (1).

(6)(b) ~~Increased~~ Except as provided in par. (c), increased discharge does not include the initial imposition of effluent limitations for substances which were in a previous discharge but which had not been limited in a prior or the current permit unless the initial imposition of effluent limitations occurs due to a changed discharge location, other than a change in location necessary to accommodate a mixing zone as provided for in ch. NR 106.

SECTION 113. NR 207.02(6)(c) is created to read:

NR 207.02(6)(c) For discharges of bioaccumulative chemicals of concern (BCCs), defined in s. NR 105.03(9), to the Great Lakes system, increased discharge means:

1. An increased discharge as defined in par. (a);

2. The initial imposition of an effluent limitation for a BCC that occurs due to an actual or expected increase in loading of the BCC; and

3. Any actual or expected increase in loading of a BCC which is caused by or will be caused by a facility expansion, a process modification, or the connection to an existing public or private wastewater treatment system of a substantial source of untreated or pretreated effluent containing BCCs, and which requires notification to the department pursuant to s. NR 205.07(2)(a) or (3)(c) or (d). Under this subdivision, increased discharge does not include any increase in the loading of BCCs that is caused by normal operational variability, changes in intake pollutants or increasing the rate or hours of production within the existing production capacity. Normal operational variability includes, for POTWs, any additional wastewater volume within the existing capacity of the POTW from commercial, industrial or residential growth which do not normally contribute substantial quantities of BCCs to the POTW's wastewater flow.

SECTION 114. NR 207.02(12) is amended to read:

NR 207.02(12) "Surface water" means all waters of the state, as designated in ~~s. 144.01(10), 1993 Stats.,~~ 281.01(18), Stats., except groundwater.

SECTION 115. NR 207.03(1) to (7) are renumbered (3) to (9) and NR 207.03(3), (4)(a) and (c) are amended to read:

NR 207.03(3) OUTSTANDING RESOURCE WATERS. If the department determines that a WPDES permit application proposes a new or increased discharge to outstanding resource waters, effluent limitations for substances in the new or increased portion of the discharge will be set equal to the background levels of these substances, upstream of, or adjacent to, the discharge site unless it is determined that for ~~tributaries to~~ Great Lakes system waters, such limitations would result in significant lowering of water quality under s. NR 207.05 (4) (b). Effluent limitations for those substances shall be determined in accordance with s. NR 207.04.

(4)(a) For a proposed new discharge which is needed to prevent or correct either an existing surface or groundwater contamination situation, or a public health problem, water quality based effluent limitations shall be determined in accordance with sub. ~~(4)~~ (6).

(c) For a proposed increased discharge, water quality based effluent limitations for the increased portion of the discharge shall be determined in accordance with sub. ~~(4)~~ (6).

(5)(title) GREAT LAKES SYSTEM. If the department determines that a WPDES permit application proposes a new or increased discharge to the Great Lakes ~~waters~~ system, it shall establish effluent limitations based on the procedures in ss. NR 207.04 and 207.05.

(7)(a)1. Significant lowering of water quality in downstream fish and aquatic life or Great Lakes system waters as determined under s. NR 207.05;

(b)1. A proposed increased discharge would result in significant lowering of water quality of downstream fish and aquatic life waters, exceptional resource waters, or Great Lakes system waters; or

SECTION 116. NR 207.03(1) and (2) are created to read:

NR 207.03(1) GENERAL. When the department promulgates a less stringent criterion for a non-BCC pursuant to s. NR 105.02(2) or revises a secondary value for a non-BCC due to an updated scientific database, any subsequent requests for increased permit limitations based on the revised criterion or secondary value will not be subject to the requirements of this chapter if the following occur:

(a) The department determines that the increased limitations based on the changed criterion or secondary values will still maintain and protect the existing designated uses, and

(b) The receiving water is not an outstanding resource water, an exceptional resource water subject to the requirements of sub. (4)(b), or a water for which sub. (7)(c) applies.

(2) DISSOLVED-BASED METAL LIMITATIONS. If a person requests an increased limitation based on a dissolved metals criterion pursuant to s. NR 106.07(7)(b), the request for an increased limitation will not be subject to the requirements of this chapter if the following occur:

(a) The department determines that the increase limitations based on the changed criterion or secondary value will still maintain and protect the existing designated uses, and

(b) The receiving water is not an outstanding resource water, an exceptional resource water subject to the requirement of sub. (4)(b), or a water for which sub. (7)(c) applies.

SECTION 117. NR 207.04(1)(a)1.a. to d. are renumbered 207.04(1)(a)1.b. and d. to f.

SECTION 118. NR 207.04(1)(a)1.a. and c. are created to read:

NR 207.04(1)(a)1.a. The permittee's discharge equalled or exceeded 85% of any mass permit limitation.

c. The permittee's weekly average discharge equalled or exceeded 85% of a weekly average permit limitation for 4 consecutive weeks.

SECTION 119. NR 207.04(1)(d)1.e. is created to read:

NR 207.04(1)(d)1.e. Use of other pollution minimization alternatives.

SECTION 120. The note following s. NR 207.04(1) is amended to read:

Note: It is the intent of the department that, where possible, an applicant may use applicable information contained in a facility plan approved by the department to meet the requirements of s. NR 207.04 (1) (a)1.a. to ~~(d)~~ f.

SECTION 121. A note following s. NR 207.04(2)(b)4. is created to read:

Note: When assessing existing treatment capabilities, it is the intent of the department to consider projected increases in a permittee's discharge due to a planned water conservation project.

SECTION 122. NR 207.04(2)(c)(intro.), 1. and (d) are amended to read:

NR 207.04(2)(c)(intro.) The department shall use the following procedures to determine water quality based effluent limitations or effluent limitations determined pursuant to chs. NR 200 to 297 as appropriate, for each substance in the proposed new or increased discharge for which the existing levels upstream of, or adjacent to, the discharge site are of better quality than applicable water quality criteria ~~in~~ or secondary values derived according to ch. NR 102, 103 or 105:

1. If there are no applicable pollution control alternatives or alternative discharge locations which meet the conditions of sub. (1) (d) 2 or 3, effluent limitations will be determined for the new or increased portion of the discharge based on applicable procedures and criteria ~~in~~ or secondary values derived according to chs. NR 102, 103, 105 and 106 or based on effluent limitations pursuant to chs. NR 200 to 297, as appropriate.

(d) The department shall determine water quality based effluent limitations using the water quality criteria or secondary values derived according to ~~in~~ ch. NR 102, 103, 104 or 105 for substances in the proposed new or increased discharge whose levels in the receiving water are of lesser quality than the water quality criteria or secondary values for the receiving water upstream of, or adjacent to, the discharge site.

SECTION 123. NR 207.05(1)(b) and (4)(b) are amended to read:

NR 207.06(1)(b) Some other list of substances for which water quality criteria or secondary values have been determined according to ~~in~~ chs. NR 102 to 105, not to exceed 10 parameters, which is determined to be representative of the discharge.

(4)(b) For a discharge to the Great Lakes ~~waters or their tributaries~~ system, the mass loading to the receiving water of any substance in the proposed new or increased discharge having a bioaccumulation factor greater than ~~250~~ 1000 would be increased.

SECTION 124. CROSS-REFERENCE CHANGES. In the sections of the code listed in Column A, the cross-references shown in Column B are changed to the cross-references shown in Column C:

A	B	C
Code Sections	Old Cross-References	New Cross-References
NR 101.01	144.96	299.15
NR 101.03(7)	144.01(6)	299.01(8)
NR 101.03(14)	ch. 147	ch. 283
NR 101.11	147.07(2)	283.21(2)
NR 101.13(4)(b)	147.04(5)	283.13(5)
NR 101.13(4)(c)	147.04(2)	283.13(2)
NR 101.113(5)(a)	147.04(1), (2) or (4)	283.13(1), (2) or (4)
NR 101.13(8)(a)	144.96(3)(cm)1., 2. and 3.	299.15(3)(cm)
NR 102.01(1)	144.025(2)(b)	281.15(2)(b)

A	B	C
Code Sections	Old Cross-References	New Cross-References
NR 102.03(8)	147.04(2)(a)	283.13(2)(a)
NR 102.03(9)	147.04(2)(b)1.	283.13(2)(b)1.
NR 103.01(1)	144.025(2)(b)	281.15
NR 103.05(3)	144.025	281.11, 281.12(1) and 281.15
	147.01	283.001
NR 103.06(1)(b)	chs. 144 and 147	chs. 281, 283, 289 and 291
NR 104.01(1)	147.01(1)(b)	283.001(1)(b)
NR 104.01(3)	147.02	283.31
NR 104.02(2)(a)	147.01(1)(b)	283.001(1)(b)
NR 104.02(4)(b)3.	147.04	283.13
	147.06	283.19
NR 104.02(4)(c)1.	147.02	283.31
NR 104.02(4)(c)2.	147.02	283.31
NR 104.02(4)(c)4.	147.04	283.13
	147.06	283.19
NR 104.04	ch. 147	ch. 283
NR 106.01	147.04(5)	283.13(5)
	144.025(2)(b)	281.15(1)
NR 106.04(1)	147.04	283.13
NR 106.10(1)(intro.)	147.015(12)	283.01(12)
NR 207.02(13)	147.04(5)	283.13(5)

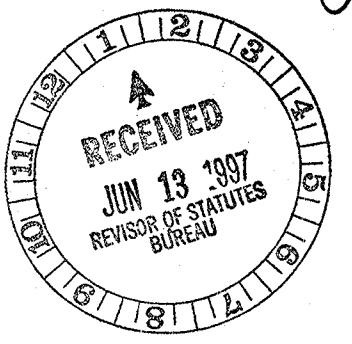
The foregoing rule was approved and adopted by the State of Wisconsin Natural Resources Board on _____.

The rule shall take effect on the first day of the month following publication in the Wisconsin administrative register as provided in s. 227.22(2)(intro.), Stats.

Dated at Madison, Wisconsin June 9, 1997

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

(SEAL)



By George E. Meyer
George E. Meyer, Secretary

WISCONSIN
DEPT. OF NATURAL RESOURCES

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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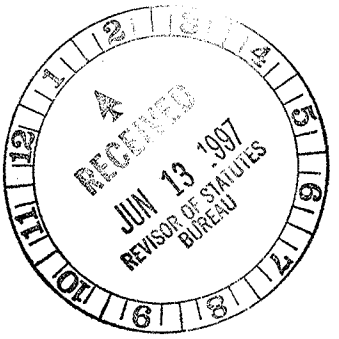
June 9, 1997



Mr. Gary L. Poulson
Assistant Revisor of Statutes
131 West Wilson Street - Suite 800
Madison, WI

Dear Mr. Poulson:

Enclosed are two copies, including one certified copy, of State of Wisconsin Natural Resources Board Order No. WT-50-96. These rules were reviewed by the Assembly Committee on Environment and the Senate Committee on Agriculture and Environmental Resources pursuant to s. 227.19, Stats. Summaries of the final regulatory flexibility analysis and comments of the legislative review committees are also enclosed.

You will note that this order takes effect following publication. Kindly publish it in the Administrative Code accordingly.

Sincerely,

George E. Meyer
Secretary

Enc.