Form 1100-001
(R 9/07)

NATURAL RESOURCES BOARD AGENDA ITEM

Item No. 3.A.2

SUBJECT: Adoption of Board Order WT-35-07, revision of Chapter NR 105 - Surface Water Quality Criteria and Secondary Values for Toxic Substances

FOR: JUNE 2008 **BOARD MEETING**

TO BE PRESENTED BY: Robert Masnado, Chief - Water Evaluation Section, Bureau of Watershed Mgmt.

SUMMARY:

The Department is proposing to update surface water quality criteria for 15 substances and to develop new surface water quality criteria for 2 other substances in ch. NR 105. These updates and additions are the result of two federal initiatives. First, in 2000 U.S. EPA formally objected to aquatic life criteria for several substances in ch. NR 105 because the state criteria were not as protective as the federal criteria. Second, U.S. EPA has developed and updated human health criteria for some additional substances subsequent to the 2000 objections. The Department's proposed updates and additions will ensure federal approval of the criteria for those substances. No changes are proposed in the procedures used for developing criteria in ch. NR 105; only the numerical criteria for some of the substances regulated in that code are being addressed at this time. In October 2007, the Natural Resources Board authorized hearings for the code revision. Three hearings were held during January, 2008. Based on the comments received during the hearing and during the subsequent public comment period, only minor corrections are being made to the rule, none of which are expected to pose regulatory or financial impact on wastewater discharges to surface waters.

RECOMMENDATION: Adopt Board Order WT-35-07, revisions and updates to chapter NR 105, Surface Water Quality Criteria and Secondary Values for Toxic Substances

LIST OF ATTACHED MATERIALS:

No	☐	Fiscal Estimate Required	Yes	☑	Attached
No	☑	Environmental Assessment or Impact Statement Required	Yes	☐	Attached
No	☐	Background Memo	Yes	☑	Attached

APPROVED:

/s/	4/2/08
Bureau Director,	Date
/s/	4/11/08
Administrator,	Date
/s/	6/16/08
Secretary, Matt Frank	Date

cc: Laurie J. Ross - AD/5
Carol Turner - LS/5
Robin Nyffeler - LS/5
Russ Rasmussen - WT/3

CORRESPONDENCE / MEMORANDUM **State of Wisconsin**

DATE:

TO: Natural Resources Board Members

FROM: Matt Frank, Secretary

SUBJECT: Proposed Changes to Chapter NR 105

Purpose of Rule:

Chapter NR 105 contains water quality criteria for toxic substances that would be applied to surface waters. These criteria are based on protection of long- and short-term impacts on fish and other aquatic life, wildlife, and human health. Department staff review Chapter NR 105 periodically and suggest revisions or additions based on new information about toxic substances and their potential impacts.

Why is This Rule Being Proposed?

The Department is proposing to update water quality criteria for 18 toxic substances in ch. NR 105 to be consistent with federal requirements. There are two initiatives that lead to the proposed updates.

In 2000, U.S. EPA formally objected to Wisconsin's aquatic life toxicity criteria for four of the 18 substances. U.S. EPA indicated that Wisconsin's criteria were not as protective as the federal criteria for copper, nickel, selenium and endrin. The proposed changes will ensure federal approval of the criteria for those substances.

In recent years, U.S. EPA has updated water quality criteria for protection of human health for the 14 other substances. Wisconsin's current human health criteria for those substances need to be modified to ensure consistency with the federal criteria. Those substances include 1,3-dichlorobenzene, 1,3-dichloropropene, 3,3'-dichlorobenzidine, antimony, arsenic, cadmium, chlorobenzene, chromium +3, chromium +6, total chromium, cyanide, ethylbenzene, hexachlorocyclopentadiene, and toluene.

Summary of Rule and Who Will Be Impacted:

Of the 18 substances proposed for updating, the most significant change in terms of impacts on dischargers will be for copper. In most, but not all, state waters the proposed criteria are about 15% more stringent than those currently in ch. NR 105, meaning facilities with copper limits already in WPDES permits will likely see their limits become about 15% tighter. This will not result in a significant change to the operation of those facilities, but there may be several permits that will need copper limits that currently do not have them.

Of the 580 municipal and industrial point source discharge permits that have been evaluated for the discharge of toxic substances, 58 currently contain copper limits based on acute criteria and

41 contain limits based on chronic criteria (some permits contain both). Of those 99 limits, 79 are projected to be up to 15% tighter while the others either are relaxed or are unchanged. It is projected that 21 additional limits would be needed in permits (6 acute, 15 chronic), but since the changes in criteria are fairly small, this would mean the discharges were close to needing limits already and therefore this should not be a significant burden.

Other substances have criteria that are proposed to change much more than those for copper, nickel being the primary example with the proposed criteria being about 60% more stringent. However, discharges of nickel are rarely at levels that approach current or proposed criteria. As a result, impacts on permitted discharges will be minimal. It is estimated that of the 580 discharges, only one has a current permit limit that will become more stringent and one more will need a limit for the first time. Of the remaining substances, one permittee will need a selenium limit and none of the others will need to be regulated if future effluent data are consistent with those already submitted as part of WPDES permit applications.

Arsenic is also worthy of mention here because of updated human health criteria. Arsenic is potentially controversial because it is one of several substances with human cancer criteria that are more stringent than the federal drinking water standards**.** For those permittees whose water supply is groundwater containing high levels of arsenic – namely in eastern Wisconsin – compliance with effluent limitations may be difficult if the discharge is directly to Lake Michigan waters. Although the criteria proposed in this rule revision are more stringent the drinking water standards, they are still about 10% less stringent than the criteria currently published in ch. NR 105. Regardless, it is not probable that these changed criteria will make compliance with limitations any easier. Dischargers affected by arsenic limitations may need to request a variance to the water quality standard using the procedures of ss. 283.15, Wis. Stats.

In inland waters, the proposed criteria are about 75% more stringent than in the existing ch. NR 105. The proposed criteria are still much greater than levels found in typical point source discharges and therefore no new permit limits are expected for discharges that aren't directly to the Great Lakes. The proposed criteria were modified following a public workshop held during December of 2006 in Stevens Point.

Has the Board Dealt with this Issue Before?

The last action of the Board regarding NR 105 criteria was to add criteria for ammonia in 2004. The last action regarding any of the substances proposed in this revision was in 1997.

Environmental Analysis:

This is a type III action under Chapter NR 150, Wis. Adm. Code, and neither an environmental impact statement nor an environmental assessment is required.

Small Business Analysis:

The Department has determined that the changes to criteria proposed in this rule package will not have a significant impact on small businesses.

WPDES wastewater discharge permits are issued to large and small industries as well as to municipal wastewater treatment systems that may serve businesses in individual communities. These permits contain numerical effluent limitations for toxic substances when warranted under ch. NR 106, following a comparison of reported discharge concentrations to the limits calculated based on criteria in ch. NR 105.

When permits contain effluent limitations, dischargers are assessed fees under programs administered in ch. NR 101. Those fees are based on the mass of the discharge of toxic substances in the wastewater, with the fee rate based on the calculated effluent limitation. Fee assessments will increase if the mass of discharge increases and/or the effluent limitation decreases, and fees will decrease if the mass of discharge decreases and/or the effluent limitation increases. As a result, typically a decrease in the water quality criterion for a substance will mean a decrease in the effluent limitation for that substance, and in turn this will mean an increase in the amount of ch. NR 101 fees that need to be paid for the discharges of that substance. It should be noted that these fees are only charged to permittees that have limits for those substances in their permits.

When more stringent water quality criteria are proposed for any toxic substance, not only will the fees increase for permits that already contain limits for that substance, but if a limit is triggered for the first time in a permit under ch. NR 106, fees would be assessed for the first time as well. Therefore, changes in water quality criteria could have a direct impact on small (or large) businesses with permits containing limits on the affected substance, as well as an indirect impact on businesses located in communities served by a municipal wastewater treatment plant that holds a permit containing limits on that substance. These impacts may be estimated based on historical fees assessed under the ch. NR 101 program.

Of the 18 substances proposed for criteria revisions in ch. NR 105, it is estimated that no discharge permits will be affected for 14 of those substances. This is because the criteria are high enough and/or the discharge levels are low enough that no effluent limitations will be needed in any permit. **The only substances for which changes in permit limitations are foreseen are arsenic, copper, nickel, and selenium.**

For arsenic, nickel, and selenium, only a very small number of permits will be affected, again because the criteria and limits are high enough and/or the discharge levels are low enough. In those cases, a very small number of permits will even need effluent limitations. Based on current effluent data, it is anticipated that only two permits will need selenium limits, four will need arsenic limits, and six will need nickel limits out of the 580 that have been evaluated for toxic substance discharges as of the end of 2006.

The four permits likely to need arsenic limits (two municipalities, two industries) would actually have their NR 101 fees decrease because the proposed criteria for those sites would increase, although the fee decrease is likely to be small because the changes in criteria are small.

Both of the permittees likely to need selenium limits are for large industries. No small industries are expected to be impacted.

Of the six permits estimated to need nickel limits, only one currently has a limit. For four of the remaining five permits, it is likely that the proposed limits drop out of their permits following

submittal of additional effluent data since they are close to the threshold under which permit limits are required in ch. NR 106. Therefore, eventually it is expected that only two permits in Wisconsin would be affected by the changes in nickel criteria although neither of them are a small business. One would have an increase in fees while the other would be getting limits for the first time. The permit getting the new limit is for a large industry and the one with the current limit is for a municipality in southeastern Wisconsin so it may have an indirect impact on small businesses located within the community.

For copper, of the 580 permits that were evaluated for toxic substance discharges at the end of 2006, 58 of them contain limits based on acute toxicity criteria and 41 contain limits based on chronic toxicity criteria (some permits contain both). Of the 58 with acute toxicity-based limits, 12 will see limits increase, 39 will see limits decrease, 6 won't change after rounding, and 1 will see the limit drop out of the permit. These changes take place because the criteria will increase in hard water areas and decrease in soft water areas. Of the 41 permits with chronic toxicity-based limits, 40 will see limits decrease while the other permit will have no change in limits; this is because the chronic criteria will decrease by about 15% in all waters. Given that the changes in criteria are relatively small, though, it is not expected that significant treatment plant construction or upgrading will be necessary to meet the new limits, beyond anything that has already been undertaken to meet current limits.

In addition, it is estimated that another 6 permits will need acute toxicity-based limits and 15 will need chronic toxicity-based limits for the first time. These initial impositions of limits are not expected to warrant major construction or upgrading either; since the dischargers would be barely over the NR 106 threshold for needing limits, it would not normally be expected that these 21 discharges would need to do much to come into compliance with new limits.

The number of permits that would need new or lower permit limits include 52 municipalities, 26 industries, and 7 public or privately owned treatment facilities (such as military, health care, and golf courses). A small number of the 26 industries may be considered small businesses, and the changes in the municipality limits could have indirect impacts on small businesses within those communities. It is estimated that the decrease in copper limits at these 85 facilities would result in about $9,000 in increased State revenues for environmental fees under the NR 101 fee program.

Three public hearings were held during January, 2008 in Oshkosh, Eau Claire, and Madison. Attached is a summary of the public comments and the Department's responses to those comments.

Action Requested of the Natural Resources Board:

The Department is asking the Board's adoption of the proposed rule changes.

Wisconsin Department of Administration
Division of Executive Budget and Finance
DOA-2048 (R10/2000)

Fiscal Estimate — 2007 Session

☒ Original ☐ Updated	LRB Number	Amendment Number if Applicable
☐ Corrected ☐ Supplemental	Bill Number	Administrative Rule Number WT-35-07

Subject

Revision of water quality criteria for toxic substances in ch. NR 105

Fiscal Effect

State: ☐ No State Fiscal Effect
☐ Indeterminate

Check columns below only if bill makes a direct appropriation or affects a sum sufficient appropriation.

☐ Increase Existing Appropriation ☒ Increase Existing Revenues
☐ Decrease Existing Appropriation ☐ Decrease Existing Revenues
☐ Create New Appropriation

☒ Increase Costs — May be possible to absorb within agency's budget.
☒ Yes ☐ No

☐ Decrease Costs

Local: ☐ No Local Government Costs
☐ Indeterminate

1. ☒ Increase Costs ☐ Permissive ☒ Mandatory
2. ☐ Decrease Costs ☐ Permissive ☐ Mandatory
3. ☐ Increase Revenues ☐ Permissive ☐ Mandatory
4. ☐ Decrease Revenues ☐ Permissive ☐ Mandatory
5. Types of Local Governmental Units Affected: ☐ Towns ☒ Villages ☒ Cities ☐ Counties ☐ Others ☐ School Districts ☐ WTCS Districts

Fund Sources Affected: ☒ GPR ☐ FED ☐ PRO ☐ PRS ☐ SEG ☐ SEG-S

Affected Chapter 20 Appropriations

Assumptions Used in Arriving at Fiscal Estimate

The proposed rule package updates water quality criteria for 18 toxic substances in NR 105 so that they are consistent with federal requirements. Of the 18 substances proposed for updating, the most significant change in terms of fiscal impact will be for copper. In most state waters the proposed copper criteria is about 15% more restrictive than those that are currently stipulated in NR 105, meaning that facilities that are permitted under the Wisconsin Pollutant Discharge Elimination System (WPDES) permit program will likely see their copper limits become about 15% tighter.

STATE FISCAL EFFECT

I. REVENUES

In the past four years, WPDES fees associated with copper limits have ranged between $45,000 to $60,000 per year. Assuming that copper-related dees would increase by 15% under tighter limits, and applying that percentage to the upper range of copper-related fees collected, the Department estimates that the proposed rule pacakge would increase annual WPDES fee collections under NR 101 by a maximum of $9,000 ($60,000 X 15%).

The Department estimates that the proposed rule changes for the remaining 17 toxic substances will have a minimal impact on WPDES fee collections.

COSTS

A minimal amount of DNR staff time will be required to implement the proposed rule changes.

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Long-Range Fiscal Implications

Revenues that would be generated by the proposed rule package will likely decrease in subsequent fiscal years as more and more permittees come into compliance with the new discharge limits.

Prepared By:	Telephone No.	Agency
Joe Polasek	266-2794	Department of Natural Resources
Authorized Signature	Telephone No.	Date (mm/dd/ccyy)
	266-2794	

Fiscal Estimate — 2007 Session

Page 2 Assumptions Narrative Continued

LRB Number	Amendment Number if Applicable
Bill Number	Administrative Rule Number WT-35-07

Assumptions Used in Arriving at Fiscal Estimate – Continued

LOCAL GOVERNMENT AND PRIVATE SECTOR EFFECTS

The proposed rule changes would impact both local government and private sector facilities that are permitted under WPDES; however, these changes are not expected to require major construction projects or other significant upgrades in order for those facilities to come into compliance with the new limits.

Wisconsin Department of Administration
Division of Executive Budget and Finance
DOA-2047 (R10/2000)

Fiscal Estimate Worksheet — 2007 Session

Detailed Estimate of Annual Fiscal Effect

☒ Original ☐ Updated	LRB Number	Amendment Number if Applicable
☐ Corrected ☐ Supplemental	Bill Number	Administrative Rule Number WT-35-07

Subject

Revision of water quality criteria for toxic substances in NR 105.

One-time Costs or Revenue Impacts for State and/or Local Government (do not include in annualized fiscal effect):

Annualized Costs:	Annualized Fiscal Impact on State Funds from:	
A. State Costs by Category	Increased Costs	Decreased Costs
State Operations — Salaries and Fringes	$	$ -
(FTE Position Changes)	(FTE)	(- FTE)
State Operations — Other Costs		-
Local Assistance		-
Aids to Individuals or Organizations		-
Total State Costs by Category	$	$ -
B. State Costs by Source of Funds	Increased Costs	Decreased Costs
GPR	$	$ -
FED		-
PRO/PRS		-
SEG/SEG-S		-
State Revenues — Complete this only when proposal will increase or decrease state revenues (e.g., tax increase, decrease in license fee, etc.)	Increased Revenue	Decreased Revenue
GPR Taxes	$	$ -
GPR Earned	9,000	-
FED		-
PRO/PRS		-
SEG/SEG-S		-
Total State Revenues	$ 9,000	$ -

Net Annualized Fiscal Impact

	State	Local
Net Change in Costs	$	$
Net Change in Revenues	$ 9,000	$

Prepared By:	Telephone No.	Agency
Joe Polasek	266-2794	Department of Natural Resources
Authorized Signature	Telephone No.	Date (mm/dd/ccyy)
	266-2794	

Response to Comments
2007 Public Hearings

Proposed Revisions to
Numerical Surface Water Quality Criteria
NR 105, Wisconsin Administrative Code

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All of the Wisconsin Legislative Council comments were addressed. Changes in the rule analysis were made to accommodate those comments.

Table 2 – Acute Toxicity Criteria for Substances With Toxicity Related to Water Quality

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.05. The criteria were developed for the protection of aquatic organisms from short-term exposures to toxic substances. The criteria in Table 2 are variable based on the hardness and/or pH of the surface water.

No public comments were received specifically involving the numerical criteria proposed for addition or revision in Table 2, but two general comments regarding copper are addressed later in this summary.

Table 5 – Chronic Toxicity Criteria for Substances With Toxicity Unrelated to Water Quality

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.06. The criteria were developed for the protection of aquatic organisms from long-term exposures to toxic substances.

Public Comment
(Betsy Lawton, Midwest Environmental Advocates, and Linda Holst, USEPA Region V) Selenium

- The proposed 5 ug/L criterion should also apply to waters classified as Warm Water Forage Communities in order to meet the goals of the Federal Clean Water Act for protection and propagation of a balanced fish and aquatic life community.

Response: The study that was used by the U.S. Environmental Protection Agency (EPA) as a basis for the 5 ug/L criterion involved testing of rainbow trout and bluegills in a North Carolina lake. The proposed revision only applied the 5 ug/L criterion to waters classified as Coldwater Communities or Warm Water Sportfish Communities because those two fish species are considered to be sport fish. However, recent history of development of aquatic life toxicity criteria in ch. NR 105 has typically set Warm Water Forage Community criteria equal to those for Warm Water Sportfish Communities because of the limited amount of toxicity test data available. The proposed code was revised to apply the 5 ug/L criterion to Warm Water Forage Communities as well. This criterion is not expected to have any additional impact on WPDES-permitted dischargers because there are none currently discharging selenium to waters classified for Warm Water Forage Communities.

Public Comment
(Linda Holst, USEPA Region V) Selenium

- The proposed 5 ug/L criterion should also apply to waters classified as Limited Forage Fish and Limited Aquatic Life Communities

Response: As noted in the previous discussion, the criterion was based on exposures of selenium to rainbow trout and bluegill. Those species are not associated with these two use designations. Data on other aquatic organisms were not used by EPA to develop its nationwide freshwater criteria. For discharges of selenium to those waterbodies, effluent limitations will be calculated based on protection of downstream uses where the 5 ug/L criterion is applied, pursuant to s. NR 104.02(5), Wis. Adm. Code.

Subsequent to this comment and the end of the public comment period, the Department has decided to propose selenium criteria for the Limited Forage Fish and Limited Aquatic Life Community classifications. Those criteria are 46.5 ug/L for both, based on the actual criteria calculation procedures currently contained in s. NR 105.06. If it were not for the North Carolina rainbow trout and bluegill studies, criteria for the other classifications would also be calculated this way, but the studies took precedence due to the lower results. Since the studies did not apply to these waterbodies, though, the applicable criteria reverted to the NR 105 approach, thereby warranting the 46.5 ug/L

Forage Fish database, the Limited Aquatic Life criterion was also revised to 0.05 ug/L (from 0.049).

Table 6 – Chronic Toxicity Criteria for Substances With Toxicity Related to Water Quality

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.06. The criteria were developed for the protection of aquatic organisms from long-term exposures to toxic substances. The criteria in Table 2 are variable based on the hardness and/or pH of the surface water.

No public comments were received specifically involving the numerical criteria proposed for addition or revision in Table 6, but two general comments regarding copper are addressed later in this summary.

Table 8 – Human Threshold Criteria

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.08. The criteria were developed for the protection of human health from long-term exposures to non-carcinogens via water and/or fish consumption.

Public Comment

(Betsy Lawton, Midwest Environmental Advocates) 1,2-Dichlorobenzene

- The proposed criteria for waters classified as public water supplies omitted the calculated criteria of 273 ug/L for Cold Water Communities and 446 ug/L for Warm Water Sportfish Communities.

Response: Table 8 was revised to make these corrections. The proposed criteria are lower (more stringent) that the criteria currently contained in Table 8, but these are not expected to have any impact on WPDES-permitted dischargers because this compound has not been found in effluents at levels approaching either set of criteria.

Public Comment

(Linda Holst, USEPA Region V) Ethylbenzene

- The proposed criteria for waters classified as non-public water supplies contained a typographical error. The proposed criterion of 2,620 ug/L for waters classified as Warmwater Sportfish Communities should have been 2,920 ug/L.

Response: Table 8 was revised to make this correction.

Table 9 – Human Cancer Criteria

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.09. The criteria were developed for the protection of human health from long-term exposures to carcinogens via water and/or fish consumption.

No public comments were received specifically involving the numerical criteria proposed for addition or revision in Table 9, but a general comment regarding arsenic is addressed later in this summary.

General Concerns Regarding Compliance Proposed Criteria

Public Comment:

(Abigail Potts, representing the Municipal Environmental Group) Copper and arsenic

- Concern is expressed that the proposed criteria will require municipal wastewater treatment plants to seek more water quality standards variances pursuant to s. 283.15, Stats. Effluents cannot be treated to remove these substances to the levels associated with the revised criteria especially where the substances are present in groundwater sources and/or where municipal water supplies contain arsenic in levels that meet drinking water standards but not surface water standards. The comment requested that the rule contain streamlined variance language for copper and arsenic to reduce additional burdens on the affected communities.

Responses: Several issues need to be addressed that were combined into this single comment. For arsenic, the proposed criteria for waters classified as public water supplies is actually increasing (becoming less stringent) from 0.185 to 0.2 ug/L, so any issues regarding new variance needs due to changes in criteria are irrelevant because any variance requests would already have been made under the current criteria. In fact, the concerns regarding high levels in groundwater could be addressed at the municipalities in question by paired monitoring of intake water and effluent to demonstrate to the Department that there is no net addition as a result of the municipal treatment plant; this approach has already been used at an industry in Sheboygan County to eliminate the need for a permit limit under the current authorities provided in the Wisconsin Administrative Code. No new streamlines variance language was necessary in that case.

On the other hand, the arsenic criterion for waters not classified as public water supplies is decreasing (becoming more stringent) from 50 to 13.3 ug/L. Only six WPDES permittees in the entire state with discharges of arsenic to waters not classified as public water supplies have effluent concentrations in excess of the proposed criterion. In all six cases, there is sufficient dilution available, whether with the receiving water or with another discharger sharing the outfall, that the calculated limits necessary to meet the proposed criteria are not needed in any of the six WPDES permits based on the

implementation procedures in ch. NR 106. Since no permit limits are needed in these situations, there is no need for arsenic-related variances.

For copper, it is estimated that based on currently available effluent data, only 2 industries and about 12 municipalities would likely be seeking variances based on the new criteria. Based on past history, it's likely that these facilities would more likely seek other alternatives that would provide more of a long-term relief solution than a temporary variance to water quality standards. These other options may include doing mixing zone studies to modify the water quality-based effluent limitations using s. NR 106.06(3) or (4) and/or doing receiving water monitoring to justify modified criteria and limits based on dissolved metal fractions using ss. NR 105.05(4) or NR 105.06(6). In addition, it is estimated that another half-dozen or so municipalities have these options available as well as the option of collecting more effluent data to see if limits are necessary based on the 99th percentile value calculation in s. NR 106.05(4).

The question is whether streamlined variance language is needed in the Wisconsin Administrative Code for such a small percentage of around 2,000 facilities currently holding WPDES permits, about a third of which have had to test for toxic substances in discharges to surface waters. Although ch. NR 106 already has what may be considered to be specific streamlined variance language for mercury, chloride, and ammonia, the treatment needs and/or the high profile of those substances outweighs what appears to be an issue for copper that is much more limited in scope. Basically, the situation with copper just doesn't seem as widespread in terms of the number of **new** variances that would be needed based on the proposed criteria.

Therefore, instead of proposing new variance language for arsenic that is clearly not needed, and similar new variance language for copper that would only be needed in a small number of cases, no changes are recommended to chs. NR 105 or 106 at this time, relying instead on the non-variance options already available to permittees and, as a last resort, the water quality stand variance language that is already contained in the State Statutes.

Copper – Biotic Ligand Model

Current Provision: No specific language is contained in the current rule on this issue.

Proposed Revision: No specific language is contained in the proposed rule.

Public Comment:

(Jacqueline Powell, Georgia-Pacific) Copper

- Tables 2 and 6 in the proposed rule should contain revised criteria for copper based on the Biotic Ligand Model pursuant to an EPA criteria document published in 2007. In addition, ch. NR 105 should contain a discussion of why the EPA guidance associated with that document was, or was not, used.

Response: The Biotic Ligand Model is considered to be a site-specific modification to an existing criterion. The 2007 EPA criteria document does not propose a new copper criterion, rather it allows for the use of the Biotic Ligand Model to demonstrate the ability to modify the criterion using site-specific data on a number of different parameters. Those parameters include temperature, pH, dissolved organic carbon, humic acid, calcium, magnesium, potassium, sulfate, chloride, alkalinity, and/or sulfide. Since the levels of those parameters vary at different locations, in different combinations, and at different times throughout the year in Wisconsin, the Department feels it is more appropriate to allow the data to be collected and presented in a way that demonstrates or supports alternative site-specific criteria. The use of site-specific criteria is already allowed pursuant to s. NR 105.02(1), Wis. Adm. Code, and any resulting criteria need to be promulgated in ch. NR 104 on a site-specific basis. Given the varying amount of resources available for the collection of these supporting data that are assumed for either affected dischargers, the State of Wisconsin, or any other interested party, the preferred approach is to allow the data collection and model implementation on a site-specific basis rather than modifying the copper criteria in Tables 2 and/or 6 to account for any statewide modifications. That way, the Model can be considered for other substances as well in the future, not just copper. It should be noted that no objections to this approach/response were raised as part of regular communications between Wisconsin, EPA, and other interested Great Lakes states. No changes were made to the rule in response to this comment.

Summary of people/organizations providing comments:

1. Abigail Potts of the law firm Anderson & Kent, commenting on behalf of the Municipal Environmental Group - Wastewater Division
2. Jacqueline Powell, Senior Environmental Engineer for the Georgia-Pacific Corporation
3. Betsy Lawton, Staff Attorney for Midwest Environmental Advocates
4. Linda Holst, Chief of the Water Quality Branch of the United States Environmental Protection Agency, Region V

A portion of the discussion of comments on Table 5 of the proposed revisions to chapter NR 105 did not print in the original version. Attached is a complete copy of the Table 5 comment summary with the restored print version underlined.

Table 5 – Chronic Toxicity Criteria for Substances With Toxicity Unrelated to Water Quality

Purpose of table: This table summarizes criteria calculated using the database requirements and procedures in s. NR 105.06. The criteria were developed for the protection of aquatic organisms from long-term exposures to toxic substances.

Public Comment
(Betsy Lawton, Midwest Environmental Advocates, and Linda Holst, USEPA Region V) Selenium

- The proposed 5 ug/L criterion should also apply to waters classified as Warm Water Forage Communities in order to meet the goals of the Federal Clean Water Act for protection and propagation of a balanced fish and aquatic life community.

Response: The study that was used by the U.S. Environmental Protection Agency (EPA) as a basis for the 5 ug/L criterion involved testing of rainbow trout and bluegills in a North Carolina lake. The proposed revision only applied the 5 ug/L criterion to waters classified as Coldwater Communities or Warm Water Sportfish Communities because those two fish species are considered to be sport fish. However, recent history of development of aquatic life toxicity criteria in ch. NR 105 has typically set Warm Water Forage Community criteria equal to those for Warm Water Sportfish Communities because of the limited amount of toxicity test data available. The proposed code was revised to apply the 5 ug/L criterion to Warm Water Forage Communities as well. This criterion is not expected to have any additional impact on WPDES-permitted dischargers because there are none currently discharging selenium to waters classified for Warm Water Forage Communities.

Public Comment
(Linda Holst, USEPA Region V) Selenium

- The proposed 5 ug/L criterion should also apply to waters classified as Limited Forage Fish and Limited Aquatic Life Communities

Response: As noted in the previous discussion, the criterion was based on exposures of selenium to rainbow trout and bluegill. Those species are not associated with these two use designations. Data on other aquatic organisms were not used by EPA to develop its nationwide freshwater criteria. For discharges of selenium to those waterbodies, effluent limitations will be calculated based on protection of downstream uses where the 5 ug/L criterion is applied, pursuant to s. NR 104.02(5), Wis. Adm. Code.

Subsequent to this comment and the end of the public comment period, the Department has decided to propose selenium criteria for the Limited Forage Fish and Limited Aquatic Life Community classifications. Those criteria are 46.5 ug/L for both, based on the actual criteria calculation procedures currently contained in s. NR 105.06. If it were not for the North Carolina rainbow trout and bluegill studies, criteria for the other classifications would also be calculated this way, but the studies took precedence due to the lower results. Since the studies did not apply to these waterbodies, though, the applicable criteria reverted to the NR 105 approach, thereby warranting the 46.5 ug/L

criteria. It should be noted that acute criteria were not proposed at this time since they were not contained in the GLWQI; the calculated criteria were so much greater than the 5 and 46.5 ug/L chronic criteria that they would not have controlled any point sources anyway.

Only one facility discharging to a Limited Forage Fish or Limited Aquatic Life waterbody has an effluent concentration in excess of 5 ug/L based on current information; that discharge will be regulated by the 5 ug/L criterion at a downstream location. As a result, the 46.5 ug/L criterion is also not expected to impact any point source discharges.

Public Comment

(Linda Holst, USEPA Region V) Endrin

- The proposed 0.036 ug/L criterion for waters classified as Limited Forage Fish Communities was in error and the correct criterion should be 0.05 ug/L.

Response: The correction was made. In addition, since criteria for waters classified for Limited Aquatic Life are equal to or greater (less stringent) than those for Limited Forage Fish communities because the Limited Aquatic Life database is a subset of the Limited Forage Fish database, the Limited Aquatic Life criterion was also revised to 0.05 ug/L (from 0.049).

ORDER OF THE STATE OF WISCONSIN NATURAL RESOURCES BOARD
AMENDING RULES

The State of Wisconsin Natural Resources Board proposes an order to amend NR 105 Tables 2, 2A, 5, 6, 8, and 9 relating to surface water quality criteria.

WT-35-07

Summary Prepared by the Department of Natural Resources

Statutory Authority: , ss. 227.11(2)(a) and 281.15, Stats.

Statutes Interpreted: s. 281.15, Stats.

Explanation of Agency Authority: In addition to the general authority granted by s. 227.11(2)(a), Stats., to implement and interpret its statutory authority, the Department of Natural Resources has specific authority in ch. 281, Stats., to promulgate rules setting standards of water quality to be applicable to the waters of the State and to implement those standards, as appropriate, under the Water Pollutant Discharge Elimination System (WPDES).

Related statute or rule: ch. 283, Stats., and chs. NR 102, 104 and 106.

Plain Language Analysis: Chapter NR 105 is the principal rule setting water quality criteria and secondary values for toxic substances in surface waters of the State of Wisconsin. Those criteria and values are designed to protect surface waters from potentially toxic levels of chemical compounds, including the consideration of short and long-term impacts on fish and other aquatic life, wildlife, and human health. These criteria and values may be used as a basis for regulating wastewater discharges to surface waters and for justifying monitoring and remedial action (cleanup) activities statewide. This chapter is reviewed and revisions proposed by staff on a regular basis.

Criteria were first developed and included in ch. NR 105 in February of 1989. The code was revised in August of 1997 to update criteria and incorporate procedures in the U.S. Environmental Protection Agency's (U.S. EPA) Great Lakes Water Quality Initiative (GLWQI or GLI), a federal law passed in 1995. Other revisions have taken place since 1989 to modify existing numerical water quality criteria or create new criteria for toxic substances.

The revisions proposed at this time are done, in part, in response to formal actions taken by the U.S. EPA in December of 2000 to object to Wisconsin's water quality criteria for four substances regulated under the GLWQI. In addition, criteria for fourteen other substances are being proposed for revision or addition in response to human health criteria developed by U.S. EPA after 1995.

No revisions are proposed to the methods of calculating numerical water quality criteria, which are also listed in ch. NR 105. Only the numerical criteria themselves are being added or revised at this time. Fifteen (15) of the 124 substances currently addressed in the code are proposed for revision, while 3 new criteria are being added.

New criteria are proposed for the following substances:

- Chronic aquatic life toxicity criteria = Selenium
- Human threshold (non-cancer) criteria = Total chromium (only in waters used for public drinking water supplies)

- Human cancer criteria = 1,3-dichloropropene

Revised criteria that are more restrictive (tighter or more stringent) than those already in ch. NR 105 are proposed for the following substances:

- Acute aquatic life toxicity criteria = Copper (only in softer water areas), and nickel
- Chronic aquatic life toxicity criteria = Copper, nickel, endrin
- Human threshold (non-cancer) criteria = Cadmium, chlorobenzene, hexavalent chromium, cyanide, 1,2-dichlorobenzene, ethylbenzene, hexachlorocyclopentadiene, toluene
- Human cancer criteria = Arsenic (only in waters not used for public drinking water supplies), 3,3'-dichlorobenzidine (only in waters used for public drinking water supplies)

Revised criteria that are less restrictive (looser or less stringent) than those already in ch. NR 105 are proposed for the following substances:

- Acute aquatic life toxicity criteria = Copper (only in harder water areas)
- Human threshold (non-cancer) criteria = Trivalent chromium
- Human cancer criteria = Arsenic (only in waters used for public drinking water supplies), 3,3'-dichlorobenzidine (only in waters not used for public drinking water supplies)

Federal Regulatory Analysis: The formal actions taken by U.S. EPA in 2000 were done because the criteria published in ch. NR 105 in 1997 were determined to be *not as protective as* the federal criteria. To address those concerns, criteria were developed or revised for copper, nickel, selenium, and endrin. The proposed criteria for nickel, selenium, and endrin are identical to federal criteria. The copper criteria are slightly relaxed or less stringent than federal criteria, but in this case a difference is allowable because the federal criteria in the GLWQI are, in part, based on the protection of a sensitive species of fish that is not present in the Great Lakes states or Iowa. The criteria calculation approach in the GLWQI allows for less restrictive criteria based on consideration of resident organisms as long as the approach is followed. In late 2000, before the U.S. EPA actions were formally taken, a representative of that agency approved the calculated criteria that eventually became the proposed revisions to the ch. NR 105 copper criteria.

A critical component in the development of human health criteria in Wisconsin is the fish consumption rate. Because people in the Great Lakes states eat more fish on the average than nationwide as a whole, human health criteria in the Great Lakes states are typically more stringent than federal criteria. The difference in fish consumption rates was considered as part of the 1997 update to ch. NR 105 and appropriately recognizes the differences in consumption rates among the general public and especially tribal populations in Wisconsin. As a result, the proposed human health criteria are considered to be as protective as criteria developed using the GLWQI approach.

Comparison of Criteria in Adjacent States to the Proposed Wisconsin Criteria:

Substance	Illinois	Minnesota	Michigan	Iowa
Copper	MS	Acute = LS, Chronic = EQ in soft water, MS in hard water	MS	LS
Nickel	MS	LS	EQ	EQ
Selenium	EQ	EQ	EQ	EQ
Endrin	EQ	EQ	EQ	EQ
Antimony	NA	MS	NA	LS in PWS, NA in non-PWS

Arsenic	LS	LS in PWS, MS in non-PWS	NA	MS in PWS, LS in non-PWS
Cadmium	NC	LS in PWS, NC in non-PWS	NS	MS in PWS, LS in non-PWS
Chromium, triv.	NC	NC	NA	NA
Chromium, hexav.	NC	NC	NA	LS in PWS, MS in non-PWS
Chromium, total	NA	EQ in PWS	NA	EQ in PWS
Cyanide	NC	NC	NA	LS in PWS, NA in non-PWS
Chlorobenzene	MS	MS	NA	EQ
Ethylbenzene	NA	LS in PWS, MS in non-PWS	NA	LS
Toluene	LS	NC	LS	MS
Hexachlorocyclopentadiene	NC	LS in PWS, NC in non-PWS	NA	LS
3,3'-dichlorobenzidine	MS	NA	NA	MS
1,2-dichlorobenzene	NC	EQ in PWS, NA in non-PWS	NS	EQ in PWS, NA in non-PWS
1,3-dichloropropane	NA	NA	NA	NA

LS = Less stringent than proposed Wisconsin criteria
MS = More stringent than proposed Wisconsin criteria
EQ = Equal to proposed Wisconsin criteria
NC = No corresponding criteria are available because others in that state are more stringent and only the most stringent criteria are published
NA = No criteria available in state rule at this time
PWS = Waters classified as public water supplies in Wisconsin
Non-PWS = Waters not classified as public water supplies in Wisconsin

Summary of Factual Data and Analytical Methodologies: The criteria are calculated in a manner consistent with that already listed in ch. NR 105. This approach is identical to that contained in the GLWQI. No changes are proposed to the calculation approach. New toxicity information is available to supplement the existing databases, and corrections were made to errors that were made in the calculation of the criteria for copper, nickel, and endrin in the existing ch. NR 105. A technical support document can be requested from the Water Evaluation Section of the Department's Bureau of Watershed Management pursuant to Wis. Stats., s. 281.15(2)(e); these documents show how the revised criteria were calculated.

The Department did not take into account any specific economic or social considerations when developing these criteria. The revised criteria were calculated using procedures already present in the Wisconsin Administrative Code and in federal procedures to provide consistency with federal guidelines based on current toxicity information.

Effects on Small Business: The Department has determined that the changes to criteria proposed in this rule package will not have a significant impact on small businesses.

Of the 18 substances proposed for criteria revisions or additions, it is estimated that no WPDES permits will be affected for 14 of those substances. This is because the criteria are high enough and/or the discharge levels are low enough that no effluent limitations will be needed in any WPDES permit for 14 substances.

The only substances for which changes in permit limitations may occur are arsenic, selenium, nickel and copper. For arsenic, selenium and nickel, based on current effluent data, the Department anticipates that there will be no increased ch. NR 101 fees or new permit limits for permitted facilities that are considered small businesses.

For copper, out of 580 permitted facilities that have been evaluated recently for copper discharges, approximately 39 facilities (public and private) may receive lower acute limits, and approximately 40 facilities (public and private) may receive lower chronic limits due to the proposed changes in copper criteria. Since the changes in criteria are relatively small, the Department does not expect that significant treatment plant construction or upgrading will be necessary to meet the revised limits. In addition, it is anticipated that another 6 permits will need acute limits and 15 will need chronic limits for the first time. These initial impositions of limits are not expected to require major construction or upgrading either since discharges will be barely over the level for needing permit limits. These facilities will have to pay increased ch. NR 101 fees, but the costs are not expected to be significant.

In conclusion, due to the proposed changes in criteria, the number of permits that would need new or lower permit limits for copper include 52 municipalities, 26 industries (many of which are not small businesses), and 7 publicly or privately owned facilities (such as military, health care, and golf courses). A few of the 26 industries may be considered small businesses, and the changes in the limits for municipalities may have indirect impacts on small businesses located within those communities, but overall the Department does not expect significant fiscal impacts to small businesses due to the proposed changes. For copper limits, it is estimated that the decrease in copper limits at these 85 facilities will result in approximately $9,000 in increased state revenues for environmental fees under the chapter NR 101 fee program.

These proposed rules do not include any reporting, implementation, compliance or enforcement procedures. All reporting, implementation, compliance or enforcement procedures that may apply to the proposed criteria are found in existing regulations and statutory provisions.

Agency Contact Persons:

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SECTION 1. NR 105 Table 2 is amended to read:

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)

$ATC = e^{(V\ ln\ (hardness)\ +\ ln\ ACI)}$			ATC at Various Hardness (ppm) Levels		
Substance	V	ln ACI	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	-1.9435	12.73	28.18	62.41
Total Recoverable Chromium (+3):					
All Surface Waters	0.819	3.7256	1022	1803	3181
Total Recoverable Copper:					
All Surface Waters	~~0.8561~~	~~-1.1199~~	~~9.29~~	~~16.82~~	~~30.45~~
	0.9436	-1.6036	8.07	15.51	29.84
Total Recoverable Lead:					
All Surface Waters	0.9662	0.2226	54.73	106.92	208.90
Total Recoverable Nickel:					
All Surface Waters	~~1.083~~	~~2.2289~~	~~642.7~~	~~1361~~	~~2434~~
	0.846	2.255	261	469	843
Total Recoverable Zinc:					
All Surface Waters	0.8745	0.7634	65.66	120.4	220.7

Water Quality Parameter: pH

$ATC = e^{(V(pH)\ +\ ln\ ACI)}$			ATC at Various pH (s.u.) Levels		
	V	ln ACI	6.5	7.8	8.8
Pentachlorophenol:					
All Surface Waters	1.0054	-4.877	5.25	19.40	53.01

SECTION 2. NR 105 Table 2A is amended to read:

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~~
		13 - 495
Lead	Hardness (ppm)	12 - 356
Nickel	Hardness (ppm)	~~19 - 157~~
		13 - 268
Zinc	Hardness (ppm)	12 - 333
Pentachlorophenol	pH (s.u.)	6.6 - 8.8

SECTION 3. NR 105 Table 5 is amended to read:

Table 5
Chronic Toxicity Criteria
Using Acute-Chronic Ratios for Substances
With Toxicity Unrelated to Water Quality
(all in ug/L)

Substance	Cold Water	Warm Water Sportfish, and Warm Water Forage ~~and Limited Forage~~	Limited Forage Fish and Limited Aquatic Life
Arsenic (+3)* 1	148	152.2	152.2
Chromium (+6)* 1	10.98	10.98	10.98
Mercury (+2) * 1	0.44	0.44	0.44
Cyanide, free	5.22	11.47	11.47
Chloride	395,000	395,000	395,000
Selenium	5.0	5.0	46.5
Chlorine* 1	7.28	7.28	7.28
Dieldrin	0.055	0.077	0.077

Endrin	~~0.072~~	~~0.072~~	~~0.10~~
	0.036	0.050	0.050
Parathion	0.011	0.011	0.011

Notes: [1] - Criterion listed is applicable to the "total recoverable" form except for chlorine which is applicable to the "total residual" form.

SECTION 4. NR 105 Table 6 is amended to read:

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 $CaCO_3$)

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

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	0.819	1.112	74.88	132.1	233.1
All Others	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~~
	0.8557	-1.6036	5.72	10.35	18.73
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~~
Cold Water, Warm Water Sportfish, Warm Water Forage, and Limited Forage Fish	0.846	0.059	29.0	52.2	93.8

Limited Aquatic Life	0.846	0.4004	40.8	73.4	132.0
Total Recoverable Zinc:					
All Surface Waters	0.8745	0.7634	65.66	120.4	220.7

Water Quality Parameter: pH

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

	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 5. NR 105 Table 8 is amended to read:

Table 8
Human Threshold 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, Lim. Forage, and Warm Water Sport Fish Communities	Cold Water Communities	Limited Aquatic Life
1. Acrolein	7.2	3.4	15	4.4	2800
2. Antimony[2]	~~10~~	~~10~~	~~2200~~	~~2200~~	~~2200~~
	5.6	5.6	373	373	1,120
3. Benzene[2]	5	5	610	260	4,000
4. Bis(2-chloroisopropyl)ether	1,100	1,100	55,000	34,000	220,000
5. Cadmium[2]	~~10~~	~~10~~	~~1200~~	~~1200~~	~~2800~~
	4.4	4.4	370	370	880
6. *Chlordane (ng/L)	2.4	0.70	2.4	0.70	310,000
7. Chlorobenzene[2]	100	100	~~4900~~	~~1600~~	~~110000~~
			1,210	400	28,000
8. Chromium, total [2]	100	100			

9. Chromium (+3)	~~28000~~	~~28000~~	~~2500000~~	~~2500000~~	~~5600000~~
	41,750	41,750	3,818,000	3,818,000	8,400,000
10. Chromium (+6)	~~140~~	~~140~~	~~13000~~	~~13000~~	~~28000~~
	83.5	83.5	7,636	7,636	16,800
11. Cyanide, Total[12]	~~200~~	~~200~~	~~40000~~	~~40000~~	~~120000~~
	138.6	138.6	9,300	9,300	28,000
12. *4,4-DDT (ng/L)	3.0	0.88	3.0	0.88	2800000
13. 1,2-Dichlorobenzene[2]	~~600~~	~~600~~	~~6400~~	~~1900~~	~~500000~~
	446	273	1509	481	126000
14. 1,3-Dichlorobenzene	1400	710	3300	1000	500,000
15. cis-1,2-Dichloroethene[2]	70	70	14,000	9,000	56,000
16. trans-1,2-Dichloroethene[2]	100	100	24,000	13,000	110,000
17. Dichloromethane[2] (methylene chloride)	5	5	95,000	72,000	328,000
18. 2,4-Dichlorophenol	74	58	580	180	17,000
19. Dichloropropenes[3] (1,3-Dichloropropene)	8.3	8.2	420	260	1,700
20. *Dieldrin (ng/L)	0.59	0.17	0.59	0.17	280,000
21. 2,4-Dimethylphenol	450	430	11,000	4,500	94,000
22. Diethyl phthalate[2]	5,000	5,000	68,000	21,000	4,500,000
23. Dimethyl phthalate[2] (mg/L)	241	184	1,680	530	56,000
24. 4,6-Dinitro-o-cresol	100	96	1,800	640	22,000
25. Dinitrophenols[3] (2,4-Dinitrophenol)	55	55	2,800	1,800	11,000
26. 2,4-Dinitrotoluene	0.51	0.48	13	5.3	110
27. Endosulfan	87	41	181	54	33,600
28. Ethylbenzene[2]	~~700~~	~~700~~	~~12000~~	~~3700~~	~~560000~~
	567	401	2,920	931	140,000
29. Fluoranthene	890	610	4,300	1,300	220,000
30. *Hexachlorobenzene	0.075	0.022	0.075	0.022	4,500
31. Hexachlorocyclopentadiene	~~50~~	~~50~~	~~980~~	~~310~~	~~39000~~
	34.7	25.6	195	65.3	8,400
32. Hexachloroethane	8.7	3.3	13	3.7	5,600
33. *gamma-BHC (lindane)	0.20	0.20	0.84	0.25	1,900
34. Isophorone	5,500	5,300	180,000	80,000	1,100,000
35. Lead	10	10	140	140	2,240
36. *Mercury[5]	0.0015	0.0015	0.0015	0.0015	336

37. Nickel[2]	100	100	43,000	43,000	110,000
38. *Pentachlorobenzene	0.46	0.14	0.47	0.14	4,500
39. Selenium[2]	50	50	2,600	2,600	28,000
40. Silver	140	140	28,000	28,000	28,000
41. *2,3,7,8-TCDD (pg/L)	0.11	0.032	0.11	0.032	7,300
42. *1,2,4,5-Tetrachlorobenzene	0.54	0.17	0.58	0.17	1,700
43. Tetrachloroethene	5.8	4.6	46	15	1,300
44. Toluene[2]	1000	1000	~~760100~~ 15,359	~~26000~~ 5,201	~~1200000~~ 280,000
45. 1,1,1-Trichloroethane[2]	200	200	270,000	110,000	2,000,000
46. 2,4,5-Trichlorophenol	1600	830	3,900	1,200	560,000

* 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 (4) (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 September 1, 1997 is incorporated by reference.

SECTION 6. NR 105 Table 9 is amended 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, Lim. Forage, and Warm Water Sport Fish Communities	Cold Water Communities	Limited Aquatic Life
1. Acrylonitrile	0.57	0.45	4.6	1.5	130
2. Arsenic[2]	~~0.185~~ 0.2	~~0.185~~ 0.2	~~50~~ 13.3	~~50~~ 13.3	~~50~~ 40
3. *alpha-BHC	0.012	0.0037	0.013	0.0039	11
4. *gamma-BHC (lindane)	0.052	0.018	0.064	0.019	54
5. *BHC, technical grade	0.038	0.013	0.047	0.014	39
6. Benzene[2]	5	5	140	45	1,300
7. Benzidine (ng/L)	1.5	1.5	81	55	300
8. Beryllium	0.054	0.054	0.33	0.33	16

9. Bis(2-chloroethyl)ether	0.31	0.29	7.6	3.0	64
10. Bis(chloromethyl)ether (ng/L)	1.6	1.6	96	79	320
11. Carbon tetrachloride	2.5	2.1	29	9.5	540
12. *Chlordane (ng/L)	0.41	0.12	0.41	0.12	54,000
13. Chloroethene (vinyl chloride)	0.18	0.18	10	6.8	37
14. Chloroform (trichloromethane)	55	53	1,960	922	11,200
15. *4,4'-DDT (ng/L)	0.22	0.065	0.22	0.065	206,000
16. 1,4-Dichlorobenzene	14	12	163	54	2940
17. 3,3'-Dichlorobenzidine	~~0.51~~ 0.5	~~0.29~~ 0.3	~~1.5~~ 1.3	~~0.46~~ 0.4	~~154~~ 140
18. 1,3-Dichloropropene	3.4	3.4	173	108	700
19. 1,2-Dichloroethane	3.8	3.8	217	159	770
20. Dichloromethane[2] (methylene chloride)	5	5	2700	2100	9600
21. *Dieldrin (ng/L)	0.0091	0.0027	0.0091	0.0027	4400
22. 2,4-Dinitrotoluene	0.51	0.48	13	5.3	110
23. 1,2-Diphenylhydrazine	0.38	0.31	3.3	1.04	88
24. Halomethanes[3]	55	53	1,960	922	11,200
25. *Hexachlorobenzene (ng/L)	0.73	0.22	0.73	0.22	44,000
26. * Hexachlorobutadiene	0.59	0.19	0.69	0.2	910
27. Hexachloroethane	7.7	2.9	11	3.3	5,000
28. N-Nitrosodiethylamine (ng/L)	2.3	2.3	150	140	460
29. N-Nitrosodimethylamine	0.0068	0.0068	0.46	0.46	1.4
30. N-Nitrosodi-n-butylamine	0.063	0.062	2.5	1.3	13
31. N-Nitrosodiphenylamine	44	23	116	34	13,000
32. N-Nitrosopyrrolidine	0.17	0.17	11	11	34
33. *Polychlorinated biphenyls (ng/L)	0.01	0.003	0.01	0.003	9,100
34. *2,3,7,8-Tetrachlorodibenzo-p-dioxin (pg/L)	0.014	0.0041	0.014	0.0041	930
35. 1,1,2,2-Tetrachloroethane	1.7	1.6	52	22	350
36. Tetrachloroethene	5.8	4.6	46	15	1,300
37. *Toxaphene (ng/L)	0.11	0.034	0.14	0.034	63,600
38. 1,1,2-Trichloroethane[2]	6.0	6.0	195	87	1,200
39. Trichloroethene[2]	5	5	539	194	6,400
40. 2,4,6-Trichlorophenol	29	24	30	97	6,400

* 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 7. EFFECTIVE DATE. This rule shall take effect the first day of the month following publication in the Wisconsin administrative register.

SECTION 8. BOARD ADOPTION. This rule was approved and adopted by the State of Wisconsin Natural Resources Board on _____.