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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

JUL 17 2002

STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:)
)
PROPOSED AMENDMENTS TO)
AMMONIA NITROGEN STANDARDS)
35 Ill. Adm. Code)

R 02-19
(Rulemaking - Water)

P.C. #6

NOTICE OF FILING

TO: Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

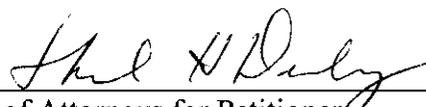
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See Attached Service List

PLEASE TAKE NOTICE today that I have filed with the Clerk of the Illinois Pollution Control Board **Public Comment of Michael Callahan on Behalf of The Illinois Association of Wastewater Agencies** a copy of which is herewith served upon you.

Respectfully submitted,



One of Attorneys for Petitioner

Dated: July 17, 2002

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THIS FILING IS SUBMITTED ON RECYCLED PAPER

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STATE OF ILLINOIS
Pollution Control Board

PUBLIC COMMENT OF MICHAEL CALLAHAN
ON BEHALF OF THE ILLINOIS ASSOCIATION OF WASTEWATER AGENCIES

On behalf of the Illinois Association of Wastewater Agencies (IAWA), I am hereby providing comment on the First Opinion and Order of the Board in the current ammonia nitrogen rulemaking procedure, Docket R02-19. The IAWA appreciates the substantial agreement of the Board with IAWA in both the interpretation of the USEPA 1999 Ammonia National Criteria Document (NCD) and the manner in which the NCD should be applied to the water quality standards of Illinois.

As the Board noted in its First Opinion and Order, the IAWA advocates the consideration of the seasonal period of March through October as being the time during a year in which the waters of Illinois can be expected to contain early life stages of fish. The presence of such early life stages is recognized by the NCD and accepted by IAWA as requiring additional protection from ammonia beyond that required during the absence of such early life stages. The overall effect of this consideration of the seasonality of the proposed regulation is to effectively consider the month of March as a warm season month as opposed to its present consideration as a winter month. This consideration extends seasonal protection from ammonia beyond that existing under the current regulation. In its First Opinion and Order, the Board also recognized the additional fish early life stage ammonia protection advocated by IAWA through inclusion of Section 302.212(e) in the proposed regulation. The intention of IAWA in considering the

seasonal impact of ammonia was to provide maximum cost beneficial protection to fish early life stages. Both the early life stage present period and Section 302.212(e) were proposed with the intention of providing this maximum potential protection. The IAWA is grateful for the Board's recognition and specific mention of this conservatism in the proposed regulation.

The IAWA continues to support the repeal of the Effluent Modified Waters (EMW) as proposed by the Board in its First Opinion and Order. The EMW concept was intended to be a procedure by which relief could be extended to the regulated community from extremely low NPDES permit ammonia limits. Regrettably, the contention which surrounded this concept ultimately rendered it impractical. The proposed standard should result in few NPDES permit ammonia limits that are low enough to present attainability problems with existing technology. The EMW concept is therefore not needed with the proposed regulation.

The Board has chosen to modify the original IAWA proposal in terms of the frequency of sampling required to determine attainment with the chronic ammonia water quality standard. Unfortunately, the modification made to the sampling requirements of Section 302.212(c)(2) by the Board after Second Hearing contains a mathematical conflict among the acute standard, the sub-chronic standard and the chronic standard. Determination of compliance with the chronic standard by one sampling within a thirty day period mathematically nullifies the acute standard and the sub-chronic standard.

The Illinois Environmental Protection Agency (Agency) requested that the 30 day average chronic standard sampling procedure be structured as proposed by IAWA. Questions arose during Second Hearing regarding this issue. It was the opinion of IAWA at the conclusion of Second Hearing that the issue had been substantially addressed by discussion at that time and

that the Agency would provide additional input to the Board further explaining its request. The IAWA did not thus subsequently comment further on the matter.

As the Board has noted in the First Opinion and Order, this request was made by the Agency to facilitate determination of compliance with the chronic standard within the framework of the existing ambient water quality monitoring program. The Board has correctly noted the correlation between the four day sub-chronic standard and the 30 day chronic standard as specified in the NCD. The NCD was based on thirty days of compliance with the chronic standard in conjunction with the four day consecutive sampling requirement of the sub-chronic standard considered within the 30 day chronic period.

The chronic sampling frequency requested by the Agency in the regulation proposed by the IAWA indicated four samples collected over a period of at least 30 days. This proposal allowed for two important considerations. First, any 30 day period was thus proposed to be evaluated by at least four non-consecutive samples thereby addressing the chronic and sub-chronic relationship as established in the NCD. Secondly, such a sample regime would allow the Agency to use its ambient water quality monitoring network sampling frequency of six weeks to determine long term chronic compliance. This original proposal by the Agency and IAWA allowed the latitude for both a concerted 30 day sampling frequency surrounding a four day sub-chronic sampling event if non-compliance were suspected while also allowing a long term evaluation of chronic compliance which could be addressed by the existing ambient water quality monitoring program frequency. In effect, two different chronic assessment potentials were established by the sampling procedure contained in the original proposal.

Since the Board issued its First Opinion and Order in this matter the IAWA has further discussed the chronic standard averaging period with the Agency. The IAWA now understands

the Agency intends to provide comment to the Board with which it will advocate an outright adoption of the thirty day average sampling period as presented in the NCD. The IAWA concurs with and endorses this action. This modification of the original IAWA proposal should address the concerns expressed by the Board in its First Opinion and Order.

However, the IAWA wishes to propose a modification to the concept of the thirty day chronic averaging period as described by the NCD that may be particularly helpful in addressing the issues which have been raised in this rulemaking procedure. Hopefully, this proposed modification will both assure water quality protection and facilitate the compliance assessment of the ammonia standard. The chronic and sub-chronic relationship are intertwined as the Board has noted. The underlying concept of the two standards maintains that the chronic standard provides long term (30 day) protection from ammonia providing that the sub-chronic standard is the maximum allowable average short term ammonia exposure during the chronic exposure averaging period. The accompanying worksheet entitled Attachment A indicates the mathematical nature of the relationship between the allowable chronic and sub-chronic concentrations. Effectively, as shown by Attachment A, Scenario 1: if the sub-chronic standard is realized as a four consecutive day average (5.57 mg/l total ammonia), the remainder of the 26 days of the 30 day averaging period must be considerably less than the allowable chronic standard if the chronic standard were to be considered independently from the sub-chronic standard. This difference is indicated by comparison of the allowable 30 day chronic standard of 2.23 mg/l total ammonia with the allowable 26 day average of 1.71 mg/l total ammonia. The 30 day averaging of (1) a 26 day weighted component of 1.71 mg/l total ammonia and (2) a 4 day weighted component of 5.57 mg/l equal the allowable 30 day chronic standard of 2.23 mg/l total ammonia.

Conversely, as the actual four day exposure concentration decreases, the concentration of the allowable 26 day weighted component is allowed to increase and yet maintain overall compliance with the chronic standard. This mathematical effect is illustrated in Attachment A, Scenario 2. If a four day sub-chronic exposure averages 4.00 mg/l total ammonia then the allowable 26 day average becomes 1.95 mg/l total ammonia. The chronic value of 2.23 mg/l is, however, conserved.

The mathematical relationship of 4/30 and 26/30 is essential to the correlation of the chronic and sub-chronic standard. Attainment with the sub-chronic standard during the chronic averaging period is the component of the water quality standard established by the 1999 NCD that Dr. Sheehan indicated in his testimony provided additional ammonia protection beyond that of the existing Illinois ammonia water quality standard. Consequently, the IAWA proposes that the chronic water quality standard be determined by at least one sample for each week of a 30 day chronic exposure assessment period in conjunction with four consecutive days of sampling within that chronic assessment period. In determining the chronic attainment, the minimum of four weekly samples are to be averaged with the mean thus derived assigned a multiplier of 0.867 (i.e. 26/30). The sub-chronic four day average value is assigned a multiplier of 0.133 (i.e. 4/30). The weighted average thus determined must then comply with the chronic water quality standard.

The IAWA suggests that the interaction of the chronic and sub-chronic standards is not optimally expressed by the original format of the IAWA proposed regulation. Therefore, IAWA proposes some wording changes in the Board's existing text and the addition of a fourth paragraph to Section 303.212(C) which specifically defines the mathematical relationship of the chronic and sub-chronic standards.

The IAWA suggests the following language to modify the Board's version of Section 302.212(C)2:

The total ammonia nitrogen (in mg/l) must not exceed the chronic standard (CS) except in those waters in which mixing is allowed pursuant to Section 302.102 of this part. Attainment of the chronic standard (CS) must be evaluated pursuant to subsection (d) of this Section by averaging at least four samples collected at weekly intervals or at other frequency distributions representative of a 30 day sampling period.

The sub-chronic standard, while defined as a function of the chronic standard, is a third independent concept as presented in the NCD. Consequently, IAWA suggests the following changes be made to the Board's modifications of Section 302.212(c)(3), which strengthen this autonomy of the sub-chronic standard:

The total ammonia nitrogen (in mg/l) must not exceed the sub-chronic standard except in those waters in which mixing is allowed pursuant to Section 302.102. Attainment of the sub-chronic standard must be evaluated pursuant to subsection (d) of this Section by averaging daily sample results collected over four (4) consecutive days.

As mentioned previously, the IAWA suggests adding an additional paragraph (Section 302.212(c)(4) which specifically defines the relationship between the chronic and sub-chronic standard:

Attainment of the chronic and sub-chronic standards shall be determined by evaluating a sub-chronic exposure pursuant to subsection (c) of this Section in conjunction with a chronic exposure pursuant to subsection (b) of this Section. Such an evaluation shall allocate an averaging weight of 0.133 (4/30) to the sub-chronic four day mean and an averaging weight of 0.867 (26/30) to the mean of the remaining days assessed in the 30 day chronic averaging period. The 30 day average thus determined shall not exceed the chronic standard.

This proposed modification to Section 302.212(c) does not alter the actual mathematical relationship of the chronic standard with the sub-chronic standard from that originally proposed to the Board by IAWA and contained in the NCD. Rather, this proposed modification

specifically elucidates the manner in which the two standards are to be jointly considered. The IAWA believes that this lack of defined association between the two standards was the basis of the Board's concern that led to the Board's modification of Section 302.212(c)(2).

With the exception of the chronic standard sampling frequency issue, the IAWA finds the Board's First Opinion and Order to be a very acceptable resolution of the ammonia water quality issue for Illinois. The IAWA is very appreciative of the Board's consideration to date with this proposed regulation and remains available at the Board's request for additional information or comment.

Attachment A: Mathematical Interaction of the Proposed Chronic and Sub-Chronic Ammonia Water Quality Standard

Given: Temperature 20C pH: 7.8

Acute Standard: 12.1 mg/l

Chronic Standard: 2.23 mg/l

Sub Chronic Standard $(2.23 \text{ mg/l}) \times 2.5 = 5.57 \text{ mg/l}$

Scenario 1:

With 4 days averaging the maximum sub chronic concentration of 5.57 mg/l total ammonia, the remaining 26 days of a 30 day chronic averaging period must be of such a concentration that compliance exists with the 30 day chronic standard of 2.23 mg/l.

$$((4 \text{ days} \times 5.57 \text{ mg/l}) + (26 \text{ days} \times \text{ ____ mg/l})) / 30 = 2.23 \text{ mg/l}$$

$$(22.28 \text{ days mg/l} + (26 \text{ days} \times \text{ ____ mg/l})) = (2.23 \text{ mg/l} \times 30 \text{ days})$$

$$26 \text{ days} \times \text{ ____ mg/l} = (66.90 \text{ days mg/l}) - (22.28 \text{ days mg/l})$$

$$\text{ ____ mg/l} = (44.62 \text{ days mg/l}) / 26 \text{ days}$$

$$\text{ ____ mg/l} = 1.71 \text{ mg/l}$$

The daily average of the remaining 26 days of the chronic averaging period in this example must be less than or equal to 1.71 mg/l to achieve compliance with the chronic water quality standard of 2.23 mg/l.

Scenario 2:

If the 4 day sub-chronic concentration averages 4.00 mg/l, the remaining 26 days of the 30 day chronic averaging period can increase relevant to Scenario 1 with chronic compliance maintained.

$$((4 \text{ days} \times 4.00 \text{ mg/l}) + (26 \text{ days} \times \text{ ____ mg/l})) / 30 = 2.23 \text{ mg/l}$$

$$(16.00 \text{ days mg/l}) + (26 \text{ days} \times \text{ ____ mg/l}) = (2.23 \text{ mg/l}) \times 30 \text{ days}$$

$$26 \text{ days} \times \text{ ____ mg/l} = (66.90 \text{ days mg/l}) - (16.00 \text{ days mg/l})$$

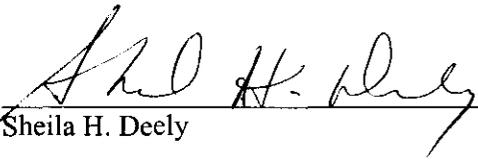
$$\text{ ____ mg/l} = (50.90 \text{ days mg/l}) / 26 \text{ days}$$

$$\text{ ____ mg/l} = 1.96 \text{ mg/l}$$

The reduction in the sub-chronic 4 day value from 5.57 mg/l to 4.00 mg/l allows for an increase in the mean of the remaining days in the chronic averaging period from 1.71 mg/l to 1.96 mg/l.

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing **Notice of Filing - Public Comment of Michael Callahan on Behalf of The Illinois Association of Wastewater Agencies** were filed by hand delivery with the Clerk of the Illinois Pollution Control Board and served upon the parties to whom said Notice is directed by first class mail, postage prepaid, by depositing in the U.S. Mail at 321 North Clark Street, Chicago, Illinois on Wednesday, July 17, 2002.



Sheila H. Deely

CH01/12236928.1

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