ILLINOIS POLLUTION CONTROL BOARD
January 4, 1996

IN THE MATTER OF:	)	
	)	
TRIENNIAL WATER QUALITY REVIEW:	)	R94-1(A) & (B)
AMENDMENTS TO 35 ILL. ADM. CODE	)	(Rulemaking - Water)
302.202, 302.208, 302.212, 302.213,	)	
302.407, 304.122 and 304.301 (Lead,	)	
Mercury and Ammonia Nitrogen)	)	

Proposed Rule Second First Notice

OPINION AND ORDER OF THE BOARD (by E. Dunham, C.A. Manning, and R.C. Flemal):

This matter comes before the Board on a regulatory proposal filed on February 24, 1994 by the Illinois Environmental Protection Agency (Agency). The Agency filed the proposal as part of its mandatory review of the applicable water quality standards of the State of Illinois pursuant to 33 U.S.C. §§ 1251-1387 (1987)[1].

By today's order the Board severs the docket into subdockets A & B. Subdocket (A) will contain the amendments proposed by the Agency for lead and mercury (Sections 302.208 and 302.407). Subdocket (B) will contain the amendments proposed by the Agency for ammonia nitrogen (Sections 302.202, 302.212, 302.213, 304.122 and 304.301). Today's order also sends the proposed amendments to the lead and mercury standards to first notice.

The Board severs this docket to avoid any future delay in the adoption of the standards proposed for lead and mercury. Based on the record before the Board, it is evident that the opposition to the amendments proposed by the Agency focuses on the proposed amendments to the ammonia nitrogen standard. The comments and testimony in the record are primarily concerned with the amendments to the ammonia nitrogen standard. Today's opinion summarizes the testimony and public comments in the record pertaining to lead and mercury.

The Board's responsibility in this matter arises from the Environmental Protection Act. The Board is charged therein to "determine, define, and implement the environmental control standards applicable in the state of Illinois." (415 ILCS 5/5(b) (1994).) More generally, the Board's rulemaking

[1] The Federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), §§ 101-607 requires the Agency to periodically, but at least every three years, review the water quality standards applicable in the State. This review is commonly referred to as the "triennial review". The Board today adds this designation to the caption in this matter for purposes of more fully characterizing the instant proceeding.

charge is based on the system of checks and balances integral to the Illinois environmental governance: the Board bears responsibility for the rulemaking and principal adjudicatory functions; the Agency has primary responsibility for administration of the Act and the Board's regulations. The latter includes administering today's proposed amendments.

PROCEDURAL HISTORY

The major portion of today's proposed amendments were filed by the Agency pursuant to Section 27 of the Environmental Protection Act (Act) (415 ILCS 5/et seq. (1994)) and the Board's procedural rules at 35 Ill. Adm. Code §§ 102.120 and 102.121.

Pursuant to Section 28.2 of the Act and the Board's procedural rules at 35 Ill. Adm. Code § 102.121(e), the Agency initially contended that today's rulemaking is needed to fulfill the requirements of the Federal Clean Water Act (CWA), and that therefore it is required pursuant to federal law. Nevertheless, the Agency's certification regarding the required nature of the amendments cited to only part of the proposal and, moreover, did not include a written confirmation letter from the United States Environmental Protection Agency (USEPA). Based on these deficiencies in the Agency's original certification, the Board by order of March 17, 1994 found that it had not been shown that the amendments as proposed were federally-required.

On April 11, 1994 the Agency filed a motion requesting that the Board reconsider is March 17, 1994 determination. The Agency certified that the entire rulemaking is federally required. Additionally, the Agency attached a confirmation letter from USEPA Region V stating that the proposed changes for the lead, mercury, and ammonia standards would address inconsistencies between current State law and the CWA. The confirmation letter also observes that the proposal would be consistent with the CWA and federal regulations. By order of May 5, 1994 the Board granted the Agency's motion for reconsideration and accepted the Agency proposal as a federally-required rule pursuant to Section 28.2 of the Act.

By order of September 15, 1994 the Board adopted the Agency's proposal for purposes of first notice, pursuant to Section 5.01 of the Illinois Administrative Procedure Act. (415 ILCS 100/1005-40). The Board adopted the proposal without making substantive comment on the merits of the proposal. First notice publication occurred in the *Illinois Register* on September 30, 1994 at 18 Ill. Reg. 14555 (Part 302) and 18 Ill. Reg. 14549 (Part 304). The Illinois Administrative Procedure Act requires that adoption of the rule occur within one year of the first notice publication. (5 ILCS 5/40(e) (1994).) As the one-year time period has already elapsed, the Board sends part of this rulemaking back to first notice.

Three public hearings in this matter have been held before hearing officer Diane O'Neill: on November 10, 1994 in Chicago, Illinois; on November 22, 1994 in Springfield, Illinois; and on January 26, 1995 in Chicago, Illinois. At hearing the Board received testimony in support of the proposal from

the Agency, as well as testimony on various aspects of the proposal from interested persons. The hearing record pertaining to lead, mercury and non-ammonia matters is summarized below.

SUMMARY OF THE RECORD BEFORE THE BOARD IN DOCKET A

The principal provisions of the instant proposed amendments are revision of the Board's General Use Water Quality Standards for lead, mercury, and ammonia nitrogen, as found at 35 Ill. Adm. Code 302.208 and 302.212, and modification of the ammonia effluent exception procedures at 35 Ill. Adm. Code 304.122 and 304.301. The proposal also contains several conforming and housekeeping amendments.

The Board summarizes the proposal submitted by the Agency along with the record developed to date in this matter as they pertain to lead and mercury standards.

Overview of the Proposal- Subdocket A

Lead: General Use Water Quality Standard; Among its General Use Water Quality Standards, the Board currently has an acute standard (AS) for lead found at 35 Ill. Adm. Code 302.208. The General Use Water Quality Standards currently do not specify a chronic standard (CS) for lead.

Pursuant to today's proposal, the AS for lead would be modified to reflect updated aquatic toxicity data regarding lead, and a CS for lead would be added. In both cases, the lead standards would be expressed as functions of hardness.

Mercury: General Use AS and CS Water Quality Standards; The Board currently has a mercury AS among its General Use Water Quality Standards. Today's proposal would change that AS from 0.5 ug/L to 2.6 ug/L, based upon the most recent aquatic life toxicity information regarding mercury. Today's action would also add, for the first time, a CS for mercury at a value of 1.3 ug/L.

Human Health Water Quality Standards; Today's action proposes, for the first time in the Board's General Use Water Quality standards, a human health standard (HHS)[2]. Only one such standard is today proposed, that being for mercury at new subsection (f) of 35 Ill. Adm. Code 302.208. The value proposed for the mercury HHS is 0.012ug/L, which is lower than the currently existing AS for mercury at Section 302.208. New text is also proposed at new 302.208(c) and 302.208(e)(3) to support the human health standard.

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[2] The Board observes that human health criteria, pursuant to 35. Ill. Adm. Code 302.Subpart F, have been a feature of the Board's water quality regulations since 1990. (See also Amendments to Title 35 Subtitle C (Toxics Control), R88-21, final opinion and order of the Board, January 25, 1990.)

Conforming and Housekeeping Amendments; There are several places in the sections which are today opened for other purposes where housekeeping corrections are in order. Among these are updating citations to the Illinois Compiled Statues to the current (1994) edition and replacement of the preferred abbreviation of the word "liter" from "l" to "L".

The Agency's proposal amends the STORET number for un-ionized ammonia (as N) found at 35 Ill. Adm. Code 302.407. As the Agency observes, the STORET number currently found at Section 302.407 for un-ionized ammonia (as N) is actually the number for un-ionized ammonia (as NH_3). The Board corrects the STORET number in Section 302.407 in today's order.

At hearing on November 22, 1994 the Agency submitted an errata sheet correcting typographical errors that appeared in the proposed amendments as first noticed. These, along with similar changes suggested by the Administrative Code Division in Public Comment #25, have been incorporated into today's proposal.

HEARING RECORD

Agency Witnesses - Mosher; The testimony of Mr. Mosher focused on the technical justification for the proposed new water quality standards, and on the anticipated economic impact of the new water quality standards.

As regards the lead standards, Mr. Mosher testified that the Agency's proposed numbers have been tailored to Illinois conditions but remain consistent with the national criteria for lead. (Tr1. at 22.) Mr. Mosher observed that there is some controversy over the existing NCD for lead[3] associated with the nature of the species that control the chronic lead standard, inability of analytic techniques to accurately measure low lead values, and the absence of approved test methodology for the most toxic forms of lead. (Mosher at 24.) In view of these and other problems, the Agency believes that Illinois-specific lead standards are justified and achievable. Mr. Mosher testified:

> The Agency concludes that the proposed chronic criterion for lead is most suitable for use in Illinois in that it is driven by native aquatic organisms . . . and the degree of safety factoring is held to an appropriate level because of the improved methodology. This criterion is more in line with observations in Illinois streams in that

[3] This document is Exhibit J to the Agency's proposal of February 24, 1994.

> violations of the chronic standard will not routinely occur in streams supporting high quality biota. . . With the establishment of a chronic standard, the acute standard cap is no longer necessary. The proposed acute standard is very similar to the existing standard without the cap. (Mosher at 28.)

As regards the proposed new mercury standards, Mr. Mosher observed that the existing mercury water quality standard (0.5 ug/L) is based on human health considerations, even though it is identified in the regulations as a standard for the protection of aquatic life (an AS). (Mosher at 19.) At this juncture in time, sufficient information is available to promulgate aquatic protection standards that are truly based on aquatic life conditions. Accordingly, the Agency recommends that this step now be taken (Tr1. at 22), and additionally that the current 0.5 ug/L standard be properly recognized in the regulations as a HHS.

The existing acute standard was set lower than levels of mercury which actually cause effects to aquatic life. (Mosher at 21.) This was done in part to limit the total amount of mercury that could be discharged because of the lack of a chronic or HHS standard. (Mosher at 21.) The Agency now proposes to update this standard and others for chronic toxicity protection of aquatic life and protection of human health through the prevention of fish flesh contamination. (Mosher at 21.) The Agency recommends that adoption of the NCD acute and chronic criteria and proposes the NCD chronic criterion protective of bioaccumulation in fish flesh as a HHS. (Mosher at 21.)

The Agency believes that the economic impact resulting from the proposed lead and mercury standards will be minimal. (Mosher at 37.) No additional treatment for lead is believed to be required as a result of this rulemaking. (Mosher at 37.) The few dischargers in Illinois with lead limits in their permits are utilizing the best degree of treatment and are not expected to have trouble meeting the new standard. (Mosher at 37.) Mercury dischargers are rare and the new standards will have the most potential impact by encouraging pollution prevention. (Mosher at 37.) Dischargers with mercury limits will be required to utilize the best analytical methods to detect mercury at levels as low as possible. (Mosher at 38.) This may result in some minor additional expense. (Mosher at 38.)

Public Comments

The Board received 25 public comments on the Agency's proposal. The origin and content of those public comments pertaining to the mercury and lead standards are summarized in this section.

PC #1: By Linda Brand, Manager of Regulatory Flexibility Unit, Illinois Department of Commerce and Community Affairs: a review of the proposed amendments found no impact on small businesses. Filed 10/5/94.

PC #11: The Sierra Club, Illinois Chapter of Trout Unlimited, Citizens for a Better Environment, Lake Michigan Federation, and Friends of the Chicago River, by Albert F. Ettinger; supports adoption of proposed standards for mercury and lead.

PC #12: By Jeffrey Flocken, Lake Michigan Federation; supports the proposed standards. Mr. Flocken sites the health effects of mercury. Filed 3/10/95.

PC #25: By the Index Department of the Administrative Code Division of the Office of the Secretary of State; notes corrections that must be made to the text of the rule before the rule can be adopted. The Board today makes the suggested corrections to the text. Filed 11/7/94.

DISCUSSION

The Board believes that the Agency has adequately demonstrated that the water quality standards it recommends for lead and mercury are justifiable and necessary for the protection of aquatic life in Illinois. The Board accordingly today proposes adoption of these standards as recommended by the Agency.

ORDER

The Board directs the Clerk to cause publication of the following amendments in the *Illinois Register* for first notice:

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE C: WATER POLLUTION

CHAPTER I: POLLUTION CONTROL BOARD

PART 302
WATER QUALITY STANDARDS

SUBPART A: GENERAL WATER QUALITY PROVISIONS

Section
302.100 Definitions
302.101 Scope and Applicability
302.102 Allowed Mixing, Mixing Zones and ZIDs
302.103 Stream Flows
302.104 Main River Temperatures

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

SUBPART D: SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

SUBPART E: LAKE MICHIGAN WATER QUALITY STANDARDS

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

AUTHORITY: Implementing Section 13 and authorized by Section 27 of the Environmental Protection Act (~~Ill. Rev. Stat. 1987, ch.111 1/2, pars. 1013 and 1027~~ 415 ILCS 5/13 and 27).

SOURCE: Filed with the Secretary of State January 1, 1978; amended at 2 Ill. Reg. 44, p. 151, effective November 2, 1978; amended at 3 Ill. Reg. 20, p. 95, effective May 17, 1979: amended at 3 Ill. Reg. 25, p. 190, effective June 21, 1979; codified at 6 Ill. Reg. 7818; amended at 6 Ill. Reg. 11161, effective September 7, 1982; amended at 6 Ill. Reg. 13750, effective October 26, 1982; peremptory amendments at 10 Ill. Reg. 461, effective December 23, 1985; amended in R87-27 at 12 Ill. Reg. 9911, effective May 27, 1988; amended in R85-29 at 12 Ill. Reg. 12082, effective July 11, 1988; amended in R88-1 at 13 Ill. Reg. 5998, effective April 18, 1989; amended in R88-21(A) at 14 Ill. Reg. 2899, effective February 13, 1990; amended in R88-21(B) at 14 Ill. Reg. 11974, effective July 9, 1990; amended in R94-1(A) at __ Ill. Reg._____, effective_____.

BOARD NOTE: This Part implements the Illinois Environmental Protection Act as of July 1, 1994.

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.208 Numeric Standards for Chemical Constituents

a) The acute standard (AS) for the chemical constituents listed in subsection (~~d~~e) shall not be exceeded at any time except as provided in subsection (~~e~~d).

b) The chronic standard (CS) for the chemical constituents listed in subsection (~~d~~e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except as provided in subsection (~~e~~d). The samples used to demonstrate compliance or lack of compliance with a CS must be collected in a manner which assures an average representative of the sampling period.

c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average based on at least eight samples, collected in a manner representative of the sampling period, exceed the HHS except as provided in subsection (d).

de) In waters where mixing is allowed pursuant to Section 302.102, the following apply:

1. The AS shall not be exceeded in any waters except for those waters for which the Agency has approved a ZID pursuant to Section 302.102.

2. The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.

3. The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.

ed) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	Storet Number	AS (ug/L)	CS (ug/L)
Arsenic (total)	01002	360	190
Cadmium (total)	01027	exp[A+Bln(H)], but not to exceed 50 ug/L, where A=-2.918 and B=1.128	exp [A+Bln(H)] where A=-3.490 and B=0.7852
Chromium (total hexavalent)	01032	16	11
Chromium (total trivalent)	01033	exp[A+Bln(H)] where A=3.688 and B=0.8190	exp[A+Bln(H)] where A=1.561 and B=0.8190
Copper (total)	01042	exp[A+Bln(H)] where A=-1.464 and B=0.9422	exp[A+Bln(H)] where A=-1.465 and B=0.8545
Cyanide	00718	22	5.2
Lead	01051	exp[A+Bln(H)]	~~Not Applied~~

(total)		~~but not to exceed 100 ug/L~~ where A=~~-1.460~~ -1.301 and B=1.273	exp[A+Bln(H)], where A=-2.863 and B=1.273
Mercury	71900	~~0.5~~ 2.6	~~Not Applied~~ 1.3
TRC	500600	19	11

where: ug/L = microgram per liter,

exp[x] = base neutral logarithms raised to the x- power, and

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

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	STORET Number	(ug/L)
Mercury	71900	0.012

where ug/L = micrograms per liter

g ~~e~~) Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.

Constituent	Unit	STORET Number	Standard
Barium (total)	mg/L	01007	5.0
Boron (total)	mg/L	01022	1.0
Chloride (total)	mg/L	00940	500.
Fluoride	mg/L	00951	1.4
Iron (dissolved)	mg/L	01046	1.0
Manganese (total)	mg/L	01055	1.0

Nickel (total)	mg/L	01067	1.0
Phenols	mg/L	32730	0.1
Selenium (total)	mg/L	00147	1.0
Silver (total)	ug/L	01077	5.0
Sulfate	mg/L	00945	500.
Total Dissolved Solids	mg/L	70300	1000.
Zinc (total)	mg/L	01092	1.0

where: mg/L = milligram per liter and
ug/L = microgram per liter
(Source: Amended at 20 Ill. Reg. _____, effective _____)

Section 302.407 Chemical Constituents

Concentrations of other chemical constituents shall not exceed the following standards:

CONSTITUENTS	STORET NUMBER	CONCENTRATION (mg/~~l~~L)
Ammonia Un-ionized (as N*)	0061~~9~~2	0.1
Arsenic (total	01002	1.0
Barium (total)	01007	5.0
Cadmium (total)	01027	0.15
Chromium (total hexavalent)	01032	0.3
Chromium (total trivalent)	01033	1.0
Copper (total)	01042	1.0
Cyanide (total)	00720	0.10
Fluoride (total)	00951	15.0
Iron (total)	01045	2.0
Iron (dissolved)	01046	0.5
Lead (total)	01051	0.1

Manganese (total)	01055	1.0
Mercury (total)	71900	0.0005
Nickel (total)	01067	1.0
Oil, fats and grease	00550, 00556 or 00560	15.0**
Phenols	32730	0.3
Selenium (total)	0~~0~~1147	1.0
Silver	01077	1.1
Zinc (total)	01092	1.0
Total Dissolved Solids	70300	1500

*For purposes of this section the concentration of un-ionized ammonia shall be computed according to the following equation:

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

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

U = Concentration of un-ionized ammonia as N in mg/~~l~~L
N = Concentration of ammonia nitrogen as N in mg/~~l~~L
T = Temperature in degrees Celsius

**Oil shall be analytically separated into polar and non-polar components if the total concentration exceeds 15 mg/~~l~~L. In no case shall either of the components exceed 15 mg/~~l~~L (i.e., 15 mg/~~l~~L polar materials and 15 mg/~~l~~L non-polar materials).

(Source: Amended at 20 Ill. Reg. _____, effective _____)

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above opinion and order was adopted on the_____ day of _____, 1996, by a vote of

_____.

_____

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board