

ILLINOIS POLLUTION CONTROL BOARD
February 16, 2006

IN THE MATTER OF:)
)
REVISIONS TO RADIUM WATER QUALITY) R04-21
STANDARDS: PROPOSED NEW 35 ILL. ADM.) (Rulemaking – Water)
CODE 302.307 and AMENDMENTS TO)
35 ILL. ADM. CODE 302.207 and 302.525)

Adopted Rule. Final Order.

OPINION AND ORDER OF THE BOARD (by N.J. Melas):

Today the Board adopts the proposed rule for final notice pursuant to the Illinois Administrative Procedure Act (IAPA) (5 ILCS 100/5-5 *et seq.* (2004)). The adopted rule is unchanged from the rule proposed for second notice.

The Board’s authority in rulemaking proceedings stems from Section 5(b) of the Environmental Protection Act (Act) (415 ILCS 5/5 (2004)), which provides that the Board “shall determine, define and implement the environmental control standards applicable in the State of Illinois and may adopt rules and regulations in accordance with Title VII of the Act.” 415 ILCS 5/5(b) (2004). Title VII of the Act sets forth the statutory parameters for rulemaking by the Board. 415 ILCS 5/26-29 (2004). The Board may adopt a rule after hearing and determination of the economic reasonableness and technical feasibility of the rule. *See* 415 ILCS 5/27 (2004). The Board’s decision is based on the record before the Board including all testimony and comments filed with the Board. 35 Ill. Adm. Code 102.418.

**OVERVIEW OF THE PROPOSED RADIUM WATER QUALITY STANDARD FOR
FINAL NOTICE**

Today the Board adopts for final notice the general use water quality standard for combined radium 226 and 228 that was adopted for second-notice review by the Joint Committee on Administrative Rules (JCAR) on December 15, 2005. The Board retains the standard of 3.75 pCi/L combined radium 226 and 228, but sets the standard as an annual average value, rather than an instantaneous maximum standard. This standard, applies to all general use waters of the State, including stream segments that receive discharge from POTWs, as well as the Lake Michigan Basin. The Board also adopts a 5pCi/L combined radium 226 and 228 standard for Public and Food Processing Water Supplies as an instantaneous maximum standard for public and food processing water supply intakes.

BACKGROUND

On January 13, 2004, the Environmental Protection Agency (Agency) filed a proposal to amend Part 302 of the Board's water quality standards.¹ The Agency proposed to change the general use and Lake Michigan water quality standards for radium from 1 pCi/L radium 226 to 5 pCi/L combined radium 226 and 228 and apply the proposed standards specifically to surface waters used for public and food processing water supplies. According to the Agency, these changes would make the radium water quality standards consistent with the federal finished water maximum contaminant level (MCL) and ensure the protection of surface water intakes for raw drinking water in the State. The Agency argued the proposed changes would also relieve a regulatory burden for many existing POTWs that receive, treat, and discharge wastewater from public water supplies that remove radium from high radium groundwater.

The Board accepted this proposal for hearing on January 22, 2004. The Board has held five days of hearings before the Board hearing officer, members, and staff. The first hearing was held on April 1, 2004, at the James R. Thompson Center in Chicago. The second hearing was held on May 6, 2004, at the Board's offices in Springfield. Both hearings allowed the proponent and any other interested party the opportunity to present testimony on the merits and economic impact of the rulemaking proposal.

On July 8, 2004, the Board adopted the Agency's proposal for publication of first notice in the *Illinois Register*, but noted by hearing officer order that the Board would hold a third hearing. First notice was published in the *Illinois Register* on August 6, 2004. 28 Ill. Reg. 32, pg. 10887, *eff.* Aug. 6, 2004. First-notice publication in the *Illinois Register* began a public comment period for interested persons to file comments with the Board. The Board held a third hearing on August 25, 2004, in Springfield. The Board gave notice of hearings a fourth time and they continued on October 21 and 22, 2004, in Chicago.

On April 7, 2005, the Board adopted the proposal, with modifications, for publication of the 2005 first notice in the *Illinois Register*. The 2005 first notice was published in the *Illinois Register* on April 11, 2005. 29 Ill. Reg. 17, pg. 5782, *eff.* Apr. 11, 2005. Second first-notice publication began another 45-day public comment period. On May 13, 2005, the City of Joliet (Joliet) moved the Board to extend the public comment period through August 15, 2005. The Board granted the motion and extended the comment period as requested.

The Board received 13 additional public comments after first notice publication. On December 15, 2005, the Board proceeded to second first notice with a rule that differed from the Board's proposal adopted for first notice in 2004. Revisions to Radium Water Quality Standards: Proposed New 35 Ill. Adm. Code 302.307 and Amendments to 35 Ill. Adm. Code 302.207 and 302.525, R04-21 (Dec. 15, 2005). On December 29, 2005, the Board received notice that JCAR accepted the second notice in this rulemaking on December 27, 2005. JCAR considered the rule at the January 18, 2006 JCAR meeting, and subsequently issued a certification of no objection to the rule.

¹ The Agency's Statement of Reasons included in the rulemaking proposal will be cited as "Statement at _."

SUMMARY OF FIRST-NOTICE PROPOSAL

At first notice in 2004, the Board adopted the original proposal filed by the Agency. As discussed above, the Agency's proposal was to eliminate any general use water quality standard and instead adopt a standard of 5 pCi/L combined radium 226 and 228 that would apply specifically to public and food processing water supply intakes. The Board accepted this proposal for hearing.

At second first notice in 2005, the Board proposed a general use water quality standard of 3.75 picocuries per liter (pCi/L) radium 226 and 228 combined (combined radium) applicable to all general use waters of the State. In addition, the Board proposed a general use water quality standard of 30 pCi/L combined radium applicable to waters receiving discharge from publicly owned treatment works (POTWs). The 30 pCi/L standard applied from the point of discharge to one mile downstream of the discharge outfall and was incorporated as a new Section 302.207(d).

DISCUSSION OF SECOND-NOTICE PROPOSAL AND ADOPTED AMENDMENTS

The proposal that the Board adopts for final notice is unchanged from that adopted at second notice. Therefore, in this section the Board discusses the second-notice proposal together with the adopted amendments. At second notice, the Board analyzed the participants' recommendations and other issues raised in public comments. The Board determined, as it did in adopting the proposal for second first notice in 2005, that a general use water quality standard for radium 226 and 228 combined must be retained in order to protect human health and the environment, including aquatic life and riparian mammals.

At second-notice, the Board expressed that limit as an average measured over the length of a year. Under the proposed standard, while the concentration of radium 226 and 228 combined may be higher than 3.75 pCi/L at times due to environmental conditions, the water body will still meet the standard as long as the concentration averaged over the period of a year remains at or below 3.75 pCi/L. Also at second notice, the Board eliminated the 30 pCi/L water quality standard applicable up to one-mile downstream of POTW discharges.

The Board's second-notice proposal did not incorporate the Agency's suggestion of allowing for mixing even if the stream has a zero 7Q10 flow. The Agency did not support this new proposal with evidence contained in the record, but stated only that allowing mixing zones in dischargers' permits would provide added relief for POTWs.

Also at second notice, the Board adopted a Public and Food Processing Water Supply standard of 5 pCi/L combined radium 226 and 228 to ensure that public water supplies meet the Federal drinking water maximum contaminant level for radium. Since the proposed general use standard is based on a long-term average concentration, the Board found that an instantaneous surface water intake standard would ensure protection from upstream discharges that could cause a Public and Food Processing Water Supply to exceed 5 pCi/L. The Board adopts the standard proposed for second notice unchanged for final notice.

The Board finds the rule proposed for final adoption will be more technically feasible and economically reasonable than the current radium water quality standard since it increases the standard for radium 226 and 228 combined. On April 2, 2004, the Board also received a letter from the Department of Commerce and Economic Opportunity (DCEO) stating that it would not conduct an economic impact study (EcIS) on the proposed rule. Nobody testified or commented about DCEO's decision not to perform an economic impact study on this rulemaking. As found at second notice, the Board finds the proposal is both technically feasible and economically reasonable.

CONCLUSION

To protect all designated uses of Illinois waters, the Board adopts a 3.75 pCi/L combined radium 226 and 228 standard applicable to general use waters and the Lake Michigan Basin. Compliance with the standard is determined by the annual average of combined radium concentrations. The proposal applies a 5.0 pCi/L combined radium 226 and 228 standard to Public and Food Processing Water Supply intakes as an instantaneous standard. The Board finds the proposal adopted today is economically reasonable and technically feasible. The Board adopts this proposal for final notice pursuant to the IAPA 95 ILCS 100/5-5 *et seq.* (2004).

ORDER

The Board directs the Clerk to cause the filing of the following rule with the Secretary of State for publication as an adopted rule in the *Illinois Register*:

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
302.105	Antidegradation

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section	
302.201	Scope and Applicability
302.202	Purpose

302.203	Offensive Conditions
302.204	pH
302.205	Phosphorus
302.206	Dissolved Oxygen
302.207	Radioactivity
302.208	Numeric Standards for Chemical Constituents
302.209	Fecal Coliform
302.210	Other Toxic Substances
302.211	Temperature
302.212	Total Ammonia Nitrogen
302.213	Effluent Modified Waters (Ammonia)(Repealed)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section	
302.301	Scope and Applicability
302.302	Algicide Permits
302.303	Finished Water Standards
302.304	Chemical Constituents
302.305	Other Contaminants
302.306	Fecal Coliform
<u>302.207</u>	<u>Radium 226 and 228</u>

SUBPART D: SECONDARY CONTACT AND INDIGENOUS AQUATIC LIFE STANDARDS

Section	
302.401	Scope and Applicability
302.402	Purpose
302.403	Unnatural Sludge
302.404	pH
302.405	Dissolved Oxygen
302.406	Fecal Coliform (Repealed)
302.407	Chemical Constituents
302.408	Temperature
302.409	Cyanide
302.410	Substances Toxic to Aquatic Life

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section	
302.501	Scope, Applicability, and Definitions
302.502	Dissolved Oxygen
302.503	pH
302.504	Chemical Constituents
302.505	Fecal Coliform

302.506	Temperature
302.507	Thermal Standards for Existing Sources on January 1, 1971
302.508	Thermal Standards for Sources Under Construction But Not In Operation on January 1, 1971
302.509	Other Sources
302.510	Incorporations by Reference
302.515	Offensive Conditions
302.520	Regulation and Designation of Bioaccumulative Chemicals of Concern (BCCs)
302.521	Supplemental Antidegradation Provisions for Bioaccumulative Chemicals of Concern (BCCs)
302.525	Radioactivity
302.530	Supplemental Mixing Provisions for Bioaccumulative Chemicals of Concern (BCCs)
302.535	Ammonia Nitrogen
302.540	Other Toxic Substances
302.545	Data Requirements
302.550	Analytical Testing
302.553	Determining the Lake Michigan Aquatic Toxicity Criteria or Values - General Procedures
302.555	Determining the Tier I Lake Michigan Acute Aquatic Toxicity Criterion (LMAATC): Independent of Water Chemistry
302.560	Determining the Tier I Lake Michigan Basin Acute Aquatic Life Toxicity Criterion (LMAATC): Dependent on Water Chemistry
302.563	Determining the Tier II Lake Michigan Basin Acute Aquatic Life Toxicity Value (LMAATV)
302.565	Determining the Lake Michigan Basin Chronic Aquatic Life Toxicity Criterion (LMCATC) or the Lake Michigan Basin Chronic Aquatic Life Toxicity Value (LMCATV)
302.570	Procedures for Deriving Bioaccumulation Factors for the Lake Michigan Basin
302.575	Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife
302.580	Procedures for Deriving Water Quality Criteria and Values in the Lake Michigan Basin to Protect Human Health – General
302.585	Procedures for Determining the Lake Michigan Basin Human Health Threshold Criterion (LMHHTC) and the Lake Michigan Basin Human Health Threshold Value (LMHHTV)
302.590	Procedures for Determining the Lake Michigan Basin Human Health Nonthreshold Criterion (LMHHNC) or the Lake Michigan Basin Human Health Nonthreshold Value (LMHHNV)
302.595	Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

SUBPART F: PROCEDURES FOR DETERMINING WATER QUALITY CRITERIA

Section	
302.601	Scope and Applicability
302.603	Definitions

302.604	Mathematical Abbreviations
302.606	Data Requirements
302.612	Determining the Acute Aquatic Toxicity Criterion for an Individual Substance – General Procedures
302.615	Determining the Acute Aquatic Toxicity Criterion - Toxicity Independent of Water Chemistry
302.618	Determining the Acute Aquatic Toxicity Criterion - Toxicity Dependent on Water Chemistry
302.621	Determining the Acute Aquatic Toxicity Criterion - Procedure for Combinations of Substances
302.627	Determining the Chronic Aquatic Toxicity Criterion for an Individual Substance - General Procedures
302.630	Determining the Chronic Aquatic Toxicity Criterion - Procedure for Combinations of Substances
302.633	The Wild and Domestic Animal Protection Criterion
302.642	The Human Threshold Criterion
302.645	Determining the Acceptable Daily Intake
302.648	Determining the Human Threshold Criterion
302.651	The Human Nonthreshold Criterion
302.654	Determining the Risk Associated Intake
302.657	Determining the Human Nonthreshold Criterion
302.658	Stream Flow for Application of Human Nonthreshold Criterion
302.660	Bioconcentration Factor
302.663	Determination of Bioconcentration Factor
302.666	Utilizing the Bioconcentration Factor
302.669	Listing of Derived Criteria

APPENDIX A	References to Previous Rules
APPENDIX B	Sources of Codified Sections
APPENDIX C	Maximum total ammonia nitrogen concentrations allowable for certain combinations of pH and temperature
TABLE A	pH-Dependent Values of the AS (Acute Standard)
TABLE B	Temperature and pH-Dependent Values of the CS (Chronic Standard) for Fish Early Life Stages Absent
TABLE C	Temperature and pH-Dependent Values of the CS (Chronic Standard) for Fish Early Life Stages Present

AUTHORITY: Implementing Section 13 and authorized by Sections 11(b) and 27 of the Environmental Protection Act [415 ILCS 5/13, 11(b), 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; amended at 8 Ill. Reg. 1629, effective January 18, 1984; peremptory amendments at 10 Ill. Reg. 461, effective December 23, 1985; amended at R87-27 at 12 Ill. Reg. 9911, effective May

27, 1988; amended at 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 20 Ill. Reg. 7682, effective May 24, 1996; amended in R94-1(B) at 21 Ill. Reg. 370, effective December 23, 1996; expedited correction at 21 Ill. Reg. 6273, effective December 23, 1996; amended in R97-25 at 22 Ill. Reg. 1356, effective December 24, 1997; amended in R99-8 at 23 Ill. Reg. 11249, effective August 26, 1999; amended in R01-13 at 26 Ill. Reg. 3505, effective February 22, 2002; amended in R02-19 at 26 Ill. Reg. 16931, effective November 8, 2002; amended in R02-11 at 27 Ill. Reg. 166, effective December 20, 2002; amended in R_____ at _____ Ill. Reg. _____, effective _____.

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.207 Radioactivity

- a) Gross beta (STORET number 03501) concentration shall not exceed 100 picocuries per liter (pCi/L).
- b) ~~Concentrations of radium 226 (STORET number 09501) and s~~Strontium 90 (STORET number 13501) concentration must not exceed ~~1 and 2~~ picocuries per liter (pCi/L)respectively.
- c) The annual average radium 226 and 228 (STORET number 11503) combined concentration must not exceed 3.75 picocuries per liter (pCi/L).

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

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section 302.307 Radium 226 and 228

Radium 226 and 228 (STORET number 11503) combined concentration must not exceed 5 picocuries per liter (pCi/L) at any time.

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

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.525 Radioactivity

Except as provided in Section 302.102, all waters of the Lake Michigan Basin must meet the following concentrations ~~in any sample~~:

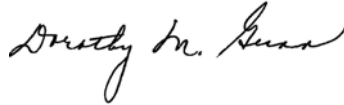
- a) Gross beta (STORET number 03501) concentrations must not exceed 100 picocuries per liter (pCi/L).

- b) ~~Concentrations of radium 226 (STORET number 09501) and sStrontium 90 (STORET number 13501) concentration shall not exceed 1 and 2 picocuries per liter (pCi/L) respectively.~~
- c) The annual average radium 226 and 228 (STORET number 11503) combined concentration must not exceed 3.75 picocuries per liter (pCi/L).

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

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on February 16, 2006, by a vote of 4-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board