

ILLINOIS POLLUTION CONTROL BOARD  
December 15, 1988

IN THE MATTER OF: )  
 )  
AMENDMENTS TO 35 ILL. ADM. ) R84-12  
CODE 604.203 AND 605.104 OF )  
SUBTITLE F: PUBLIC WATER )  
SUPPLIES (Trihalomethanes) )

PROPOSED RULE.      FIRST NOTICE.

OPINION AND ORDER OF THE BOARD (by J.D. Dumelle):

On October 5, 1982 the Board adopted amendments to Chapter 6: Public Water Supply (now 35 Ill. Adm. Code Subtitle F) in R81-11 (49 PCB 101).<sup>\*</sup> That action established a maximum allowable concentration of 0.10 mg/l for Total Trihalomethanes (TTHM) in finished drinking water (35 Ill. Adm. Code 605.104). Those rules, however, applied only to water supplies serving over 10,000 individuals. In the Second Notice Opinion issued on July 21, 1982 (47 PCB 453), the Board stated:

Since these smaller supplies generally use groundwater sources and have shorter transport time, they are considerably less likely to have TTHM levels exceeding the 0.10 mg/l standard. At the same time, universal applicability would greatly increase the number of water sample analyses which Illinois Environmental Protection Agency would have to perform. After more data are gathered on existing TTHM levels, the Board may consider an additional rulemaking to protect public water supplies serving less than 10,000 people.

Thus, on May 3, 1984, the Board entered an Order authorizing inquiry hearings "to consider expanding the applicability of 35 Ill. Adm. Code 604.203 and 605.104." Two such hearings were held on August 16 and 28, 1984.

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\* Given the close relationship between this proceeding and R81-11, the Board on April 4, 1985 incorporated by reference the record, opinions and orders of that proceeding into this one. References to the R81-11 transcript and exhibits are given as (R81-11, \_\_\_) and (R81-11, Ex. \_\_\_) respectively. References to the R84-12 transcript and exhibits are given as (R84-12, \_\_\_) and (R84-12 Ex. \_\_\_) respectively.

## Procedural History

On April 4, 1985, the Board adopted an order proposing to amend 35 Ill. Adm. Code 604.203 such that the TTHM standard of 35 Ill. Adm. Code 604.202 would be made applicable to all public water supplies and to amend 35 Ill. Adm. Code 605.104 such that the sampling requirement would be extended to surface water supplies serving fewer than 10,000 people. Public hearings on the proposed rule were held on May 31, 1985, and October 22, 1985. On June 27, 1986, the Illinois Environmental Protection Agency (Agency) submitted its proposal to amend 35 Ill. Adm. Code 604.203 and 605.104 and to add 35 Ill. Adm. Code 601.105. A public hearing was held on June 30, 1986 to support and to question the Agency proposal.

On October 22, 1986, the Department of Energy and Natural Resources (DENR) submitted its determination that an Economic Impact Study (EcIS) was necessary and would be prepared. On October 7, 1987, DENR submitted the completed EcIS to the Board. Hearings on the EcIS were conducted on April 27, 1988 in Carbondale, Illinois, and on May 12, 1988 in Chicago,

Based on the record that has been prepared, the Board today adopts for First Notice the Agency's proposal, with certain modifications, to amend 35 Ill. Adm. Code 601.105, 604.203, and 605.104.

## Federal Drinking Water Regulations Status

As a preliminary matter, both at hearing on June 30, 1986, and in comments submitted June 13, 1988, the Agency stated that USEPA is in the process of proposing and promulgating new drinking water standards for disinfection byproducts including the four limitations for trihalomethanes and suggested that the Board wait until USEPA has acted. In the June, 1988, comments, the Agency stated "[t]he proposed regulations were to have been completed last month and may be imminent." On October 24, 1988, USEPA published its semiannual Regulatory Agenda (53 Fed. Reg. 42492). USEPA's current timetable for proposing criteria for disinfection treatment processes is as follows: Notice of Proposed Rulemakings -- September, 1990, Final Action -- September, 1991. As the Board can complete this proposed rule change well before that September 1991 date, the Board is not persuaded to await federal action. If and when federal action is completed, the Board's regulations can be reviewed for consistency, and if necessary, can be up-dated at that time.

## Background

Trihalomethanes are organic chemicals consisting of one carbon atom, one hydrogen atom and three halogen atoms (R81-11,

21). These are formed when free chlorine reacts with naturally occurring compounds which are generally produced by decaying vegetation (R81-11, 21). Research by the National Cancer Institute and the National Academy of Sciences shows that TTHMs may be carcinogenic and can lead to liver or kidney disorders, birth defects and central nervous system damage (R81-11, 23 and R81-11, Ex. 9).

In recognition of these possible adverse health effects, the United States Environmental Protection Agency (USEPA) promulgated federal regulations (44 Fed. Reg. 68624, R81-11, Ex. 4, R81-11, 23-24) establishing a maximum allowable concentration of total trihalomethanes of 0.10 mg/l and monitoring schedules. The federal regulations are part of the Interim Primary Drinking Water Regulations (40 CFR Part 141) under the Safe Drinking Water Act (42 U.S.C. 300f et seq.) which requires states to adopt rules at least as stringent as the USEPA rules to retain primary enforcement responsibilities (R81-11, 27). If primacy is not retained, federal funding of the program could be lost for the entire public water supply program (R81-11, 28-29).

The present TTHM standard of 0.10 mg/l applicable to public water supplies serving over 10,000 people was set on the basis of the USEPA standard which in turn was at a level which was estimated to allow for "one excess cancer death for every 10,000 to 100,000 people with a lifetime exposure to this in their drinking water" (R81-11, 24). This standard has allowed the state to retain primacy.

#### Board Proposal

As previously stated, the Board adopted on April 4, 1985, a proposal to make the 0.10 mg/l TTHM standard currently applicable to public water supplies serving over 10,000 people also applicable to public water supplies serving fewer than 10,000 people.

The Board believes that people served by small public water supplies should be afforded the same protections as those served by larger suppliers. To this end, the Board proposed essentially two amendments to the existing public water supply regulations (35 Ill. Adm. Code 604.203 and 605.104). Generally speaking, the amendments are explained as follows:

Section 604.203: The Board proposed to amend subsection (d)(2), which currently states that the 0.10 mg/l TTHM standard "does not apply to supplies serving less than 10,000 individuals." The Board proposal deletes that exclusion and would require compliance to be achieved by the small water supplies by a date certain, i.e., January 1, 1990.

Section 605.104: The Board proposed to add a new subsection (b) relating to "surface water supplies for supplies serving fewer than 10,000 individuals." The proposed subsection would require the surface water supplier to submit at least one initial sample per treatment plant for maximum total trihalomethane potential (MTP) (defined at 35 Ill. Adm. Code 601.105) analysis. After that, the supplier could request the Agency to determine that the results of the sample and the local conditions indicate that the supply is not likely to approach or exceed the Maximum Allowable Concentration, such that the supply could continue to submit one annual sample. If the sample exceeds the Maximum Allowable Concentration or if it cannot be analyzed for MTP, the supplier must submit samples quarterly in accordance with 35 Ill. Adm. Code 605.104(a), i.e., the requirement for supplies serving 10,000 people or more.

The Board's rationale, with respect to both the technical feasibility and economical reasonableness, for proposing the amendments is adequately set forth in the April 4, 1985 Opinion. That rationale is incorporated herein.

#### Agency proposal

On June 27, 1986, the Agency submitted its own proposal to amend the trihalomethane regulations with respect to supplies serving less than 10,000 people. The Agency proposal was the subject of public hearing on June 30, 1986 attended by Board staff, Agency staff, and members of the public. The Agency proposal differed from the Board proposal in certain fundamental respects.

Section 106.105: The Agency proposed to add a definition of "Maximum Residence Time Concentration" for use as an alternative analysis to the MTP analysis proposed by the Board. The definition is set forth in the proposed amendment to Section 601.105 in the Order.

Section 604.203: The Agency proposed no change to subsection (d)(2). The Agency would continue to exempt supplies serving fewer than 10,000 people from compliance with 35 Ill. Adm. Code 605.104.

Section 605.104: The Agency proposed to require supplies (of less than 10,000) to submit at least one initial sample per treatment plant for "MRTC analysis between May 1, 1987 and October 31, 1987." Thereafter, much like the Board proposal, the supplier can request the Agency to determine that only one annual sample per treatment plant need be submitted to the Agency between May 1 and October 31.

In support of its proposed amendments to the Board proposal, the Agency indicated that revision was necessary to lessen the impact on smaller water supplies and on the Agency. At hearing on June 30, 1986, the Agency stated that further revision is necessary to remove the requirement for measuring the "Maximum Trihalomethane Formation Potential (MTP)." R84-12, R. at 226. The Agency stated that:

The MTP analysis is extremely labor-intensive and expensive, and results will certainly require further THM testing. In view of the evidence presented, the Agency strongly recommends that the MTP requirement be deleted and replaced with a sampling program to determine THM levels in samples collected from points in distribution systems having maximum residence time.

The rule change the Agency is proposing provides that surface and surface-connected water supplies serving less than 10,000 people initiate sampling to determine the extent to which THMs may be forming in the distribution system.

This will allow collection of information to determine the prevalence of small supplies which may have THMs in excess of the standard. It will also allow time for those supplies which exhibit a tendency to have THMs in excess of the standard to take steps to achieve voluntary compliance by making adjustments to the treatment process.

R84-12, R. 226-227.

Consistent with this position, the Agency proposed that the smaller water suppliers submit samples for "Maximum Residence Time Concentration" (MRTC) analysis. For clarity, the Agency proposed a definition of MRTC, i.e., "the concentration of total trihalomethanes found in a water sample taken at a point of maximum residence time in the public water supply system."

## Economic Impact

The Economic Impact Study (EcIS) submitted by the Department of Energy and Natural Resources (DENR) addresses the economic and operational implications of both the Board and the Agency proposals. DENR found that there are 381 Illinois public water supplies potentially affected by the proposed regulations. Further, DENR determined that these 381 public water supplies serve a total of 846,432 individuals. That is, 846,432 more people will be protected against trihalomethanes in public drinking water supplies. DENR estimated that the annualized monitoring costs incurred under the Board proposal would be \$131,612 (\$103,981 incurred by the State, \$27,631 incurred by the public water supply), and that the annualized monitoring costs incurred under the Agency proposal would be \$113,562 (\$85,930 incurred by the State, \$27,631 incurred by the public water supply). Thus, the Agency monitoring proposal would cost approximately \$18,050 less per year than the Board proposal. This works out to a total direct cost of conducting a MTP test (Board proposal) at \$125.80 compared with \$78.40 for a one-sample TTHM test (Agency proposal). EcIS at 37.

In light of the fact that USEPA and the State have previously concluded that the potential health effects were great enough to warrant adoption of trihalomethane regulations for public water supplies serving more than 10,000 people, the Board does not believe that the costs associated with either of the proposals is unreasonable. However, to minimize the impact upon the public water supplies and upon the Agency, the Board will proceed with the less expensive proposal, i.e., the Agency proposal. However, the Board believes that certain revisions to the Agency proposal are necessary (1) to accomplish the goal of reducing the amount of the trihalomethanes to acceptable levels, and (2) to comply with the rulemaking requirements of the Administrative Procedure Act.

## Revisions To Agency Proposal

First, the Board notes that the Agency proposed a definition for "maximum residence time concentration" of total trihalomethanes found in a water sample taken at a point of maximum residence time in the public water supply. At hearing, Board staff questioned the definition of "maximum residence time" and questioned the possible value in proposing a definition for it as well. Thereafter, the Agency suggested as a definition for maximum residence time: "an active part of the distribution system remote from the treatment plant." The Board has amended this proposed definition for purposes of First Notice and requests comment on it.

Second, the Agency proposed no amendment to 35 Ill. Adm. Code 604.203(d)(2), i.e., which excludes from the 0.10 mg/l standard supplies serving less than 10,000 people. The Board believes that this subsection must be amended if supplies serving fewer than 10,000 people are to meet the 0.10 mg/l standard, which is the goal of this rulemaking proceeding. Therefore, this subsection is amended to require compliance by supplies serving fewer than 10,000 by a date certain. The date of January 1, 1990, is the date proposed so as to provide notice to public water supplies well in advance, and to provide time for completion of this rulemaking proceeding.

Third, the Board has amended the second sentence of Section 605.104(b) of the Agency proposal as follows: "After written request by the supply and the determination by the Agency that the results of the sample ~~and local conditions~~ indicate that the supply is not likely to ~~approach or exceed~~ ..." The Board believes that "and local conditions" and "approach" are terms too uncertain and would only confuse those who must comply with the regulation.

Fourth, because the final two sentences proposed in Section 605.104(b) were the same as the existing language in 605.104(a), the Board has simply referenced Section 605.104(a) rather than restate the language.

Finally, the Board requests comment on three aspects of the record. First, at hearing on June 30, 1986, the Agency stated that 57 public water supplies were surveyed by taking three samples from the mid-point of the distribution system and one from the point of maximum residence time during each quarter. (R84-12, 224.) As Section 605.104(a) is silent on where samples should be collected, the Board questions whether or not the language of Section 605.104(a) should be amended to clarify specifically where samples should be taken. Second, the final sentence of Section 605.104(b) states "if the sample ... cannot be analyzed for MRTC, the supply shall submit samples in accordance with Section 105.104(a)." The Board requests comment on (1) when a sample cannot be analyzed for MRTC, and (2) whether some other method of testing should be specified, such as permitting sampling from points of less than maximum residency time, when a sample cannot be analyzed for MRTC. Third, the Board recognizes that the Agency's workload will be affected by this rule. The Board requests comment on what value a "phasing in" period would offer. For example, would administration of the rule be more effective if it were made applicable in the first year to public water supplies serving 5,000 to 9,999, in the second year to public water supplies serving 2,500 to 4,999, and then in the third year to public water supplies serving under 2,500 people?

ORDER

The following amendments are hereby proposed for First Notice. The Clerk of the Board is directed to submit these proposed amendments to the Secretary of State for publication in the Illinois Register.

TITLE 35: ENVIRONMENTAL PROTECTION  
SUBTITLE F: PUBLIC WATER SUPPLIES  
CHAPTER I: POLLUTION CONTROL BOARD

PART 601

INTRODUCTION

Section	
601.101	General Requirements
601.102	Applicability
601.103	Severability
601.104	Analytical Testing
601.105	Definitions
Appendix	References to Former Rules

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended at 3 Ill. Reg. 13, p. 236, effective March 30, 1979; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended at 6 Ill. Reg. 14344, effective November 3, 1982; amended in R84-12 at \_\_\_ Reg. \_\_\_\_\_, effective \_\_\_\_\_.

Section 601.105 Definitions

"Point Of Maximum Residence Time" means that part of the active portion of the distribution system remote from the treatment plant where the water has been in the distribution system for the longest period of time.

"Maximum Residence Time Concentration" (MRTC) means the concentration of total trihalomethanes found in a water sample taken at a point of maximum residence time in the public water supply distribution system.

(SOURCE: Amended at \_\_\_ Ill. Reg.  
effective \_\_\_\_\_)

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE F: PUBLIC WATER SUPPLIES  
CHAPTER I: POLLUTION CONTROL BOARD

PART 604  
FINISHED WATER AND RAW WATER QUALITY AND QUANTITY

SUBPART A: BACTERIOLOGICAL QUALITY

Section	
604.101	Standard Sample
604.102	Total Coliform Limits
604.103	Total Coliform Check-Samples
604.104	Bacterial Plate Count Sample
604.105	Bacterial Plate Count Limits

SUBPART B: CHEMICAL AND PHYSICAL QUALITY

Section	
604.201	Finished Water Quality
604.202	Contaminants and Maximum Allowable Concentrations
604.203	Exceptions to Maximum Allowable Concentrations
604.204	Action Pursuant to Exceedance of Maximum Allowable Concentration

SUBPART C: RADIOLOGICAL QUALITY

Section	
604.301	Radium-226, -228, and Gross Alpha Particle Activity
604.302	Man-Made Radioactivity
604.303	Determining Maximum Allowable Concentrations

SUBPART D: CHLORINATION AND FLUORIDATION

Section	
604.401	Chlorination Requirement
604.402	Chlorination Exemption Requirements
604.403	Conditions for Obtaining a Written Chlorination Exemption
604.404	Loss of Chlorination Exemption
604.405	Fluoridation Requirement

SUBPART E: RAW WATER

Section	
604.501	Raw Water Quality
604.502	Raw Water Quantity
Appendix	References to Former Rules

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat., 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended at 3 Ill. Reg. 13, p. 236, effective March 30, 1979; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended at 6 Ill. Reg. 14344, effective, November 3, 1982; amended in R84-12 at \_\_\_ Ill. Reg. effective \_\_\_\_\_.

Section 604.203 Exceptions to Maximum Allowable Concentrations

d) Total Trihalomethanes:

- 2) Supplies serving ~~75,000~~ 10,000 or more individuals shall comply with the Total Trihalomethanes standard listed in Section 604.202 by the effective date of these regulations. Supplies serving ~~10,000~~ to ~~74,999~~ fewer than 10,000 individuals shall comply with this standard by November 5, 1983 January 1, 1990. This standard does not apply to supplies serving less than ~~10,000~~ individuals.

(SOURCE: Amended at \_\_\_ Ill. Reg. effective \_\_\_\_\_)

TITLE 35: ENVIRONMENTAL PROTECTION  
SUBTITLE F: PUBLIC WATER SUPPLIES  
CHAPTER I: POLLUTION CONTROL BOARD

PART 605

SAMPLING AND MONITORING

Section	
605.101	Frequency of Bacteriological Sampling
605.102	Minimum Allowable Monthly Samples for Bacteriological Analysis
605.103	Frequency of Chemical Analysis Sampling
605.104	Frequency of Trihalomethane Analysis Sampling
605.105	Monitoring Requirements for Radium-226, -228, and Gross Alpha Particle Activity
605.106	Monitoring Frequency for Radium-226, -228, and Gross Alpha Particle Activity
605.107	Monitoring Requirements for Man-Made Radioactivity
605.108	Monitoring Frequency for Man-Made Radioactivity
605.109	Surface Water Supplies Additional Monitoring Requirements
605.110	Modification of Monitoring Requirements
Appendix	References to Former Rules

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended at 6 Ill. Reg. 14344, effective November 3, 1982; amended in R84-12 at \_\_\_\_ Ill. Reg. \_\_\_\_\_, effective \_\_\_\_\_.

Section 605.104 Frequency of Trihalomethane Analysis Sampling

- a) Surface Water Sources for Supplies Serving Over 10,000 Individuals: Supplies serving over 10,000 individuals shall submit at least four samples per treatment plant per quarter for analysis or analytical results from a certified laboratory for Total Trihalomethanes to the Agency. After results of four consecutive quarters demonstrate consistent Total Trihalomethanes concentrations below the Maximum Allowable Concentration, and upon written application by the supply, the Agency may reduce the sampling frequency to one sample per quarter until the Maximum Allowable Concentration is exceeded or until a significant change in source or treatment method is made.
- b) Surface Water Sources for Supplies Serving Fewer than 10,000 Individuals: Surface water sources for supplies serving fewer than 10,000 individuals shall submit at least one initial sample per treatment plant for MRTC analysis between May 1, 1989 and October 31, 1989. After written request by the supply and the determination by the Agency that the results of the sample indicate that the supply is not likely to exceed the Maximum Allowable Concentration, the supply shall continue to submit one annual sample per treatment plant, or report of analysis by a certified laboratory to the Agency between May 1 and October 31 of succeeding years. If the sample exceeds the Maximum Allowable Concentration or cannot be analyzed for MRTC, the supply shall submit to the Agency samples in accordance with the sampling frequency specified in Section 605.104(a) above.
- cb) Ground Water Sources for Supplies Serving Over 10,000 Individuals: Supplies serving 10,000 individuals or more shall submit at least one sample per treatment plant for MTP analysis. After written request by the supply and the determination by the Agency that the results of the sample and local conditions indicate that the supply is not likely to approach or exceed the maximum allowable concentration, the supply shall continue to submit one annual sample per treatment plant, or report of analysis by certified laboratory to the Agency. If

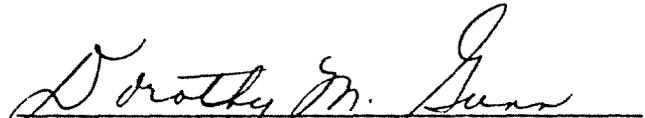
the sample exceed the Maximum Allowable Concentration or cannot be analyzed for MTP, the supply shall submit samples in accordance with Section 605.104(a).

- d) Ground Water Sources for Supplies Serving Fewer Than 10,000 Individuals - Supplies serving fewer than 10,000 individuals are not required to submit samples for trihalomethane analysis under this Section.

(SOURCE: Amended at \_\_\_ 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 15<sup>th</sup> day of December 1988 by a vote of 7-0.

  
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Dorothy M. Gunn, Clerk  
Illinois Pollution Control Board