

1 POLLUTION CONTROL BOARD

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IN THE MATTER OF:

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6 REVISIONS TO RADIUM WATER) R04-21
QUALITY STANDARDS: PROPOSED) RULEMAKING -
7 NEW 35 ILL ADM CODE 302.307) WATER
AND AMENDMENTS TO 35 ILL ADM)
8 CODE 302.207 AND 302.525)

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DATE: Wednesday, Thursday, May 6, 2004

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TIME: 2:30 PM

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14 PLACE: Illinois Pollution Control Board
Hearing Room
1021 N. Grand Avenue East.
15 Springfield, Illinois

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20 Kimberly A. Ganz, CSR, RPR, RMR, CRR
IL Lic. #084-001691
21 MO Lic. #721

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APPEARANCES:

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MR. NICHOLAS J. MELAS
7 BOARD MEMBER
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MS. DEBORAH J. WILLIAMS
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14 MR. ALAN KELLER
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1 MS. WILLIAMS: Good afternoon.
2 Welcome to the Illinois Pollution Control
3 Board. My name is Amy Antonioli and I'm
4 the hearing officer assigned to this
5 rulemaking. The board has captioned this
6 proceeding in the matter of revisions to
7 radium water quality standards proposed new
8 Illinois Administrative Code, 302.307 and
9 amendments to 35 Illinois Administrative
10 Code 302.207 and 302.525 which the board
11 has docketed as R04-21.

12 In this proceeding the agency is
13 seeking to amend the board's water quality,
14 radium quality standards. This rulemaking
15 was filed on January 13, 2004, by the
16 Illinois Environmental Protection Agency.
17 The board accepted the proposal for hearing
18 on January 22, 2004. This is the second
19 hearing. The first hearing took place on
20 April 1, 2004, in the James R. Thompson
21 Center in Chicago. To my left is member
22 Nicholas Melas, the board member who is
23 assigned to this matter, and also present
24 from the board's technical unit are Anand

1 Rao and Lisa Liu.

2 Today's hearing is governed by the
3 board's procedural rules for regulatory
4 proceedings. All information that is
5 relevant and not repetitious or privileged
6 will be entered into the record. All
7 witnesses will be sworn and subject to
8 cross questioning.

9 The purpose of today's hearing is two
10 fold. First, this rulemaking is subject to
11 section 27B of the Environmental Protection
12 Act. Section 27B of the act requires the
13 board to request the Department of Commerce
14 and Economic Opportunity or the DCEO to
15 conduct an economic impact study on certain
16 proposed rules prior to their adoption.
17 The board must make the impact study or the
18 DCEO explanation of why it won't conduct
19 the study available to the public at least
20 20 days before the public hearing on the
21 economic impact proposed rules. The board
22 requested by letter in this rulemaking
23 dated February 18, 2004, that the DCEO
24 conduct an economic impact study of this

1 rulemaking.

2 On April 2, 2004, a letter from the
3 DCEO explains that the DCEO will not
4 perform an economic impact study for this
5 rulemaking. Due to physical constraints,
6 we've made that letter available on the
7 table at the side of the room today or it's
8 also available on the board's website and
9 has been since it was filed with the board.
10 The second purpose of this rulemaking today
11 is to allow members of the public the
12 opportunity to testify and to ask questions
13 of the proponents.

14 Mr. Dennis Duffield, Director of
15 Public Works and Utilities of the City of
16 Joliet has prefiled testimony for today's
17 hearing. We will start today with a brief
18 summary of the proposal by the agency and
19 then allow Mr. Duffield to give an oral
20 summary of his testimony or if he chooses
21 to read his prefiled testimony into the
22 record. Finally we will have a questioning
23 period and when we get to the questioning
24 period, anyone can ask a question but for

1 the Reporter, please speak up and try not
2 to speak over each other so that the
3 transcript comes out clear. Please note
4 that the questions, any questions asked by
5 Member Melas or any member of the staff are
6 intended to help build a complete record
7 for the board's decision and not to
8 expression any preconceived notion or bias.

9 Also at the side of the room today
10 I've made copies available of the board's
11 order accepting this matter for hearing,
12 the notice of hearings, the agency's
13 proposal, the prefiled testimony both by
14 Mr. Duffield and by the agency, and at this
15 time I will ask Member Melas if you would
16 like to add anything.

17 MR. MELAS: No. I just welcome
18 everybody here to this hearing.

19 HEARING OFFICER: So, we will turn it
20 over to the agency now.

21 MS. WILLIAMS: Thank you. Good
22 afternoon, my name is Debra Williams and
23 I'm assistant counsel before the Bureau of
24 Water at the Illinois EPA and as requested

1 by the Hearing Officer, I will now provide
2 a brief introduction to the agency's
3 rulemaking proposal in this matter which
4 was presented in detail at the April 1
5 hearing in Chicago.

6 Under Section 303C of the Clean Water
7 Act, the Illinois EPA has the obligation to
8 no less than every three years conduct
9 reviews of its water quality standards and
10 update those standards where needed. As
11 part of that ongoing process. The agency
12 has proposed this update to the water
13 quality standards for rating. Currently
14 the standard applicable to all general use
15 waterways in the state of Illinois is a
16 radium 226 standard of one pico-curie per
17 liter. U.S. EPA has established a maximum
18 contaminant level or MCL of 5 pico-curies
19 per liter for radium 226 and radium 228
20 combined. Research by the agency has
21 concluded that the technical basis for the
22 radium water quality standard was
23 protection of human health from consumption
24 of radium in drinking water and that 5

1 pico-curies per liter is clearly the level
2 protective of that use as established under
3 the Safe Drinking Water Act. Therefore,
4 the agency has proposed changing the
5 standard to 5 pico-curies per liter and
6 placing that standard in the board's public
7 and food processing water supply standard
8 thereby making the standard applicable only
9 in drinking water supply intake.

10 The new standard is proposed to be
11 placed in section 302.307 of subpart C of
12 part 302 of the board's regulations. The
13 agency has also proposed to repeal the
14 general use standard in section 302.207 of
15 subpart C and the Lake Michigan basin
16 standard of Section 302.525 in subpart E.

17 I have with me today several agency
18 staff members who are again available to
19 answer any additional questions by the
20 board or members of the public. To my left
21 is Bob Mosher of the Bureau of Water
22 Standard Unit, and to my right is Jerry
23 Kuhn of the Division of Public Water
24 Supplies, both of whom attended the first

1 hearing, and to my far right is Al Keller,
2 the permit section manager who will stand
3 in for Blake Kinsley of the industrial unit
4 who was not able to attend this week's
5 hearing. Thank you for this opportunity to
6 summarize the proposal and for thanking the
7 board in advance for consideration of our
8 proposal.

9 HEARING OFFICER: Thank you, Miss
10 Williams. At this time we could go ahead
11 and have Mr. Duffield sworn in, then he can
12 choose to either give a summary of his
13 prefiled testimony or go ahead and read the
14 testimony into the record.

15 (Mr. Duffield is sworn.)

16 HEARING OFFICER: Thank you.

17 MR. DUFFIELD: My name is Dennis
18 Duffield, I am the Director of Public Works
19 and Utilities for the City of Joliet and I
20 would like to summarize my testimony as
21 I've already prefiled.

22 The Joliet public water supply has
23 radium in it that exceeds the drinking
24 water standard. We also operate two

1 wastewater treatment plants that receive
2 the wastewater from this water supply which
3 results in radium as an influent to the
4 treatment plants. On a numerical average,
5 Joliet has about 10.4 pico-curies of
6 combined radium 226 and 228 in its water
7 supply. That ranges throughout the system
8 based on actual wells that are operated.
9 Of that, between the range of 6.2 and 10.0
10 pico-curies per liter arise as influent to
11 the two treatment plants. The treatment
12 plants off of the two samples we've
13 analyzed remove somewhere between 2 and 81
14 percent of the radium and have discharged
15 radium in the effluent in the plants at a
16 range of 1.9 to 6.1 pico-curies per liter.

17 Our east side plant discharges into
18 Hickory Creek at the confluence with the
19 Des Plaines River. We sample upstream and
20 downstream of our discharge point and have
21 found that the upstream radium
22 concentration is 1.3 pico-curies per liter
23 of combined radium 226 and 228 and the
24 downstream which is essentially within the

1 Des Plaines River is 1.4 pico-curies per
2 liter, or almost no change.

3 Joliet believes the proposed rule is
4 necessary to allow Joliet to complete our
5 plans to treat for radium in the water
6 supply system using the hydrous manganese
7 oxide treatment method which results in the
8 discharge of radium to the sanitary sewer
9 as it's currently discharged and then
10 ultimately to the Des Plaines River and
11 Hickory Creek and we would like to do so
12 without a water quality standard violation.

13 We've noted that in testimony provided
14 by Bob Mosher of the Illinois EPA that the
15 original standard for radium was
16 established based on problems with people
17 ingesting radium. The proposed rule
18 provided by the agency addresses this by
19 establishing a standard for public water
20 supply intakes and food processing
21 facilities. We support the implementation
22 of this rule. That summarizes my
23 testimony.

24 HEARING OFFICER: Very good. Thank

1 you, Mr. Duffield, for your testimony. If
2 there is no objection, I have a copy of the
3 prefiled testimony in front of me and I
4 will move to enter that as Exhibit No. 1.
5 Seeing no objection, I enter this exhibit.
6 Does anyone here have any questions for
7 Mr. Duffield? Go ahead.

8 MR. KELLER: You're building a new
9 treatment plant on the far west side of
10 Joliet and would that treatment plant have
11 similar type problems with radium or not.

12 MR. DUFFIELD: I expect that it would,
13 that it would be the same because at that
14 location, we have all deep wells. We won't
15 have any shallow wells so the incoming
16 radium concentration might be higher at
17 that plant.

18 HEARING OFFICER: And I have a
19 question out of curiosity. Have you or
20 your staff investigated other methods of
21 removing the radium from the drinking water
22 besides the co-precipitation of radium?

23 MR. DUFFIELD: Yes, we have analyzed
24 two other methods. One method does not

1 discharge to the sanitary sewer. That
2 method concentrates the radium and ships it
3 off to a low level hazard, radium waste
4 disposal site which we think has other
5 problems and so out of cost analysis and a
6 risk to our customers, we have selected the
7 hydrous manganese oxide process and will be
8 submitting that as a part of our design
9 report for review.

10 HEARING OFFICER: At this time, is
11 there anyone else or any questions for the
12 witnesses from the agency? Okay. We thank
13 everyone who is here for being here today
14 and for the testimony that you have
15 provided. For the record, the board will
16 accept public comments in this rulemaking
17 to be included in the first notice
18 opinionated order until June 3, 2004.
19 There will be an additional public comment
20 period after the board adopts these rules
21 for first notice 45 days after the first
22 notice appears in the environmental
23 register.

24 Today's hearing concludes the hearings

1 scheduled by the board in this matter but
2 any party may request an additional hearing
3 pursuant to Section 102.1412B of the
4 board's procedural rules.

5 We hope to have the transcript for
6 today's hearing within 10 days and that
7 transcript will be available on the board's
8 website which is www.ipcb.state.il.us.
9 There the transcripts as well as the
10 agency's proposal and all of the boards
11 orders throughout this proceeding will be
12 viewable and downloadable at no charge.
13 Alternatively you may order a copy of the
14 transcript from the clerk of the board at
15 75 cents per page. Anyone can file a
16 public comment with the clerk of the board
17 but please note when filing a public
18 comment you must serve all the people on
19 the service list with a copy of the public
20 comment. Again, copies of the current
21 service list are available at the side of
22 the room or you may call the board at any
23 time to request the most current and
24 up-to-date copy.

1 If there is nothing further, I want to
2 thank you all again for your comments and
3 testimony and this hearing is adjourned.
4 Thank you.

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6 HEARING ADJOURNED:

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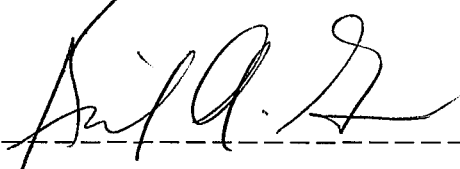
1 STATE OF ILLINOIS) SS

2 COUNTY OF WASHINGTON)

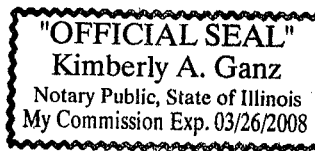
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4 I, KIMBERLY A. GANZ, Lic. No. 084-
5 1691, a Certified Shorthand Reporter in and
6 for the County of Washington, State of
7 Illinois, DO HEREBY CERTIFY that the
8 foregoing transcript was taken down in
9 shorthand by me and afterwards transcribed
10 under my direction by computer
11 transcription and said transcript is
12 herewith returned.

13 IN WITNESS WHEREOF, I have hereunto
14 set my hand and affixed my Seal this 13th
15 day of May, 2004.

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18 Certified Shorthand Reporter



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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
REVISIONS TO RADIIUM WATER QUALITY) R 04-21
STANDARDS: PROPOSED NEW 35 ILL.) (Rulemaking-Water)
ADM. CODE 302.307 AND AMENDMENTS)
TO 35 ILL. ADM. CODE 302.207 AND 302.525)
)

NOTICE OF FILING

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R 04-21 (AA) Exhibit #1
5/6/04

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board the **PRE-FILED TESTIMONY OF DENNIS L. DUFFIELD, P.E.** on behalf of the City of Joliet, a copy of which is herewith served upon you.

CITY OF JOLIET

By: *Dennis L. Duffield*
Dennis L. Duffield, P.E.
City of Joliet
Director of Public Works and Utilities

DATED: April 22, 2004
City of Joliet
921 E. Washington Street
Joliet, Illinois 60433-1267
(815) 724-4230

THIS FILING IS SUBMITTED ON RECYCLED PAPER

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)
)
REVISIONS TO RADIUM WATER QUALITY) R 04-21
STANDARDS: PROPOSED NEW 35 ILL.) (Rulemaking-Water)
ADM. CODE 302.307 AND AMENDMENTS)
TO 35 ILL. ADM. CODE 302.207 AND 302.525)
)

PRE-FILED TESTIMONY OF DENNIS DUFFIELD

My name is Dennis Duffield. I am the Director of Public Works and Utilities for the City of Joliet. I am responsible for the planning, design, construction and operations of water and wastewater systems for Joliet. I have worked for the City of Joliet for approximately 24 years and have been responsible for the water and wastewater systems for all but the first four months of the 24 years. Prior to working at the City of Joliet, I worked for the City of Virginia Beach, Virginia for approximately five years with responsibilities for the operations of the water distribution and wastewater collection systems. Previous experience was in the Indian Health Program of the United States Public Health Service. I received a Bachelor of Science in Civil Engineering from Bradley University in 1972. I have been a Licensed Professional Engineer in the State of Illinois since 1980.

Today I will testify in regards to the Illinois Environmental Protection Agency's (IEPA) proposed changes to the water quality standards for radium and the impact of this proposal on the water supplies and wastewater treatment plants.

The City of Joliet operates a public water supply using groundwater containing radium. After use by consumers, the water is discharged to the two wastewater treatment plants that the City of Joliet also operates. Discharge from the plants is to Hickory Creek at the confluence with the DesPlaines River and directly to the DesPlaines River.

The City of Joliet's water supply system currently consists of 15 deep wells that produce water that exceeds the drinking water standard for combined radium 226 and radium 228 of 5.0 pico-curies per liter and 5 shallow wells that produce water that complies with the standard. This water is currently supplied to consumers without treatment. The wastewater from the community is collected and transported to two wastewater treatment plants. Since no radium treatment is provided, the radium that enters the system arrives at the wastewater treatment plants.

Joliet recently measured the concentration of radium in the influent to the treatment plants. The results are as follows:

Joliet Eastside Wastewater Treatment Plant

Date	Radium 226 pCi/liter	Radium 228 pCi/liter	Combined Radium 226 and 228, pCi/liter
February 2004	3.0	5.3	8.3
March 8, 2004	1.9	4.3	6.2

Joliet Westside Wastewater Treatment Plant

Date	Radium 226 pCi/liter	Radium 228 pCi/liter	Combined Radium 226 and 228 pCi/liter
February 2004	2.9	5.1	8.0
March 8, 2004	3.9	6.1	10.0

These concentrations of radium arriving at the wastewater plants are very near to the 10.4 pico-curies per liter average concentration measured in Joliet's deep wells.

Joliet is planning to remove radium from the drinking water by implementing the co-precipitation of radium with pre-formed hydrous manganese oxide. In this process, a solution of hydrous manganese oxide is mixed with the well water and forms a precipitate. The radium is attached to the precipitate. The precipitate is filtered from the water which removes the radium.

The filters collect the precipitate and begin to filter water at a slower rate. The flow of water is then reversed and the precipitate is washed from the filter and collected. This stream is known as the "backwash". This wastewater from the water treatment process is then discharged to the sanitary sewer. This wastewater contains the radium removed from the drinking water.

The backwash combines with discharge from homes and businesses in the sanitary sewer and becomes the influent to the wastewater treatment plants. Since the radium is removed and subsequently recombined, there is no change in the quantity of radium anticipated to arrive at the wastewater treatment plants.

Measurements of the concentration of radium discharged from the wastewater treatment plants were also taken. The results of the measurements are as follows:

Joliet Eastside Wastewater Treatment Plant

Date	Radium 226 pCi/liter	Radium 228 pCi/liter	Combined Radium 226 and 228, pCi/liter
February 2004	1.2	3.9	5.1
March 8, 2004	2.6	3.5	6.1

Joliet Westside Wastewater Treatment Plant

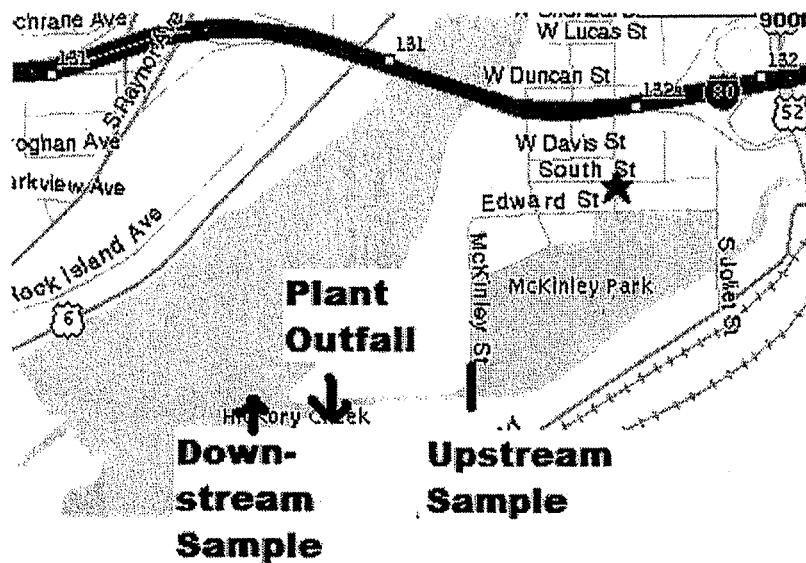
Date	Radium 226 pCi/liter	Radium 228 pCi/liter	Combined Radium 226 and 228 pCi/liter
February 2004	2.0	2.9	4.9
March 8, 2004	0.9	1.0	1.9

All of the discharge results demonstrate that this proposed rule is necessary to allow the continued discharge from existing wastewater treatment plants. The concentration of radium in the treatment plant discharge is reduced from the influent concentration. From this limited information, the range of the removal for combined radium 226 and 228 is from 2% to 81%.

The discharge from the Joliet Eastside Wastewater Treatment Plant is to Hickory Creek at the confluence with the DesPlaines River. Joliet collected stream samples from a location upstream of the plant discharge on Hickory Creek and a location downstream of the plant discharge on the DesPlaines River submitted for radium concentration determinations. The results of samples collected March 8, 2004 are as follows:

Location	Radium 226 pCi/liter	Radium 228 pCi/liter	Combined Radium 226 and 228 pCi/liter
Upstream	<0.1	1.3	1.3
Downstream	0.2	1.2	1.4

The specific sampling locations are shown on the map below:



These sample results show the impact of the discharge on the river is very limited.

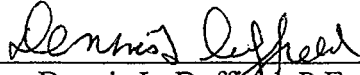
Joliet has collected additional influent and effluent samples and is waiting for the laboratory results. It is our intent to provide this information if it becomes available before the hearing record is closed.

The proposed rule is necessary to allow the water supplies to proceed with construction of the required facilities to remove radium from the drinking water and to be assured that the discharge of the backwash or other return flows from the radium removal treatment system can be discharged to the sanitary sewer without causing an effluent violation for the wastewater treatment plant owner. This will also allow the wastewater treatment plant owner to be assured that it will not be necessary to develop additional standards for the discharge of water treatment wastes containing radium to the sanitary sewer system. Joliet currently prohibits the discharge of any radioactive wastes of such concentrations that will cause the treatment plant to violate any water quality standards. Without the approval of the IEPA's proposed rule, Joliet would have to consider other water treatment methods that do not discharge the water treatment waste stream containing the radium to the sanitary sewers. This would be required as the discharge of radium bearing wastes to the sanitary sewers could result in a violation of the existing water quality standards.

As indicated in the testimony of Robert Mosher at the April 1, 2004 hearing, the only threat to human health from radium is through ingesting the radium through drinking water. The IEPA's proposed water quality standards adequately address any potential problems with food processing and public water supply intakes and allow the continuation of discharges by wastewater treatment facilities.

The City of Joliet supports the implementation of the water quality standards for radium.

I would like to thank the Board for the opportunity to submit pre-filed testimony. I will be pleased to answer any additional questions presented by the Board or members of the public regarding my testimony.

By: 
Dennis L. Duffield, P.E.
City of Joliet
Director of Public Works and Utilities

April 22, 2004

City of Joliet
Department of Public Works and Utilities
921 E. Washington
Joliet, Illinois 60433-1267