ILLINOIS POLLUTION CONTROL BOARD
May 9, 1986

CITY OF YORKVILLE,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 86-24
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

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

This matter comes before the Board upon a February 20, 1986 filing by the City of Yorkville ("City") of a petition for a five year variance from the Board's public water supply regulations, namely 35 Ill. Adm. Code 602.105(a) (Standards For Issuance) and 602.106(b) (Restricted Status), but only as they relate to the 5 pico Curie per liter standard for combined radium-226 and radium-228 set forth in Section 602.301(a). The Illinois Environmental Protectin Agency ("Agency") filed its recommendation on March 31, 1986 to grant the requested variance subject to conditions. The City waived hearing and none was held. No objections from the public have been received.

The City of Yorkville, Illinois owns and operates a potable water supply and distribution system for a population of 3,422 people as well as for various commercial and industrial users. It is a deep well system which includes two deep wells and a shallow well, pumps and distribution facilities. The wells are as follows:

Well No. 2	42 feet deep	placed in operation 1954
Well No. 3	1,335 feet deep	placed in operation 1960
Well No. 4	1,393 feet deep	placed in operation 1976

Analyses of well water samples by the City show the following results in pico curies per liter (Pet. at 6):

DATE OF SAMPLE	RESULTS			LOCATION
	Ra 226	Ra 228	Combined	
Spring 1985	1.0	0.5	1.5	Well No. 2
Spring 1985	6.3	4.6	10.9	Well No. 3
Spring 1985	9.0	8.1	17.1	Well No. 4
Spring 1985	8.5	5.7	14.2	Dist. Sys.

The Agency submitted data to a USEPA laboratory for analysis. The analysis was of an annual composite of four consecutive quarterly samples or the average of the analyses of four samples obtained at quarterly intervals. The analysis as reported to the Agency showed a radium-226 count of 5.6 pC/l and the radium-228 content was 2.2 pC/l. The combined radium-226 and radium-228 content was therefore 7.8 pc/l, exceeding the 5 pC/l standard. The analysis was reported to the City on January 25, 1984 (Agency Rec at 4).

The City learned of its exceedences from the combined radium standard from an Agency letter dated January 25, 1984 (Attach. 1 to Pet.). On October 4, 1984, the Agency notified the City that it would be placed on restricted status (Attach. 2 to Pet.). Restricted status basically means that construction and operating permits would be denied by the Agency for new or modified developments in the City which require the extensions of the water supply system.

The City identifies three different alternatives for resolving the radium problem. They are (1) using other wells for blending, (2) rehabilitating existing wells and using other wells for blending purposes, and (3) constructing treatment facilities to treat all water supplied by the existing deep wells. Two primary treatment methods were discussed by the Agency and the petitioner.

The first primary treatment method is lime or lime-soda softening. Radium removal by lime softening can be related to hardness removal and pH of treatment. Lime softening can remove 80-90 percent of the radium; therefore, it could be suitable for raw waters containing up to 25 pCi/l. The problem with this method is that it produces large quantities of sludge and concentrates the radium. This causes additional problems and expenses in proper waste disposal. (Pet. at 7; Agency Rec. at 6).

The second treatment method is ion exchange water softening. This method is cheaper than lime softening, is effective and will remove more than 90% of the radium. However, if an ion exchange softener which is regenerated with salt is used, the sodium content of the water will be increased significantly. This may create a significant risk to persons who are hypertensive or who have heart problems. In addition, the waste from routine softening is high in total dissolved solids and may be very difficult to dispose of legally. Also, the ion exchange process will concentrate the radioactivity and release the majority of the radioactivity in the waste stream in a concentrated form, which may be more of a hazard at that point than it is in the drinking water. In addition, some of the radioactivity remains in the ion exchange material, so that it may be a hazard to anyone subsequently working on the softener, and disposal of the radioactive ion exchange material may be a

problem. The Agency is actively discouraging the use of the ion exchange process for radionuclide removal by the City (Pet. at 8; Agency Rec. at 7).

The City expects to use both alternatives (1) and (2) to come into compliance (Pet. at 7). While the City has presented no economic data, as of February 20, 1986, it anticipated that within three months (May 20, 1986) its consultant would furnish a recommendation (Pet. at 6).

The City did not formally assess the effect on the environment of a grant of variance. It did, however, incorporate by reference in its petition (Pet. at 8) the testimony and exhibits of Drs. Richard E. Toohey and James Stebbings on July 30 and August 2, 1985 in R85-14 (Proposed Amendments to Public Water Supply Regulations, 35 Ill. Adm. Code 602.105, 602.106). The Agency incorporates by reference in its Recommendation (Agency Rec. at 6) the testimony of Dr. Toohey in R85-14 as well as PCB 85-54. The Board will allow the R85-14 testimony of Drs. Toohey and Stebbings only, which will include the cross examination of these two witnesses as well to minimize selective incorporation assertions.

The City cites the Toohey testimony for the proposition that the granting of relief for the limited time of the requested variance would not cause any significant harm to the environment or to the people served by the water supply system.

The Agency agrees with the City and states:

> [w]hile radiation at any level creates some risks, the risk associated with this level is very low....The Agency believes an incremental increase in the allowable concentration for combined radium-226 and radium-228, even up to a maximum of 20 pCi/l, should cause no significant health risk for the limited population served by new water main extensions for the time period of this recommended variance. [Agency Rec. at 6, emphasis in original].

The Board notes that the USEPA has challenged several Board variances from the radiological standards as being inconsistent with the Safe Drinking Water Act and regulations thereunder. 42 U.S.C. 300f et seq.; 40 C.F.R. Parts 141, 142 (subparts E, F) (1985).

The Board recently has decided that instead of issuing what amounted to federal variances from the primary drinking water standards in Section 604.301(a), it will now issue state variances from Sections 602.105(a) and 602.105(b) as they relate to the primary drinking water quality standard. The grant of variance would be from the state regulations establishing the

restricted status mechanism, and not the national primary drinking water regulations. This would allow construction permits to issue while at the same time would not insulate the petitioner from the possibility of enforcement for violations of the drinking water standards.

The City alleges that an arbitrary or unreasonable hardship would exist if it had to immediately comply with the applicable regulations for many reasons (Pet. at 10-12). First, because there is no significant risk of environmental harm during the variance period, there would be an expenditure of money with no significant benefits. Second, because of a USEPA notice of intent to propose amended rules (48 Fed. Reg. 45502, October 5, 1983) and the Agency's rule amendments in R85-14, that expenditure of money would not be justified where the standard becomes obsolete. Third, a compliance option, such as ion exchange whereby hazardous sludge is a process by product, may do more harm than good. Fourth, to deny relief from the construction ban in light of the uncertainty of the radium standard would also be a hardship. In addition, the City contends that denial of variance will harm prospective home buyers as well as business developers and the petitioner's tax base.

The Board agrees with the City that immediate compliance with regulations would impose an arbitrary or unreasonable hardship. It is difficult to argue economic hardship when there is no economic data in the record, however, it is within the Board's expertise to notice generally that capital costs are high for these treatment technologies. The Board notes that some treatment technologies such as ion exchange may indeed treat one problem yet cause another. The Board will grant a three year variance to allow both a firm compliance plan to be submitted based on the City's consultant's recommendation and for that plan to be implemented within the variance period. The City has provided no reason why five years are required to achieve compliance. For the short term of the variance, any adverse risk to the environment would be minimal. The Board by its action will allow new construction and water system extensions. The Board does not rely on a potential change of the Federal standard as a reason for granting the variance. The USEPA has not proposed rules since publishing its intent to do so in 1983 and the Agency, although it proposed rules to the Board, is now awaiting USEPA action.

The Agency has recommended that variance be granted for a period of five years from 35 Ill. Adm. Code 602.105(a) and 602.106(b) as they relate to the radiological standards subject to conditions which would require continued sampling, the procurement of professional assistance to investigate compliance options, the preparation of a compliance plan, the procurement of necessary permits for carrying out that plan, and appropriate

notice to the public. The Board will grant variance until May 9, 1989 subject to conditions. The City stated that its consultants would be ready by the end of May with a recommendation. The City then will have to implement a compliance alternative and come into compliance by the end of the variance period.

This Opinion constitutes the Board's findings of fact and conclusions of law in this matter.

ORDER

The City of Yorkville is hereby granted a variance from 35 Ill. Adm. Code 602.105(a) and 602.106(b) as they relate to the combined radium standard of Section 604.301(a), subject to the following conditions:

1. This variance expires on May 9, 1989.

2. In consultation with the Agency, the City shall continue testing for radium 226 and 228 to determine as accurately as possible the level of radioactivity in its wells and finished water.

3. One month after the grant of variance, evidence that the City has secured professional assistance in investigating compliance options shall be submitted to the Agency's Division of Public Water Supplies, FOS, 2200 Churchill Road, Springfield, Illinois 62706.

4. Six months after the grant of variance, the City shall complete investigating compliance methods, including those treatment techniques described in the Manual of Treatment Techniques for Meeting the Interim Primary Drinking Water Regulations, USEPA, May 1977, EPA-600/8-77-005, and shall prepare a detailed Compliance Report demonstrating how and when compliance will be achieved, but no later than May 9, 1989.

5. This Compliance Report shall be submitted to the Agency's Division of Public Water Supplies nine months after the grant of variance.

6. Three months after the date the Compliance Report is due in the Agency's office or after a written extension of time by the Agency, provided that this additional extension is no longer than three months, the City shall apply to the Agency's Division of Public Water Supplies, Permit Section, for all permits necessary for construction of installations, changes or additions to the City's public water supply needed for achieving compliance with 35 Ill. Adm. Code 604.301(a).

7. Construction shall begin at a time which will bring the City into compliance by May 9, 1989.

8. Pursuant to 35 Ill. Adm. Code 606.201, in its first set of water bills or within three months after the date of this Order, whichever occurs first, and every three months thereafter, the City shall send each user of its public water supply a written notice stating that the City:

   a) has been granted a variance from 35 Ill. Adm. Code 602.105(a) (Standards of Issuance) and Section 602.106(b) (Restricted Status) as they relate to Section 604.301(a), and

   b) is not in compliance with the public water supply radiological standard of 5 picoCuries per liter for combined radium 226 and 228. The City shall also state in the notice the average content of radium 226 and 228 in samples taken since the last notice period.

9. The City shall take all reasonable measures with its existing equipment to minimize the level of radium 226 and 228 in its finished water.

10. Within forty-five (45) days of the date of this Order, the City shall execute a Certification of Acceptance and Agreement to be bound by all terms and conditions of the exception granted. This Certification shall be submitted to the Agency at 2200 Churchill Road, Springfield, Illinois 62706. The form of said Certification shall be as follows:

Certification

I, (We) _____, hereby accept and agree to be bound by all terms and conditions of the Order of the Pollution Control Board in PCB 86-24, dated _____.

_____
Petitioner

_____
Authorized Agent

Title

Date

IT IS SO ORDERED.

J.D. Dumelle and B. Forcade dissented.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order was adopted on the 9th day of May, 1986, by a vote of 5-2.

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board