ILLINOIS POLLUTION CONTROL BOARD
July 24, 1980

CITY OF KNOXVILLE,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 80-79, -80
	)	
ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

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

This matter comes before the Board upon two variance petitions filed April 17, 1980 by the City of Knoxville (Knoxville). The petitions (Ra Pet. and F Pet.) request variances from finished water standards for gross alpha particle activity and fluoride of Rules 304(B) and (C) of Chapter 6: Public Water Supplies (Rules). The Board on its own motion will consolidate these actions for decision. On May 19 and May 30, 1980 the Environmental Protection Agency (Agency) recommended that the variances be granted with conditions (Ra Rec. and F Rec.). A first amended recommendation with regard to alpha particle activity was filed June 6, 1980. Knoxville waived its right to a hearing. On May 6, 1980 the Agency received a letter from Mr. and Mrs. Jim Goff. They were advised of their right to file a formal objection with the Board. None has been received. The letter concludes as follows: "Please consider what we've said while making your decision on the petition." The Board construes the letter as a comment and not an objection requesting a hearing pursuant to Procedural Rule 404.

Knoxville has a population of 2930 and is situated in Knox County, about three miles southeast of Galesburg. It operates a public water supply which serves 1125 users. It has one ground storage tank, a collecting reservoir and two elevated storage tanks. It has three wells, described as follows:

Well No.	Depth (ft.)	Capacity	
		Ml/day+	Million gallons/day
1	2480	1.31	.346
2	1380*	1.64	.432
3	2480	2.45	.648
Total	----	5.40	1.43

*The pleadings do not identify the wells. It is inferred from the absence of measurements of radioactivity for well 2 that it is the least deep.

+Megaliters (10^6 liters) per day.

RADIUM (PCB 80-79)

Rule 304(C)(1) sets a maximum limit of 15 pCi/l for gross alpha particle activity in finished water. The source of this activity is usually radium which occurs in trace amounts in many deep aquifers. For the remainder of this Opinion, "radium" will be used interchangeably with "gross alpha particle activity." The Agency has two analyses taken from Knoxville's distribution system and four from wells 1 and 3. The results are summarized as follows (Ra Rec. 2):

	Gross Alpha (pCi/l)	Date
Well 1	8.0	9-27-72
	40.3	3-31-75
Well 2	----	----
Well 3	8.8	9-27-72
	26.5	3-31-75
Distribution	19.7 $\pm$ 6.70	3-23-79
	19.3 $\pm$ 6.66	7-2-79

Rule 309(C)(1)(a) provides that compliance with the radiological standards is to be determined on the basis of four samples taken at quarterly intervals. The Agency affirms that it has restricted issuance of permits for water main extensions on the basis of two samples "because of the appearance of a violation and the requirements of Section 39 of the Act which place the burden of showing that a violation will not exist on the permit applicant." Although Knoxville has not filed a permit appeal, the Board notes that the provisions of the first sentence of Rule 309(C)(1)(a) apply only to enforcement cases. For purposes of permit issuance and variances other evidence of compliance or violation may be sufficient.

Knoxville states that for plants with less than 37.8 Ml/day (10.0 MGD) capacity zeolite softening may be the most desirable treatment method. It estimates an installation cost of $750,000, $667 per user or $256 per capita. Operating costs are not estimated but are expected to be very high (Pet. 1).

The Agency on the other hand estimates the capital cost at $194,000 with operation and maintenance at $34,000 per year. It estimates the increased monthly cost per service connection at

$4.00. The Agency also suggests that cost savings would be obtained either by finding a source of water for blending or by treating only one or two of the wells and blending the treated water to achieve compliance.

Bills have been introduced in Congress to alter the radiological standards or extend the time for compliance. The Board has previously noted an expert opinion that the standards could be increased considerably and still provide adequate protection (Village of Glasford v. EPA, PCB 79-238, February 7, 1980). The Agency believes that if there is any health threat from Petitioner's present level of radiation, it is a long term threat. Matched against the costs and attendant difficulties of installing treatment and the possible availability of blending, the Agency believes a variance is justified (Ra Rec. 5).

FLUORIDE (PCB 80-80)

Rule 304(B) sets a maximum limit of 2.0 mg/l for fluoride concentration in finished water for supplies in northern counties, including Knox County. The Agency has records of sixteen analyses ranging from 1.0 to 2.8 with an average of 2.04 mg/l fluoride. Four samples taken in April 1979 average 2.33 mg/l (F Rec. 2).

Both Knoxville and the Agency have presented cost data for treatment of fluoride with activated alumina. Knoxville estimates an installation cost of $750,000. Operation will require $185,000 in additional revenue per year or $14.00 per user per month. The Agency estimates are lower, ranging from $4.00 to $11.00 per month depending on what percent of water must be treated to achieve satisfactory finished water (F Rec. 6).

In its first amended recommendation the Agency suggests that fluoride and radium can be treated together. The Board notes that in previous cases the Agency has suggested that lime softening to reduce radium levels may also reduce fluoride levels to within the standard. Accordingly the cost of treatment may be overstated.

The Agency agrees that fluoride at a level present in Knoxville's water supply presents no threat to health. The Agency has urged the United States Environmental Protection Agency to raise the standard to four times the optimal level or to approximately 4.0 mg/l (F Rec. 2). The United States Environmental Protection Agency has stated that at levels up to 8 mg/l fluoride (and possibly higher) there have been no known harmful effects other than dental mottling at levels in excess of 4 mg/l (F Rec. 3).

Having considered the factors above the Board finds that Knoxville would suffer arbitrary or unreasonable hardship if required to suspend water main extensions or to treat immediately for radium and fluoride. Because of its obligations under the delegation of primacy of enforcement under the Safe Drinking Water Act, the Agency has recommended that the variances be granted only through January 1, 1981, the deadline for exemptions from the federal regulations (Turnberry Utilities, Inc. v. EPA, PCB 79-257, March 20, 1980; Village of Wataga v. EPA, PCB 80-30, May 1, 1980).

Because the petitions are deficient in their discussion of alternatives to treatment and combined treatment for radium and fluoride, the Board will grant a variance only through January 1, 1981 without considering whether Knoxville is entitled to a variance for either or both parameters for a longer period under federal law (40 CFR Part 142, Subparts E and F). Knoxville will be required to provide the Agency with a compliance program within 150 days of this Order. The Agency has indicated that, in the event the federal standards or deadlines are not changed, it proposes to enter into a compliance agreement with Knoxville under its enforcement powers (First Amendment to Recommendation). The United States Environmental Protection Agency has indicated that through this mechanism compliance programs may be extended beyond the deadline for exemptions (F Rec. 7).

In addition to the other conditions noted above, Knoxville will be required to periodically notify its customers of the existence of this variance.

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

ORDER

Petitioner the City of Knoxville is granted a variance from the 2.0 mg/l fluoride maximum standard and the 15 pCi/l gross alpha particle activity limitation of Rules 304(B) and 304(C)(1) of Chapter 6: Public Water Supplies, subject to the following conditions:

1. This variance will expire January 1, 1981.

2. Petitioner shall investigate the possibility of developing additional water sources which could be used in blending with its current well sources to reduce the radiation or fluoride level present and report to the Agency the information it has developed and the conclusions it has reached based on that information. As

part of its program, Petitioner should submit representative samples of water from its existing wells to the Agency for alpha radiation analysis.

3. Petitioner should explore the availability of landfill sites that can and will accept radiation bearing softening wastes should blending not prove to be a feasible alternative.

4. Within 150 days of the date of this Order Petitioner shall present to the Agency for its approval, a coordinated program (with increments of progress) to bring the supply into compliance with the fluoride and radiological standards in accord with applicable state and federal law.

5. Petitioner shall provide notice of this variance to its customers in writing at least once every three months. This notice shall indicate the most recently measured levels of radioactivity.

6. Within forty-five days of the date of this Order, Petitioner shall execute and forward to the Illinois Environmental Protection Agency, Division of Public Water Supplies, 2200 Churchill Road, Springfield, Illinois 62706 a Certificate of Acceptance and Agreement to be bound to all terms and conditions of this variance. This forty-five day period shall be held in abeyance for any period this matter is being appealed. The form of the Certificate shall be as follows:

CERTIFICATION

I, (We), _____, having read and fully understanding the Order in PCB 80-79, -80, hereby accept that Order and agree to be bound by all of its terms and conditions.

SIGNED _____

TITLE _____

DATE _____

IT IS SO ORDERED.

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify that the above Opinion and Order were adopted on the 24th day of July, 1980 by a vote of 5-0.

Christan L. Moffett, Clerk
Illinois Pollution Control Board