

stroke, or kidney disease. In addition no significant differences in these conditions could be attributed to relative levels of sodium concentrations. Consequently, home water softeners (which raise sodium levels) were found to have no association with cardiovascular disease. This conclusion is important because water softeners remove barium from drinking water. Since the use of home water softeners cannot be controlled, any conclusions on relative incidences of hypertension, heart disease, stroke, or kidney disease must be viewed with caution.

The guidance document recommends exemptions (similar to Illinois variances) for communities ". . . whose drinking water has barium concentrations up to 4 mg/l providing no adverse health effects attributable to the drinking water are discernible." The guidance document goes on to state: "The level of 4 mg/l in drinking water was calculated from the data . . . suggesting that adsorption of barium from the gastrointestinal tract in children is approximately 25% of ingested amounts. Therefore a 10 kg child drinking 1 liter of water containing 4 mg/l barium would adsorb only 1 mg of barium."

The finished water from three of Petitioner's wells (Nos. 6, 7 & 8) contains barium in excess of 1.0 mg/l and two of these exceed 4.0 mg/l although none exceeds 5.0 mg/l. Petitioner has agreed to operate and maintain its system so that no finished water would exceed 4.0 mg/l.

Petitioner claims that denial of a variance would cause hardship for two reasons. First, Petitioner has no excess capacity or alternative water source to replace these wells. Second, Petitioner has no excess funds to install additional barium removal equipment. Petitioner is asking for relief until January, 1981 so that it can re-evaluate costs, methods, and treatment to meet the standard.

Petitioner has attached an affidavit executed by Dr. Frank Fiorese, a toxicologist. Dr. Fiorese has concluded that the barium found in wells 6, 7 & 8 occurs in the form of barium sulfate. As such, he concludes, it will not diffuse through the gastrointestinal wall, will not reach the blood stream, and is not toxic.

The Agency supports a variance in this instance because Petitioner's existing zeolite softening equipment can reduce barium down to the 4 mg/l limit. Although USEPA may consider changing the Federal barium standard or the date for compliance, the Agency does not believe that Petitioner should rely on this contingency. Consequently, the Agency recommends that Petitioner devise a compliance plan within 6 months to meet the present standard.

Denial of a variance would constitute arbitrary or unreasonable hardship on Petitioner. Petitioner has the ability

to treat its water to a level which has been recommended as safe on an interim basis. The Board will not require Petitioner to conduct a survey of blood pressure levels among its high risk residents as recommended in the guidance document. A survey of this nature would involve considerable expense and would be of dubious value in light of the inconsistent results obtained in the USEPA health effects study.

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

ORDER

It is the Order of the Pollution Control Board that Petitioner be granted a variance from the maximum concentration limit for barium in Rule 304 B 4 of Chapter 6: Public Water Supplies until January 1, 1981 subject to the following conditions:

- 1) Petitioner shall maintain a level of 4.0 mg/l barium in its finished water.
- 2) Within six months of the date of this Order, Petitioner shall develop a program which will result in compliance with the present barium standard (1.0 mg/l) and shall submit the program to the Agency for approval. If the program, as approved, provides for the installation of new equipment or the development of additional raw water sources, Petitioner shall obtain the necessary Agency permits and submit quarterly progress reports to the Agency.
- 3) Within 45 days of the date of this Order, Petitioner shall execute a Certification of Acceptance and Agreement to be bound to the terms and conditions of this variance. This 45 day period shall be held in abeyance if this matter is appealed. The Certification shall be forwarded to the Illinois Environmental Protection Agency, Division of Public Water Supplies, 2200 Churchill Road, Springfield, Illinois 62706 and shall read as follows:

CERTIFICATION

I (We), _____, having read and fully understanding the Order in PCB 77-332, hereby accept that Order and agree to be bound by all of its terms and conditions.

SIGNED _____

TITLE _____

DATE _____

I, Christan L. Moffett, Clerk of the Illinois Pollution Control Board, hereby certify the above Opinion and Order were adopted on the 29th day of March, 1979 by a vote of 5-0.

Christan L. Moffett
Christan L. Moffett Clerk
Illinois Pollution Control Board