

ILLINOIS POLLUTION CONTROL BOARD
August 15, 1985

IN THE MATTER OF:)
)
PROPOSED AMENDMENTS TO) R85-14
PUBLIC WATER SUPPLY)
REGULATIONS, 35 ILL. ADM.)
CODE 602.105 and 602.106)

DISSENTING OPINION (by J.D. Dumelle):

Everyone wants economic growth. No one wants industrial expansion or commercial or residential development halted in Illinois.

But the effects of this Emergency Rule can be to expose more people to levels of radium in drinking water up to four times the Federal standard issued under the Safe Drinking Water Act.

The residential subdivision constructed as a result of the majority's action today will remain in existence far into the future. The new families moving into those homes may also reside there for many years.

The Federal government is currently re-evaluating the radium standard. But if an extended comment period is granted, a final decision may not be had until 1987. Then, if the standard is not materially loosened, public water supplies would probably need at least three years to design and install radium-removal plants. Thus, at least five years could elapse. And, if no prosecutions are commenced, a water supply might go for 10 years or more with its present high radium levels unabated.

How dangerous are these high radium levels? The prestigious Journal of the American Medical Association ("JAMA") published an article in its August 2, 1985 issue titled "Association of Leukemia With Radium Groundwater Contamination" by Lyman, Lyman, and Johnson. (Ex. 21). The principal author, Dr. Gary H. Lyman, is a physician with an MPH degree. The study found a greater incidence of leukemia in counties with high levels of radium in groundwater than in the counties with low levels of radium. The authors do not assert proof of a causal relationship between leukemia and radium in groundwater but recommend further study.

The authors point out that "Almost 85% of the radiation-induced leukemias occur within 20 years of exposure, with the greatest risk observed within five to ten years" (emphasis added). (p. 621). As discussed above, ten or more years may elapse before the existing high radium levels in Illinois are brought down. The "greatest risk" will occur in this period.

The majority today has allowed water main extensions for supplies with up to four times the Federal radium standard. The principal support for this level comes from the testimony of Dr. Richard E. Toohey, a nuclear physicist at Argonne National Laboratory.

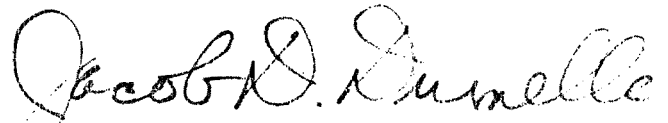
Dr. Toohey has three major flaws in his position. He doubles the Federal standard by claiming that average water intake is one liter per day and not the two liters per day used by the Federal government in setting the standard. (R. 45-46).

However Exhibit 26A shows that average adult water intake is 1.5 liters per day with some individuals consuming four liters per day. Thus, Dr. Toohey's assumed average water intake is far too low. Furthermore, protection ought to be afforded those individuals who consume four liters a day.

His second flaw is his neglect of age-and-ingestion factors. He postulates a "threshold" for bone sarcomas at a 9 mCi dose. This is the case of a 7-year old boy. Yet radiation has no "threshold". Are even younger children more sensitive to lower radium doses? Dr. Toohey's ingestion absorption factor of 20% based upon young adults does not apply to infants. (R. 62, 73-4). They may be bottle fed with high radium local water. Their absorption rate may well approach 100%.

Lastly, he neglects the possibility of leukemia incidence (R. 85) and other cancers. Yet the JAMA article on Florida mentioned above finds a increase in leukemia with higher radium levels in groundwater. Dr. Toohey feels that only head carcinomas and osteosarcomas are caused by radium. Yet a 1982 article titled "Drinking Water and Cancer Incidence in Iowa" by Dr. Judy A. Bean, Peter Isacson, Rolf M.A. Halme, and James Kohler in the prestigious American Journal of Epidemiology stated in its abstract, "Incidence rates of cancers of the lung and bladder among males and of cancers of the breast and lung among females were higher in towns with a radium -226 level in the water supply exceeding 5.0 pCi/l". (Ex. 26E).

It seems to me that when in doubt about a material which can cause cancer that one takes the "prudent man" approach and minimizes the exposure to that substance. I do not agree with the majority that the "overwhelming weight" of this record justifies allowing more people to be exposed to more radium. More radium means more cancer because radiation has no threshold.



Jacob D. Dumelle, P.E.
Chairman

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Dissenting Opinion was filed on the 20th day of August, 1985.

Dorothy M. Gunn
Dorothy M. Gunn, Clerk
Illinois Pollution Control Board