



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

JUN 10 2005

Amy Antonioli  
Illinois Pollution Control Board  
100 W. Randolph, Suite 11-500  
Chicago, Illinois 60601

REPLY TO THE ATTENTION OF:

WQ-16J

**RECEIVED**  
CLERK'S OFFICE

JUN 14 2005

STATE OF ILLINOIS  
Pollution Control Board

Dear Ms. Antonioli:

Recently, the Illinois Pollution Control Board (Illinois PCB) proposed revised water quality standards for radium for General Use waters in Illinois. Illinois' existing radium standard for General Use waters is 1 pCi/L for radium 226. The proposed revision would change the General Use standard to 3.75 pCi/L for radium 226 and 228 in all General Use waters, except for areas within one mile of an outfall from a wastewater treatment plant, "receiving wastewater discharge from public drinking water supplies using ground water with a high radium concentration" where a standard of 30 pCi/L would apply. The United States Environmental Protection Agency, Region 5 (USEPA) has informally reviewed the Illinois PCB proposal and offers the following comments.

There are no national criteria recommendations for radium to protect aquatic life or wildlife, and there are insufficient data to support derivation of water quality criteria for either of these endpoints using USEPA methods. USEPA is unaware of any scientific evidence that would suggest that a standard set at this level would compromise protection of any of the applicable designated uses, and does not anticipate disapproval of the proposed General Use standard of 3.75 pCi/L.

However, USEPA is concerned that the proposal does not include any demonstration that 30 pCi/L within a one-mile mixing zone provides a level of protection consistent with the 3.75 pCi/L value, nor any other independent level of protection for the designated use. There does not appear to be any technical or scientific justification for creating a categorical exemption from a water quality standard intended to protect aquatic life and wildlife for a mile downstream of a wastewater discharge. In addition, it is not clear how the proposed 30 pCi/L standard would be implemented to protect possible downstream public water supply intakes.

USEPA also has questions about the duration and frequency of exceedance associated with the proposed standard. As proposed, it appears that any exceedance of the standard would be considered to indicate impairment of the use. However, the proposed revised standard appears to be based on exposure to wildlife from consumption of contaminated aquatic organisms that might accumulate radium in their tissues from exposure to radium in the water. This type of exposure is long-term and a more appropriate indicator of the

level of risk to wildlife is probably some measure of average concentration over time. Therefore, it would appear to be appropriate to express the standard as an average value over some period of time to reflect the concern over longer-term exposure, rather than a value that can never be exceeded. For example, in the Great Lakes Water Quality Guidance (40 CFR 132), USEPA recommends that waste load allocations based on wildlife standard be calculated using the 90-day, 10-year low flow as the design flow. However, if the Illinois PCB chooses to express the General Use standard as a long-term average value, then the Illinois PCB should also establish a 5 pCi/L Public and Food Processing Water Supply standard as an instantaneous maximum standard for public water supply intakes. This would ensure that public water supplies utilizing surface water would meet the Federal drinking water maximum contaminant level for radium.

Finally, we note that USEPA's regulations define "pollutant" to include radioactive materials, except those regulated under the Atomic Energy Act of 1954, as amended. See 40 CFR 122.2; *Train v. Colorado Public Interest Research Group, Inc.*, 426 U.S. 1 (1976). Although it is appropriate for Illinois to adopt water quality standards for radium, it will be necessary for the State, or USEPA where appropriate, to establish that a particular radioactive material is a "pollutant" before taking other actions under the Clean Water Act (CWA), such as establishing National Pollutant Discharge Elimination System (NPDES) limitations consistent with water quality standards or listing a waterbody or establishing or approving a total maximum daily load under Section 303(d) of the CWA for a waterbody that is not achieving these standards. A radioactive material may be a "pollutant" within the definition of 40 CFR 122.2 in some fact-specific contexts, while not being a "pollutant" within that definition in other fact-specific contexts.

If you have any questions, please feel free to contact me at (312) 886-6758, or Ed Hammer of my staff, at (312) 886-3019.

Very truly yours,



for Linda Holst, Chief  
Water Quality Branch