



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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January 9, 1992

Honorable William K. Reilly
Administrator
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, D.C. 20460

OFFICE OF
THE ADMINISTRATOR

Subject: Commentary on Residual Radioactivity

Dear Mr. Reilly:

Upon the recommendation of its Radiation Advisory Committee, the Science Advisory Board urges the Agency to develop Federal radiation protection guidance specifically for removal or remediation actions for radioactive substances at various locations, including Superfund sites and Federal facilities. No radiation guidance directed to allowable residual radioactivity contamination at such sites currently exists. This recommendation is directed toward residual radioactivity resulting from human activities, not naturally occurring distributions of radionuclides.

The present guidelines available for assessing cancer risk focus mainly on chemical contamination at Superfund sites. These use risk-based goals frequently augmented by reference to Applicable Relevant and Appropriate Requirements (ARARs), which are specific numerical guidelines derived from regulatory limits used elsewhere. For radioactive substances ARARs either do not exist or were developed for purposes distinctly different from those contemplated for residual radioactivity. For example, the Agency commonly selects a radionuclide standard for finished drinking water to use as an ARAR for leachate or contaminated groundwater at such sites; this practice imposes an unnecessarily high restriction in areas wherein such water is not being used for human consumption.

Both the Department of Energy and the Superfund program must deal with radioactive contaminants at more than a hundred sites of various types. The number is likely to increase, perhaps substantially, as federal site evaluations proceed, and as radioactivity sources not previously considered gain public attention. Examples of this latter category are accumulation of naturally occurring radioactive materials in wastes from oil drilling and pipeline activities and in municipal water treatment residues. The Congress has recognized this potential problem by directing the Agency to address this issue in a recent appropriation bill. The Agency previously issued an Advance Notice of Proposed Rule-Making for residual radioactivity in 1986 (51 FR 22264) but the Agency has made little progress in finalizing this notice.

States and Federal agencies do not now have specific criteria for residual radioactivity to follow in assessing sites, or for designing and implementing remedial actions. This lack of clearly defined and consistent requirements leads to considerable variation in approach from site to site and, at times, selection of costly clean-up procedures that may not be justifiable from a cost/risk point of view.

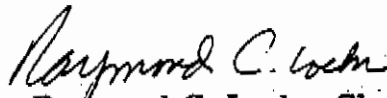
The technical issues that should be considered in developing guidance should include at least the following:


1. the types and forms of radioactive substances at sites;
2. a consistent protocol for exposure assessment and risk estimation that recognizes both spatial and temporal factors and the attendant uncertainties associated with human exposures to radiological contaminants at or from these sites;
3. the degree to which other contaminants and biota may enhance or inhibit the on-site and off-site migration of radionuclides; and
4. consideration of technical approaches for implementation of guidelines through managing radionuclide contaminants, and the effectiveness, costs, and cost/risk balancing for selected remedial actions.

Such guidance could include residual contamination levels for individual radionuclides that should not be exceeded, or perhaps set forth decision-making processes for establishing such levels. Current Superfund guidance suggests that any lifetime risk in excess of one in ten thousand is an obligatory (de maximus) basis for consideration of the feasibility of removal or remediation action. Once an action has begun, the risk goal may be as low as one in a million, which may represent a de minimis level for which no further action is indicated. However, the radiation exposures that would produce such risks are far below variations in the natural background level. Measurement of the corresponding nuclide concentrations is difficult and the reliable estimation of the net effects independent of natural background is difficult if not impossible to verify. The Agency thus must establish whether the de maximus and de minimis values used for Superfund actions for chemicals are justified for radionuclides as well, and if it is determined that these levels are not justified, such values and ARARs for radionuclides must be established.

The Board will continue to follow the Environmental Protection Agency's progress on residual radioactivity. We shall be happy to elaborate on the need for Federal guidance at your convenience. We look forward to hearing your thoughts on an approach to this important issue.

Sincerely,


Raymond C. Loehr, Chair
Executive Committee
Science Advisory Board


Oddvar F. Nygaard, Chair
Radiation Advisory Committee

Enclosure: Committee roster

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