May 16, 2000

Docket No. 30-34751 License No. 31-02892-06

Randy Godfrey
Engineering Manager
U.S. Department of the Army
New England District, Corps of Engineers
656 Virginia Road
Concord, MA 01742-2751

Dear Mr. Godfrey:

Enclosed is the NRC analysis of the proposed derived concentration guideline levels (DCGLs) for the St. Albans Extended Care Center. Note that additional information is required as a result of the analyses to justify the DCGLs, as is described in the enclosed document.

As you have discussed with Todd Jackson of my staff, a meeting is scheduled at NRC Headquarters on May 22, 2000, to discuss the results of the analysis performed of the proposed soil DCGL. The objective of the meeting is to clearly define what additional information is required to support the proposed DCGLs and assure that any questions are discussed.

We look forward to continuing to work with you and the Corps of Engineers staff on this important project, and appreciate your time and interest. Please contact Mr. Jackson at (610)337-5308 if you have any questions regarding the enclosure or the scheduled meeting.

Sincerely,

/RA Marie Miller for/

Ronald R. Bellamy, Ph.D.
Chief, Decommissioning and Laboratory Branch

Enclosure: Evaluation of DCGLs for the St. Albans Extended Care Center

cc w/enclosure:
H. Honerlah, Corps of Engineers
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Evaluation of Proposed Soil Derived Soil Concentration Guideline Levels (DCGLs) for Decommissioning of the St. Albans Extended Care Center (ECC) Site

Staff evaluated the licensee's derivation of the DCGL for soil and concluded that it was generally acceptable as long as the non-irrigated plant pathway is the dominant exposure pathway. However, the licensee used distribution coefficients (K_d) values of 30 cm^3/g (the default K_d in RESRAD for Sr-90) for the contaminant zone, unsaturated zone, and saturated zone. The default K_d values (and higher values) are sufficient to allow the activity to be essentially retained in the contaminant zone. Without a cover over the contaminated soil (as was assumed by the licensee), the predominant exposure pathway remains the non-irrigated plant ingestion pathway. However, when a lower K_d value such as 3 cm^3/g is assumed for the three zones, the Sr-90 readily migrates to the ground water resulting in the drinking water pathway becoming the predominant pathway.

The licensee justified using the default K_d (i.e., 30 cm^3/g) because the actual K_d value is believed to be smaller based upon a measurement at another site, and the smaller K_d results in a lower dose estimate (i.e., higher DCGL). No physical parameter information was provided on why the K_d value is considered representative (e.g., similar soil texture, pH and redox conditions, etc.) for the licensee's site. Use of the smaller K_d value of 3 cm^3/g results in a smaller dose (i.e., larger DCGL) only because the licensee used the nondispersion ground-water model in RESRAD.

Although the nondispersion model is the default modeling approach, it requires that certain assumptions be made with regards to the hypothetical well location in relationship to the contamination. Generally, the nondispersion modeling approach results in a less conservative dose estimate than the alternative mass balance modeling approach. Because it is generally less conservative than the mass balance approach and because the mass balance approach is more consistent with the modeling approach used in developing the screening DCGLs, the nondispersion approach should not be used without justification.

If the licensee chooses to use the mass balance approach, the derived DCGL is greatly reduced. A key parameter is the fraction of water obtained onsite. As with the fraction of onsite plant food, it is probably not reasonable to assume that the hypothetical resident will, in the near future, get all of its water from an onsite well given that the site is located in an urban setting. Based upon staff calculations, the peak groundwater concentration occurs roughly 15 years after the onset of the analysis. Although the contaminants have been present at the site for more than 25 years (i.e., assuming as reported that the licensed activities ended on December 31,1973), significant leaching from the soils are not likely to occur until the building is removed.

RECOMMENDATION

Staff believes that the Corps of Engineers (COE) has developed a conservative DCGL for Sr-90 for cleaning up the soils at the VAECC site, assuming that the Sr-90 is retained in the soil. However, staff does not believe that the COE has sufficiently justified the assumption that the Sr-90 will be retained in the soils. Use of a smaller distribution coefficient (K_d) could result in a higher dose estimate (i.e., lower DCGL) with the use of the less conservative mass balance modeling approach.

Accordingly, additional information should be provided to either support the use of the default distribution coefficients (K_d)for Sr-90 or use of the nondispersion modeling approach.