

Princeton University DEPARTMENT OF GEOLOGICAL AND GEOPHYSICAL SCIENCES

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July 1, 1980

Director,  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

I wish to comment briefly on the draft environmental statement for decontamination of the Dresden nuclear power station, NRC report NURE G-0686, Docket No. 50-10, May 1980.

I have participated in several research projects relating to disposal of organically chelated radionuclides and disposal of chelating agents in general. As a result, I have become concerned about the prospect of burial of large quantities of chelating agents in low level radwaste repositories. This problem extends, of course, beyond Dresden Unit No. 1 to all decontamination operations, present and future.

I am encouraged by the recommendations made since initiation of this project that (1) all waste be disposed of in desert repositories with low precipitation, deep water tables, etc., and (2) all chelated waste be segregated physically by an effectively impermeable barrier from other radioactive wastes in the same repository. I urge that these points be adopted as firm requirements for this and all similar operations in the future.

However, I am surprised that the alternative of physically or chemically degrading chelating agents after reactor decontamination and prior to disposal is treated in only the most cursory fashion in this report (as a brief response to question 4d, Appendix A, pg. 12, and not even mentioned in Section 2.4 which evaluates alternatives). This recommendation has now been made quite strongly in print (Means et al. (1978) Sci., v. 200, pp. 1477-1481, and Means et al. (1980) Environ. Pollution, v. 1, Ser. B., pp. 45-60), in reports (Means and Alexander (1980) "The Chelate Problem" Battelle Columbus Lab. Rpt. BMI-X-701, DOE contract W-7405, ENG92, Task No. 119), and by letter to the NRC (letter from me to Dr. J.M. Hendrie dated June 25, 1979). I note, for example, that the NS-1 chelating agent decomposes at approximately 300°F (pg. 14, Appendix A), only 50°F above the proposed temperature of the decontamination procedure (pg. 3-1), and is also chemically degradable. Chelate degradation would obviate many objections raised regarding disposal of these and similar wastes, and should warrant much more rigorous consideration. Where data are unavailable programs should be undertaken to design and evaluate specific degradation procedures applicable to large-scale decontamination operations.

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Director,  
Division of Licensing

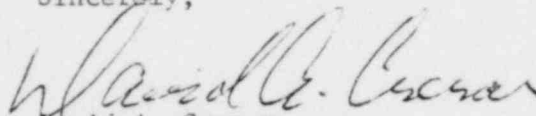
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I also find it unfortunate that in this report the NRC should have consistently de-emphasized the significance of chelating and other strong complexing agents in the migration of radioactive wastes. It is the very presence of large quantities of such compounds to be contained in the waste generated from decontamination operations that has created much of the present public concern. Surely this issue should be addressed directly in your impact statement (where the word "chelating" is now mentioned only once in a passing reference to the Hanford disposal license, Sect. 4.2.3). The NRC response to several questions in the Appendix notes, quite rightly, that observed migration at ORNL is attributable to fracture flow and high precipitation, but tacitly de-emphasizes the parallel importance of organometallic complexing and chemical controls in general. Obviously the NRC is aware that waste migration is both a physical and chemical problem, yet this report suggests otherwise: the chemical problem is not fully acknowledged; pertinent fundamental properties of the solvent are not noted and discussed. These properties include biological, physical, and chemical degradability; complexity constants for selected radionuclides; aqueous solubility; uptake and metabolization by organisms; influence on distribution coefficients,  $K_d$ , for selected adsorbent substrates as a function of solvent concentration.

Finally, one purpose of reports such as this must be to communicate clearly with a concerned public. Unfortunately, the numerous grammatical errors in this report, repetition and scrambled pagination, and the incomplete responses to queries such as those noted above do not project an image befitting the NRC.

Sincerely,



David A. Crerar  
Associate Professor, Geochemistry

DAC:jo  
copy: Paul O'Connor  
NRC, Washington, D.C.