

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of  
KERR-MCGEE CHEMICAL CORPORATION  
(West Chicago Rare Earths  
Facility)

Docket No. 40-2061-ML  
ASLBP No. 83-495-01-ML

AFFIDAVIT OF PAUL A. BENIOFF  
CONCERNING CONTENTION 2(o)

I, Paul Benioff, being duly sworn, do depose and state:

1. My name is Paul A. Benioff. I am employed by Argonne National Laboratory, Division of Environmental Assessment and Information Systems, as an environmental chemist. I have a Bachelor of Science degree in botany and a Ph.D. in chemistry. A statement of my professional qualifications may be found in the record of the hearing, ff. Tr. 688.
2. In the preparation of the Supplement to the Final Environmental Statement related to the decommissioning of the Rare Earths Facility, West Chicago, Illinois (NUREG-0904 Supplement No. 1, Volumes I and II, hereinafter referred to as the SFES), I authored the sections on: Source Characteristics; EPA Standards; State of Illinois Standards; Water Quality in the Affected Environment; the Chemical Impacts on Surface and Groundwater Quality; and the cost-benefit analysis. I also provided the distribution coefficients for chemical species for hydrogeological modeling.
3. The purpose of this affidavit is to address Contention 2(o).

4. The total amount of rare earth compounds under consideration is about 310 cubic meters. This volume is less than 0.1% of the total 376,000 cubic meters of waste (Table 2.2 of the SFES) and as such is an insignificant fraction of the total waste volume. Moreover, the mobility of the rare earths is quite low. This is supported by the recommended literature values of the distribution coefficient (Kd values) of 1,000 ml/g for the rare earths (Sheppard et al, 1984; Bacs and Sharp 1983). This high value shows that rare earths are less mobile than any of the chemical species for which peak concentrations were calculated for the SFES (Table E.7).

5. There is no reason to expect that rare earth compounds would have a deleterious effect on the clay liner, especially because they would be present in such low concentrations in the aqueous phase. This is a result of the small amount of rare earths disposed of and the low mobility.

6. Based on data summarized in the NIOSH Registry of Toxic Effects of Chemical Substances, the toxicity of the rare earths is also quite low or nonexistent, especially compared to other parameters listed in Table E.7 of the SFES.

The foregoing statements are true and correct to the best of my knowledge and belief.

*Paul A. Benhoff*  
PAUL A. BENHOFF

Subscribed and sworn to before me  
 this 19th day of January, 1990

*Margaret A. Zurek*  
MARGARET A. ZUREK  
 Notary Public

My commission expires: \_\_\_\_\_

"OFFICIAL SEAL"  
 MARGARET A. ZUREK  
 NOTARY PUBLIC, STATE OF ILLINOIS  
 MY COMMISSION EXPIRES 2/13/91