

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	}	
KERR-MCGEE CHEMICAL CORPORATION	}	Docket No. 40-2061-ML
(West Chicago Rare Earths	}	ASLBP No. 83-495-01-ML
Facility)	}	

TESTIMONY OF PAUL BENIOFF ON CYANIDE ISSUE

Q.1. What is the purpose of your testimony?

A.1. The purpose of this testimony is to explain the SFES forecasts of cyanide contamination in the groundwater in terms of the confidence that can be placed in the analyses.

Q.2. How were the peak concentrations of cyanide calculated for presentation in the SFES?

A.2. The cyanide concentrations were calculated using the same overall model as was used for the metals. Cyanide was assumed to be completely mobile with a value of 0 for the distribution coefficient (Table E.1 of the SFES). This value is recommended in the literature; references are given in the footnotes to Table E.1 in the SFES. Also, this value is maximally conservative in that it maximizes the concentration of cyanide in the leachate and the speed at which it moves in the groundwater (no retardation).

Q.3. What confidence can be placed in the projections of cyanide concentrations in the groundwater?

A.3. The values of peak concentrations presented in Table E.7 in the SFES were calculated using conservative assumptions for the model parameters. Thus they represent upper bounding values in the sense that the calculated values should be much higher than the values which are expected to actually occur. This is especially true for cyanide because of the assumption of complete mobility.

Paul Benioff

Professional Qualifications

At present I am a section leader in the Division of Environmental Assessment and Information Systems at Argonne National Laboratory. Besides my duties as section leader I am the project manager for the preparation of a study dealing with the cleanup of waste management areas at an Army installation. Other duties include writing sections of documents dealing with characterization and cleanup of waste at various Department of Defense (DOD) and Department of Energy (DOE) installations.

From 1978 until early 1989 I was employed by Argonne National Laboratory as an environmental chemist in the divisions of Environmental Impact Studies and of Energy and Environmental Systems. During this period I worked on various projects for the DOD and DOE. My duties included developing radiological and chemical characteristics of waste sources, determining the impact on chemical and radioactive water quality for groundwater and surface water, analyzing various waste disposal technologies, carrying out cost-benefit analyses, analyzing federal and state regulations appropriate to waste disposal, analyzing environmental pathways for some organic chemicals, and analyzing the effect on the battery industry of the development of a large fleet of electric vehicles. I was also project manager or assistant project manager on other DOD projects and on the NRC project for the West Chicago Facility.

From 1961 until 1978 I worked in the Chemistry Division of Argonne

National Laboratory I was working on theoretical aspects of chemical reactions and nuclear reactions at high energy. I was also working the foundations of quantum mechanics and the relationship between the foundations of physics and mathematics.

I have published over 35 papers in refereed technical journals and have participated in the preparation of more than 21 environmental reports.

I received a bachelors degree in botany in 1951 from the University of California at Berkeley and a Ph. D. from the same university in nuclear chemistry in 1959. In 1960 I received a postdoctoral Weizmann Fellowship to work at the Weizmann Institute of Science in Israel.