40-8027
PDR
Return
to
3165S

KERR-McGEE CORPORATION
KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

ENVIRONMENT AND HEALTH MANAGEMENT DIVISION

December 22, 1982

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. R. G. Page
Uranium Licensing Branch
Division of Fuel Cycle & Material Safety, NMSS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
ATTN: Mr. Mark Rhodes

Re: SUB-1010, Docket 40-8027

Dear Mr. Rhodes:

In answer to your questions in regard to the composition of the lime sludge proposed for burial in our "Application for Burial of Radioactive Waste in Soil" dated May 1, 1981 the following information is provided:

1. pH
The pH measures between 10.5 and 11 standard units.

2. Chemical Analyses and the compound likely to exist.

The analyses of the elements are given as follows:

	ppm	Probable Compound
Aluminum	4000	$Al_2(OH)_6$
Boron	3000	Hydrated calcium borate
Calcium	300,000	Calcium hydroxide Calcium carbonate
Iron	1,000	Ferric oxide
Potassium	550	Potassium Iron Sulfate
Magnesium	1500	Magnesium hydroxide
Sodium	7,000	Sodium silicate

Remainder of heavy metals present in amounts less than 100 ppm.

21736

JAN 6 1983

3. Radioactivity

	pCi/gm	Probable Compound
Uranium	740 pCi/gm	U_3O_8
Thorium 230	5.5 pCi/gm	Thorium oxide
Radium	.1 pCi/gm	Radium hydroxide

4. Moisture content may vary but averages approximately 55%.

5. Activity in the leachate

Uranium	670 pCi/l
Thorium 230	8.5 pCi/l
Radium 226	1.2 pCi/l

Note that the uranium natural daughters are out of equilibrium because the uranium originating in this slurry is uranium hexafluoride not collected in the secondary cold traps. The uranium in the UF_6 has been stripped of its radium and thorium daughters in the purification process. Therefore, the uranium analysis is an equal mixture of uranium 238 and 234. We calculate that it will require approximately 190,000 years for the uranium 234 to come into equilibrium with its thorium and radium daughters.

Please let me know if you have additional questions.

Sincerely,

Allan S. Dooley for

W. J. Shelley, Vice-President
Nuclear Licensing & Regulation

WJS/pd

m