

Please refer to our discussion of January 13, in regard to the data supplied by Kerr-McGee on the chemical characteristics of the lime sludge. The additional questions asked are listed below with the appropriate answer immediately following:

1 Q. How is leachate obtained?

- A. Leachate is the result of running the EP toxicity test procedure on a quantity of as is sludge. The material passes the test when the leachate contains a concentration of heavy metals less than 100 times the drinking water standard. Test is conducted by taking 100 grams of the asis material adding 1600 ml of distilled water, decreasing the pH with .5N acetic acid to a pH of 5 plus or minus .2. In the event this pH is not reached prior to adding 400 ml of acid, the addition is terminated. The mixture is then agitated for 24 hours, the volume adjusted and the liquid separated from the solid phase and analyzed for elements of interest. A more detailed description of the procedure can be found in 40 CFR 261.24 Appendix II.
- 2 Q. How much of material is leached out by this procedure?
- FEE EXCENT A. This procedure is intended to remove heavy metals in the solution at a pH of 5. However, with the lime slurry as tested, the limiting amount of acetic acid will not reduce the high pH of the lime system. As a consequence, essentially none of the heavy metals will be removed.

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- 3 Q. Total activity is given for dry mater al. what is the moisture content?
  - A. The moisture content as stated elsewhere is approximately 55%. My earlier answer was wrong in regard to the EP test. Analyses are performed on an as-is basis.
- 4 Q. What percent of the sludge is soluble?
  - A. As described above, all of the heavy metals will be insoluble. However, uranium will be present in the sludge as uranium oxyfluoride (U02F2) which is completely soluble in water and continues to be soluble in the lime slurry since the holding power of the uranium for the fluoride is as high as the holding power of calcium for the fluoride present as hydrofluoric acid. When this soluble uranyl fluoride comes in contact with the clays of the pit liner, which contains significant quantities of aluminum, the uranium will be immediately precipitated as a hydrous oxide with the aluminum combining with the fluoride since the aluminum fluoride bond is stronger than the uranyl fluoride bond.

Please let me know if you have further questions.

Sincerely,

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

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