PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 25 1979

Mr. David A. Crerar, Assistant Professor
Princeton Univeristy
Department of Geological and Geophysical
Sciences
Guyot Hall, Princeton, New Jersey 08540

Dear Mr. Crerar:

This is in response to your letter dated June 25, 1979 to Dr. Hendrie which requested that an Environmental Impact Statement (EIS) be prepared prior to the chemical decontamination of Dresden Nuclear Power Station Unit No. 1. We are currently reviewing the need for such an impact statement for the decontamination as a result of a petition by Mrs. Kay Drey dated March 10, 1979.

A copy of our response to Mrs. Drey and the related Federal Register notice are enclosed for your information. Please be assured that the Dresden decontamination will not go forth until the need for an Environmental Impact Statement is resolved.

We will provide you with copies of our decision on this matter when we have completed our review.

We have reviewed your comments on the subject of the disposal of chelated decontamination waste in low level waste burial sites. Based on this review we have concluded that the waste from the Dresden chemical decontamination should be disposed of in a dry burial site where the potential for interaction of the waste with ground water is minimial. Commonwealth Edison, the licensee for Dresden Unit 1, has agreed to dispose of the Dresden 1 waste at either Beatty, Nevada or Hanford, Washington commercial low level waste burial sites. These sites differ significantly in their geologic and hydrologic characteristics from the Oak Ridge site where chelant-aided migration of radionuclides was observed by you and your colleagues.

Specifically, the Oak Ridge site, where migration occurred, experiences very high precipitation and has a water table so shallow that it probably intersects the disposal bits and trenches during periods of heavy rain fall. In addition, the Oak Ridge topography is hilly with steep slopes underlain by factured shale material which allows underground water and radioactive waste to flow down hill through the fracturer until it seeps to the surface within 250 feet of a perennial stream.

Conversely, the commercial waste burial sites at Beatty and Hanford, where no migration of radionuclides has been observed, are flat desert areas with very low precipitation, a water table approximately 300 feet below ground level and a distance of 8 to 10 miles to the nearest perennial stream.

In addition to these site characteristics, which prevent the migration of radioactive material from the desert waste burial sites, another significant difference between the proposed waste disposal technique and the now discontinued Oak Ridge methods is that the Dresden waste will be disposed of as a solid. At Oak Ridge over 35 million gallons of liquid radioactive waste was pumped into the disposal trenches. We estimate that approximately 7 million gallons of liquid waste was disposed of in Trench No. 7, which you identified as a source of chelated radionuclides. Because of the differences we have concluded that the Dresden wastes should be disposed of in a dry burial site. This conclusion will be further discussed in our response to Mrs. Drey.

With regard to your question about the leach diffusion rate of the chelate within the solids, Dow Chemical has reported that approximately 0.7% of the contained Co^{60} was leached out of the solid in the first week of immersion in deionized water and that only an additional 0.2% was leached out in the next 60 days. The amount of Co^{60} expected to migrate from the solid in a dry burial site in the absence of ground water is expected to be significantly less than the results of these tests.

We have reviewed the results of Commonwealth Edison's pilot scale decontamination conducted at their test loop at Dresden 1. We have concluded that the tests demonstrated the effectiveness of the decontamination process in preventing uncontained leakage during the decontamination or the solidification process.

If we may provide any additional information, please feel free to contact us.

Sincerely,

Darrell G. Eisenhut, Acting Director
Division of Operating Reactors

Enclosures:
As stated