



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

SEP 7 1979

Docket No. 50-10

Leonard J. Banaszak
 Professor of Biological
 Chemistry
 Washington University
 School of Medicine
 660 South Euclid Avenue
 St. Louis, Missouri 63110

Dear Professor Banaszak:

This is in response to your letter dated July 23, 1979, which requested information related to the chemical decontamination of Dresden Nuclear Power Station, Unit No. 1.

We have been reviewing this project since Commonwealth Edison's initial decontamination proposal on December 12, 1974. On December 9, 1975, we issued a conditional authorization which allowed Commonwealth Edison to initiate the chemical decontamination subject to the completion of three items which would be resolved as follows:

1. The testing program will be completed and the results submitted for the review and approval of the NRC staff prior to performing the proposed chemical cleaning.
2. A pre-service inspection program for the primary coolant boundary will be formulated and submitted for NRC review and approval prior to returning the reactor to service.
3. A post-cleaning surveillance program which includes additional surveillance specimens and a specimen withdrawal and examination schedule will be submitted for NRC review and approval prior to returning the reactor to service.

A copy of our Safety Evaluation in support of this action is enclosed for your information.

Since our 1975 authorization Commonwealth Edison has completed its materials test program and construction of the necessary support facilities to carry out the project in a safe and environmentally acceptable manner. Our review of the testing program and the facility construction is continuing and will be completed prior to the chemical cleaning that is currently scheduled for November 1979.

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With respect to the specific questions posed in your letter, the following answers are provided:

Q1. Is it true that 3000 curies are expected to be washed free from the pipes with the chelating agents?

A. Yes, Commonwealth Edison has estimated that 3000 curies \pm 1000 curies of activated corrosion products will be removed by the decontamination.

Q2. How was this estimate obtained?

A. Samples have been removed from the Dresden 1 primary coolant system during maintenance and repair. These samples have been analyzed by gamma ray spectroscopy to determine the radionuclide content of the radioactive contamination in the system. The following radionuclides are expected to be present in the waste in the quantities indicated:

<u>NUCLIDE</u>	<u>CURIES</u>	<u>Ci/55 Gal. DRUM</u>
^{60}Co	2160	1.80
^{58}Co	630	0.53
^{144}Ce - ^{144}Pr	117	0.10
^{54}Mn	30	0.03
^{95}Zr - ^{95}Nb	21	0.02
^{57}Co	15	0.01
^{141}Ce	15	0.01
^{103}Ru	9	<.01
MFP	3	<.01
	<u>3000</u>	<u>2.50</u>

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Q3. Is 1.2×10^4 nano curies/gram about the normal specific activity of buried radioactive waste?

A. Radioactive wastes for burial typically have specific activities on the order of 1 Ci/100 lb. This value is roughly equivalent to 25×10^6 nano curies/gram. Therefore, the specific activity of the Dresden decontamination waste is comparable to other wastes currently being buried.

Q4. What is the rate of leakage from such a matrix (assuming that the container is absent)?

A. With regard to your question about the leaking 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.

Q5. Is the container constructed of metal?

A. Yes, the waste will be buried in steel drums.

Q6. Is the temperature of the container and polymer measurably affected by the radioactivity?

A. No, there is no significant heat generated in a drum by 2.5 curies of solid waste.

Q7. If the container is metal, is the corrosion rate notably affected by any heating effects due to radiation or the chelating agents, or the unpolymerized solidifying monomer?

A. No significant heat is generated by the radioactive material and the temperature of the container is controlled by the temperature of the soil in which it will be buried. The decontaminating solution has been tested for corrosivity by Commonwealth Edison and has been found to corrode steel

specimens at a rate similar to that of deionized water. Therefore, we do not expect that the solvent will cause accelerated corrosion of the drums.

In a study funded by NRC the Dow solidification polymer was found to be inert in corrosion testing on mild steel and therefore it will not cause accelerated corrosion of the drums.

- Q8. Is it possible to be put on some sort of mailing list normally used to send out information about hearings and/or reports on potentially hazardous procedures associated with nuclear energy?
- A. The Nuclear Regulatory Commission is required to publish in the FEDERAL REGISTER, a notice of any license amendment. In addition, all correspondence which relates to the Dresden Nuclear Power Station is available to the public at the Dresden Local Public Document Room at the Morris Public Library, 604 Liberty Street, Morris, Illinois 60450. A copy of the 1978 Annual Report of the Nuclear Regulatory Commission is also enclosed in response to your request for material related to nuclear energy.

I hope this information is responsive to your request.

Sincerely,

H. R. Denton

for

Harold R. Denton, Director
Office of Nuclear Reactor Regulation

Enclosures:

1. Safety Evaluation
2. 1978 Annual Report

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