

July 16, 1980

Director  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

I submit the following comment on the draft environmental statement for decontamination of the Dresden 1 nuclear power station, NRC report NUREG -0686, Docket No. 50-10, May, 1980.

4.2.2. (C)

EIS "Leach tests on samples indicated that the Dow solidification process is equivalent or better than other solidification methods being routinely employed by nuclear power plants"

COMMENT In view of the long-term nonbiodegradability and rapid migration of chelated radionuclides and MFP in ground disposal, leach tests must demonstrate decided superiority over solidification methods employed routinely by nuclear power plants.

What leachate was used by Dow for testing chelated samples solidified by the Dow method? How close in composition was the test leachate to that anticipated at the disposal site? pH?

EIS "The amount of radioactivity of the solidified radwaste amounts to less than 0.1% of the  $4.3 \times 10^6$  Ci of total radioactivity shipped to commercial burial sites as of 1977. The volume of solidified radwaste expected to be generated by the Dresden Unit 1 decontamination operation amounts to less than 0.06% of the  $1.8 \times 10^7$  cubic feet of total radwaste shipped to commercial burial sites as of 1977"

COMMENT Means, Crerar, and Duguid (Science, Vol. 200) state: "In the United States there are six commercial and five Energy Research and Development Administration terrestrial radioactive waste burial sites which have in the past received or are currently receiving low- and intermediate-level radioactive wastes. Varying levels of radionuclide migration from original disposal sites have been observed at four of these burial sites other than ORNL, including the Savannah River Laboratory, South Carolina; the Hanford, Washington facilities; West Valley, New York; and Maxey Flats, Kentucky. The Chalk River facility in Canada has experienced similar migration problems. Actual

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migration of Pu, the presence of Pu in the dissolved fraction of leachates, and the existence of mobile Pu-contaminated leachates in waste pits have been reported at the Hanford, West Valley, and Maxey Flats facilities, respectively. Complexing agents are either present or suspected to be present in waste at Chalk River, West Valley and Maxey Flats"

The above implies complexing agents play an important role in the unexpected migration of radwaste at Chalk River, West Valley, and Maxey Flats, in addition to ORNL and Savannah River. Hanford, Washington - one of the two proposed sites for the decontaminated Dresden radwaste - experienced plutonium migration. Does the proposed disposal at Beatty or Hanford mean the introduction of complexing agents to these sites? In view of the large radioactive burden ( $4.3 \times 10^6$  Ci) in place at commercial burial sites as of 1977, what worst case effect (e.g. 100 year flood; earthquake) would result from the presence of NS-1 (solidified from an original 85,000 gallons) at either Beatty or Hanford (waste to aquifer distances 300' and 290' respectively)?

In the past year or so both sites denied burial of low level radwaste from Commonwealth Edison Company. What assurance is there the Dresden waste will be accepted now? In the future? Is Commonwealth Edison, the NRC, and the EPA prepared to accept the indefinite storage of decontaminated radwaste on-site?

Observations by Means, et al., on the acknowledged migration of persistent and highly toxic radwaste at sites widely diverse in climate, geology, and content of radioactivity, do not instill confidence in the ability or willingness of the NRC to satisfactorily sequester the chelated radwaste of Dresden from the biosphere.

## 5.2 SHUT THE REACTOR DOWN PERMANENTLY

EIS "The permanent shutdown of the reactor would, therefore, result in the need to purchase approximately 300 million dollars worth of replacement power over the remaining 15 years that the Dresden 1 license is in effect. The cost of this alternative to decontamination is significantly more than the 39.5 million dollars expended to carry out the decontamination and is not justified by any improvement in the quality of the human environment. Therefore, the immediate shutdown alternative is less favorable than decontamination"

- COMMENT The generating capacity over peak load of Commonwealth Edison Company is sufficient to absorb the shut-down of Dresden 1 without the need to purchase additional power. A generating reserve of 38 percent, substantially above the 14 percent level of reserve deemed adequate by the company, together with the addition of four new nuclear units within the next year or two provides sufficient reserve to permit the shut-down of Dresden without the purchase of replacement power.
- Since lessons-learned from this experimental decontamination will be applied to the eventual decontamination of the other 10 Commonwealth Edison reactors in operation or under construction, the 39.5 million dollar expenditure at Dresden should be reduced by the amount saved in the eventual decontamination of the other reactors.
- APPENDIX A (p. 2)
- EIS "Conversely, the commercial waste burial sites at Beatty and Hanford, where no migration of radionuclides has been observed..."
- COMMENT The actual migration of plutonium has been reported from the Hanford, Washington Disposal waste site. (Transuranium Nuclides in the Environment, Price & Ames, IAEC, 1976.)
- EIS "We do not have field or laboratory test results which quantify the migration potential of radionuclides associated with Dow solvent, assuming that some escapes from solidified waste and into the soils of a disposal site"
- COMMENT Recognition of the demonstrated migration of radwaste at sites across the nation and in Canada requires data be generated on the migration potential of radwaste associated with NS-1.
- EIS "...another significant difference between the proposed waste disposal technique and the now discontinued Oak Ridge methods is that 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"
- COMMENT In addition to Oak Ridge, Means *et al.* (*ibid.*) mention the migration of waste at six sites in this country and Canada. What relationship exists among the parameters of average precipitation, liquid waste, complexing agents, and geology at the six sites?

QUESTION 4

EIS "...The NRC response that decontamination wastes from Dresden 1 will be buried in 'dry' areas is not adequate in light of man's inability to predict climatic conditions over the long time spans this waste remains dangers to life"

COMMENT The EIS response does not address this statement.

QUESTION 5

EIS "...consideration has been given to the fact that organic solvents present in much radioactive waste can dissolve the Dow solidification agent?"

COMMENT The EIS response does not address this question.

3a RESPONSE

EIS "The Dresden decontamination is not an experiment..."

COMMENT If not an experiment then why the paucity of data on the quality and quantity of mixed fission products and actinides, frequency of decontamination procedures over the remaining 15 years of the operating license, and the rate of leaching under field and laboratory conditions?

3c RESPONSE

COMMENT I recommend comparative data on leach rates, solidification, and leachates between Brookhaven National Laboratories and Dow be shown in tabular form. The information is currently unclear.

APPENDIX A (3c)

EIS "We do not know the leach rate of Dow polymer under burial conditions"

COMMENT In view of the possible calamities that may occur over the period of a hundred or more years, it is imperative field tests be undertaken to quantify the migration potential of radionuclides complexed with Dow's NS-1.

APPENDIX A (P. 12)

EIS "The chelating agent can be 'deactivated' (reduced to simple molecules) thermally or chemically. However, this process has not been chosen by the licensee because: (1) the leach rate with chelating agent is tested to be less than those of solidified radioactivity without the chelating agent and (2) the additional

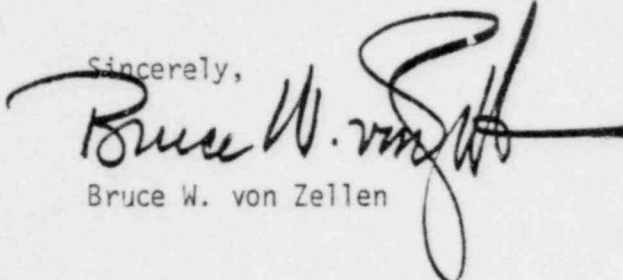
process of 'deactivation' adds complication to radwaste handling and may also result in additional equipment maintenance and personnel radiation exposure"

COMMENT These reasons are not supported by convincing evidence. Dow appears to have used distilled water alone as a leachate for the polymer and chelated radwaste and nowhere in the EIS is it demonstrated reason (2) is true.

APPENDIX A (P. 15)

EIS "In fact, rather than using stronger chelated agents at Dresden Unit 1 in the future, it is quite possible that, following the strong decontamination solution the utility may elect to use a weaker but more frequent decontamination process on line than is currently being developed under EPRI sponsorship by Batelle Northwest"

COMMENT The experimental overtone to this statement suggests ever-increasing amounts of complexing agents being added to the environment from this and other future decontaminations.

Sincerely,  
  
Bruce W. von Zellen

BWvZ/md