WASHINGTON UNIVERSITY IN ST. LOUIS

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Attn:
DIRECTOR,
DIVISION OF LICENSING
U.S. NUCLEAR REGULATORY COMMISSION

July 1, 1980

Paul W. O'Connor, Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. O'Connor:

Thank you for a copy of the Draft Environmental Statement related to the Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station Unit No. 1.

I have read the report carefully and am rather disappointed by the fact that it essentially is a rehash of most of the items that were originally raised about the dangers accompanying this whole operation. It appears to contain practically nothing by way of new information related to the problem that the decontamination operation will create.

In the letter which follows I would like to once again point out some of the dangers that appear to be overlooked by the personnel involved in this procedure. My concerns will be listed in a series of items which I have written below.

1) The report seems to totally overlook other possibilities for disposing of the chelated radionuclides which will be obtained from the wash of the cooling system. The major environmental importance and the major reason for this operation coming under the criticism of people who are aware of the dangers of radioactivity stem from the fact that the products are in a highly mobile form. The mobility of the radioactive waste is due entirely to the presence of the chelating agent(s) and not a single new possibility has been described for removing or destroying the chelated form of these products prior to burial. Thus, all of the radioactivity which will be obtained by the cleanup procedure will remain in a form which is biologically highly mobile. It is this chelation process itself which represents the major danger both for this single washout procedure and others that may follow for similar reasons.

The Nuclear Regulatory Commission, if it is to truly be concerned with the dangers of this new procedure, should have taken into consideration the possibility for isotope migration which will result from this chemical chelation. The danger which arises from the fact that these chelated radionuclides can migrate into the environment has not really been dealt with in the draft report. The fact that they are being put into a solidified form does not change this fact. Data from studies reported from a variety of places indicate that leaching of the chelated radionuclides from the solidified storage material is possible. Indeed throughout the literature which I have read it is made very clear that the polymerization within the barrels is solely for the purpose of transportation. It will in no way prevent the eventual leaching of the chelated radioactive waste into the environment.

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2) The proposed decontamination of the cooling system involves the removal and disposal of a large amount of highly radioactive substances. In communications from the N.R.C. the amount has been estimated to be 3,000 plus or minus 1,000 curies. The large indicated error in this estimate suggests that it was obtained by inadequate experimental procedures and further studies should be made to obtain a more precise value. Any environmental impact of the decontamination procedure will be directly related to the total amount of dangerous radionuclides removed during the decontamination, and present estimates of the amount are not satisfactory.

3) In addition, on page 2-2 of the draft statement, no measurements of 59 iron, 51 chromium, or 63 nickel are found. This suggests that either they were not measured in the test samples or they are not present. It would be astounding if no iron, chromium or nickel were found in this crud which is being generated by the materials in the cooling system and which contain a large amount of steel. The estimates of the nuclides present in this crud (Table 1) to my mind would be expected to include iron, chromium and nickel since these are elements which are found in any stainless steel piping system. I realize that the data I have seen suggest that part of this cooling system is constructed of Monel. However I find it difficult to understand why stainless steel components which must certainly be part of this cooling system do not contribute measurable amounts of neutron activated forms of iron and other metals of this sort.

4) Initial plans for removing the waste from Dresden to some storage site involve the polymerization within steel barrels. It seems certain that after polymerization the possibility exists that small pockets of free chelating agent will remain in these transportation drums. These small pockets of chelating agents are highly corrosive toward the mild steel to be used for transport. In fact, adequate data from the Brookhaven National Laboratory support the corrosiveness of this cleaning material. Data which I have read from the B.N.L. indicate that an uncoated container will be reduced to about 25 mils thickness after 3 months. Such corrosiveness means that in a few instances pitting will occur, resulting in leakage from the barrels after a relatively short time. In fact, not knowing how long it will be between placing the chelated crud in the barrels and arrival at the burial site and assuming this to be weeks rather than days, it is almost certain that some pits will produce leaks in the barrels. Indeed, in a memorandum to Paul O'Connor, C. Bishop describing the dangers of the use of the mild steel barrels, Mr. Bishop notes, and I quote, "We recommend that a container which can withstand corrosion better than the 55 gallon mild steel drum be used at Dresden based on test results and assuming that the time from solidification in the drums to disposal may be longer than a few months."

Thus even the N.R.C. is unhappy with the use of these drums. Yet on p. 3-1 of the environmental impact statement and I quote, "After processing the concentrated waste solution will be solidified in 55 gallon drums using the process developed by the Dow Chemical Co. etc.".

Hence to the external viewer such as myself, it appears that the people who prepared the environmental impact statement have ignored the dangers which may arise from the use of these 55 gallon drums.

5) Should an accident occur during the cleanup operations, procedures for the protection of the workers and the nearby environment should be developed prior to the undertaking of the decontamination operation. Such an accident, however unlikely, could have disastrous results for the population and the watershed near to the plant. This danger arises once again because of the highly mobile nature of the chelated forms of these radionuclides. The draft statement contains little evidence of precautions to be used in case of a mishap.

6) Leaching of chelated radionuclides even when contained in a polymer matrix appears to occur at a measurably significant rate. Hence data provided to me suggested that the so-called solid polymer matrix containing chelated radionuclides when immersed in the water leaked about 1% in 60 days. Such amounts could be significant or insignificant depending on dilution factors accompanying leakage. While it is true leakage would be greatly reduced at a drier disposal site dilution factors would also be reduced. An environmental study of the potential dangers of pulses of high concentration of chelated radionuclides leaked from a storage site should be considered. In addition one is uncertain about how dry this disposal site will remain. Recent volcanic activity in an area immediately adjacent to the disposal area could alter rainfall patterns. The disposal site is within a few hundred miles of the highest rainfall area in the United States. One would not have to produce dramatic changes in this rainfall pattern to change significantly the rainfall in the Hanford area. In addition to the danger of radionuclides already disposed at this site, the chelated forms which will arrive there after the Dresden decontamination multiply this danger significantly, again because of the mobility of these chelated forms.

7) Last of all, perhaps the most worrisome factor in the decontamination problem is the element of timing. I recently saw a graph of the radioactivity buildup or crud buildup in the cooling system at Dresden. Since beginning operation in 1961, the amount of crud buildup has been nearly trebling every year. The buildup rate is linear and the graph makes it clear to even the most unacquainted observer that the buildup would rapidly reach dangerous levels. Studies of safe cleaning and disposal operations could have been done as far back as 1965. While the present dangers of this crud to plant workers is obvious, the urgency of the cleansing operation is unacceptable as a reason for continuing. The N.R.C. should view the Commonwealth Edison request as not a matter of urgency. The industry had better than fifteen years to deal with this matter in a careful scientific fashion. What have they produced? They are proposing to clean this and perhaps other systems with chelating agents. They will put these chelated nuclides into the ground. Albeit in the best way they know how. But fifteen years of idleness on their part in no way mitigates the danger of this now highly mobile form of radioactivity. If these materials must be removed and disposed of, the present solution does not appear to be an environmentally safe way.

It is with real apprehension that I hope the N.R.C. will temporarily prevent this approach and aid the nuclear industry in finding a new and hopefully a safe solution.

Sincerely yours,

Leonard J. Banaszak

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