

**Sinnissippi Alliance for the Environment**

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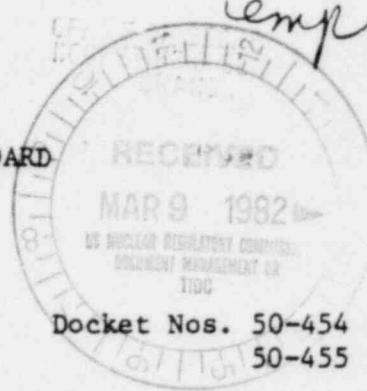
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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

## BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 )  
COMMONWEALTH EDISON COMPANY )  
 )  
(Byron Station, Units 1 and 2) )



DAARE/SAFE SUPPLEMENTAL RESPONSE TO COMMON-  
WEALTH EDISON'S REQUEST FOR ADDITIONAL INFORMATION/CONTENTION  
EIGHT

In response to Edison's request for additional clarification of facts underlying DAARE/SAFE's Contentions, DAARE/SAFE provides the following information relating to Contention Eight. This response incorporates DAARE/SAFE's previous responses to Commonwealth Edison and NRC Staff and specifies, to the best of DAARE/SAFE's ability, the specific facts, documents, and/or portions of documents which DAARE/SAFE will rely upon as evidence for Contention Eight. DAARE/SAFE's clarification of its other contentions will be supplied as soon as possible.

DAARE/SAFE has no intention of relying upon expert testimony to support this Contention at this time.

Upon written notification at least one week in advance, DAARE/SAFE will arrange to have available for inspection and copying requested documents in this response. DAARE/SAFE should be contacted care of: Mr. Stanley Campbell, (815) 962-7373 for questions concerning this response.

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C O N T E N T I O N    8

Intervenors contend that Applicant does not meet the requirements of 10 C.F.R. Part 51.21 and 51.20(a), (1 and 2), (b), (c) because no consideration is given the environmental impact of primary coolant system chemical decontamination and steam generator chemical cleaning which the Department of Energy has determined will occur twice during the lifetime of a nuclear power plant. Recent data raise the possibility of serious adverse consequences of the decontamination process. Chelating agents, intended for the removal of highly radioactive corrosion products adherent to the coolant system surfaces, sharply increase the rate of migration of these same radioactive products through the environment and into the food chain. No analysis or discussion is given possible biological consequences to the accidental spillage during decontamination, waste storage, transportation, or disposal (on or off-site).

Central to the discussion of the Byron Station is NUREG-0686, The Final Environmental Statement Related to the Primary Cooling System Chemical Decontamination at Dresden Nuclear Power Station, Unit No. 1. NUREG-0686 reveals the applicant's commitment to chemical decontamination with chelating agents, specifically the solvent NS-1 and an evaporating and polymerization-solidification process developed for the applicant by DOW Chemical Company with a Department of Energy grant. The comment section of NUREG-0686 exposes many of the unanswered environmental problems of the applicant's proposals.

Author's content.

on Zellen comment to NUREG-0686 illustrate nuclear wastes and facilitate their disposal. 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-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 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 of 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)?"

2. The composition of the crud to be cleaned from the primary cooling system and disposed of in the environment is uncertain. NUREG-0686 neglects the possibility of fuel rod cladding failure and the consequent presence of many long-lived fission products and much more radioactivity in the crud. Potential failates of the Zircaloy cladding used in the Byron Station are examined in Contention 6. The DOW waste processing process is limited to irradiated pipe and component corrosion, mainly CO-60. As the NRC states in NUREG-0686 Appendix, second page 5, "The longest lived significant isotope that will be solidified after decontamination is CO-60 with half-life of 5.2 years. Tests have been performed to demonstrate that the statility of the solid polymer will not substantially alter for over 50 years, correßonding to 10 half-lives of CO-60." But since the crud may contain fission products, actinides and corrosion products with longer half-lives than CO-60, the solidification may fail before the activity decreases.

3. No methods of physically, chemically or biologically degrading chelated radioactive wastes have been developed. Although the wastes are so dangerous that their containment must be absolute, the applicant's solidification and isolation methods are only temporary. Before disposal, the complexed water soluble nature of decontamination wastes should be abolished and theib

uptake by organisms prevented.

The applicant's waste containment strategy has three basic elements: (1) solidification in a polymer matrix, (2) disposal in an arid region, (3) isolation from other wastes and populations. Points 4 through 7 consider some fundamental weaknesses of this plan.

4. DOW did not field test the leaching rate of the polymerized chelated radioactive waste. DOW apparently didn't know the pH of the dump site soil and NUREG-0686 mentions only DOW leaching tests using demineralized water (NRC response, NUREG-0686, Page 8-13). "Leach tests performed by DOW indicate that the cobalt-60 release is less than 1 percent in 70 days." (NRC response NUREG-0686, Page 8-16)

5. For leaching prevention, the applicant relies heavily on the arid conditions at the Hanford, Washington and Beatty, Nevada dump sites.

A U.S. General Accounting Office report lists characteristics identified by earth scientists about America's low-level waste dumps from which inadequate data have been collected, and "about which not enough is known to reasonably predict the migration direction and rate (or radioactivity movement) or to determine whether reasonable predictions can be made." Major information lacking about the Hanford site includes: "rate of infiltration (the amount of water that is not evaporated or transpired and is free to move downward), rate and direction of ground water movement, and interconnection between shallow and deep aquifers." The data needed for the Beatty site include: "rate of infiltration, and direction and rate of ground water movement." ("Improvements Needed in the Land Disposal of Radioactive Wastes -- A Problem of Centuries," RED-76-54.

January 12, 1976; pp. 13 and 45-46.)

NUREG-0686 section 4.2.3 on disposal gives only sketchy, incomplete climatic and hydrologic site information. Omitted is the probability of a flash flood occurring at the dump sites during the period the chelating agents remain active.

6. Will chelated decontamination waste interact with other waste at Hanford or Beatty? Most nuclear dumps here and in Canada have had waste leaks and seepage. High level liquid wastes have leaked at Hanford. They contain xylene and tuolene, solvents for the Dow vinyl-ester-sturene solidifying agent. Further, NUREG-0686, section 4.2.3 states: "that solidified waste be segregated from other waste by a minimum of 10 ft. of soil". High level wastes have leaked further than this before. The possible contact of high level liquid wastes and a chelating agent set the stage for a large scale environmental disaster in the event of a flash flood at one of the dump sites.

7. EPA recommends a generic environmental impact statement on waste treatment and disposal. (NUREG-0686, page 8-45) What is the total anticipated chelated waste production for Byron and all other nuclear power stations? How can this total be managed to provide the most effective treatment and safest disposal?

8. Will decontamination solvents weaken or corrode critical plant components leading to a nuclear accident?

One of the bases of public concern over the decontamination has been the possibility of damaging the reactor and thus precipitating a major accident in the future. The NRC has ignored the concerns of the public as well as of government scientists. In particular, a memo from John Weeks (4/16/79) at Brookhaven National Laboratories (BNL) expressed concern that significant amounts of NS-1 solvent might be trapped in creviced areas around bolts or in creviced pockets formed by galvanic corrosion near defects of the vessel clad.

The water rinse cycles could easily fail to remove such trapped solvents. The longer the solvent remains, the more corrosion becomes significant.

These concerns were initially raised by studies done by Dow and GE on various steel types found in the reactor. Those studies reported that type 410 steel which is used in a number of bolts and valves in the core support system is susceptible to corrosion under certain conditions. The BNL memo said that such conditions could readily exist in the reactor especially if there is an extended period between the decontamination and start up.

(CBE comment, NUREG-0686 page A-49)

9. According to the Dresden decontamination Draft EIS, appendix page 15, the Electric Power Research Institute is sponsoring research by Battelle Northwest to develop "a weaker but more frequent decontamination process on line". This suggests a continuous waste problem adding more and more chelating agents to the environment, processing immense quantities of contaminated cooling water, and a greater corrosion problem.

This response was compiled by the following members of DAARE/SAFE:

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The undersigned, a member of DAARE/SAFE, certifies that on this date she served a copy of this "Response" on each member of the Service List by United States regular mail, Special Delivery, or by other means as appropriate.

Date: March 2, 1982

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