



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

JUL 22 1980

MEMORANDUM FOR: Robert E. Browning, Deputy Director  
Division of Waste Management, NMSS

FROM: William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration, NRR

SUBJECT: COMMENTS ON BNL LETTER REPORT ON LEACHABILITY, STRUCTURAL  
INTEGRITY, AND RADIATION STABILITY OF ORGANIC ION EXCHANGE  
RESINS SOLIDIFIED IN CEMENT AND CEMENT WITH ADDITIVES

You have suggested that, as a result of the subject report, the NRC should take action to alert reactor operators to the concerns identified by BNL. Solidification system vendors and most utilities are aware of much of the qualitative information discussed in the BNL report. Until data is obtained on full-size test specimens or a method is developed to accurately extrapolate the data from small samples to actual waste product sizes, we believe it would be premature to draw any firm conclusions in regard to resin waste from normal operating reactors solidified with cement. Certainly, it appears that a more complete data base is needed before the NRC considers adopting such requirements for normal operating reactors as eluting radioactive material from organic resins or abolishing the use of organic resins with higher level waste streams, as has been suggested in the past. Since burial ground records indicate only a small percentage of normal operating reactor resin waste approaches the concentrations of long-lived radioactive material found on the first-stage EPICOR-II resins, the impact of waiting until more definitive data is obtained will be minimal. In addition, in response to the deadline established by the burial ground licensing authorities to either solidify resins or package them in a high integrity container, it appears that many reactor licensees will be adopting the high integrity container alternative. We are requiring that solidification of reactor wastes be performed in accordance with a process control program (PCP) which will produce a homogeneous, free-standing monolith with no free-standing water. Solidification according to a PCP should result in a waste product with good mechanical strength, which according to the BNL report may reduce leachability.

In summary, we believe that no action to implement additional requirements should be taken until Part 61 requirements (leachability, radiation stability, mechanical strength, flammability, container integrity, concentration guides, soil ion exchange capacity, etc.) are more finalized and the properties of full-size resin-cement waste products are defined. To assure that reactor licensees are aware of these potential concerns, however, it may be beneficial for a letter or circular to be sent to licensees summarizing the BNL findings for information purposes. Alternatively, this matter could be discussed with the AIF Solidification Task Force.

8212020221 800722  
PDR MISC

PDR

*J. Collins*  
*R. Bellamy*  
*George - note*  
*Note & return*  
*Return to JT*  
*File Solid Waste*

R. E. Browning

- 2 -

JUL 22 1980

DISTRIBUTION:  
Central File  
NRR Reading File  
ETSB Reading File  
ETSB Subject File 20.5.11a  
WEKreger  
CPaul

The reactor industry has a great deal of experience with the use of cement as a solidification agent and though it is not without problems, there are few, if any, solidification agents which are as well understood from an operational standpoint and produce a better waste product for the same cost. Any actions taken by the NRC should be based on firm technical grounds.

Original signed by:  
William E. Kreger

William E. Kreger, Assistant Director  
for Radiation Protection  
Division of Systems Integration  
Office of Nuclear Reactor Regulation

- cc: H. Denton
- E. Case
- D. Ross
- J. Martin, NMSS
- B. Snyder
- W. Kreger
- J. Collins
- H. Lovenberg, NMSS
- F. Arsenault, SAFER
- W. Gammill
- R. Capra
- G. Bidinger, IE
- R. Bangart
- L. Barrett
- R. Smith, NMSS
- T. Johnson, NMSS
- R. Weller
- R. Bellamy
- P. Grant
- V. Malafeew

OFFICE	DSI:RP:ETSB	DSI:RP:ETSB	DSI:RP		
SURNAME	RBangart:do	WP:Gammill	WEKreger		
DATE	07/21/80	07/22/80	07/22/80		