

October 17, 1996

MEMORANDUM TO: Donald A. Cool, Director  
Division of Industrial and Medical  
Nuclear Safety, NMSS

FROM: Michael F. Weber, Chief [ORIGINAL SIGNED BY:]  
Low-Level Waste and Decommissioning  
Projects Branch  
Division of Waste Management, NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST - GETTER ROOM DOSE/RISK  
ASSESSMENT OF GE CHEMICAL PRODUCTS PLANT

As requested, the Low-Level Waste and Decommissioning Projects Branch has reviewed this technical assistance request (TAR) related to whether the risk from leaving three drains in place with their existing levels of contamination is acceptable at the General Electric Chemical Products Plant in Cleveland, Ohio.

The TAR sought headquarter's review on an issue that Region III believes to be a borderline case. The information submitted by the licensee's contractor contained five different scenarios, their worst case scenario, a residential farmer, resulted in a dose of 62 mrem/yr. Region III conducted an independent assessment using different assumptions and calculated a worst case dose of 33 mrem/yr for the residential farmer. The staff believes that the uncertainties in the source term are too large, the pathway scenarios are not realistic, and the pipes are not sufficiently characterized by measuring only at the ends.

The licensee's assessment is not adequate to conclude that they will comply with the ALARA principle. The licensee should submit an ALARA analysis as the basis for leaving the pipes in place. The ALARA justification should include a discussion of possible decontamination and measurement methods and a description of the actions that the licensee will take to minimize the dose. The ALARA analysis should detail the risk involved as well as the environmental and health impacts resulting from the decision.

Additional measurements will be needed for the ALARA analysis. Specific measurements will reduce the need for excessive conservatism. For additional guidance, refer to the attached summary, "Attributes of ALARA Analysis Pertinent to the Contaminated Pipes in GE Chemical Products Plant Getter Room." If you have any questions, please contact Sherry Wu of my staff at 415-6619.

License No: SMB-191

Docket No: 40-534

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Attachment: As stated

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(301) 415-6619

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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## **Attributes of ALARA Analysis Pertinent to the Contaminated Pipes in GE Chemical Products Plant Getter Room**

The circumstances of this particular pipe case are such that the licensee cannot achieve the criteria stated in Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors." The ALARA philosophy continues to apply, and the licensee should demonstrate compliance with the requirements of 10 CFR 20.1101(b) by evaluating measurement methods, remediation approaches, and excavation techniques. 10 CFR 20.1101(b) requires that:

"The licensee shall use, to the extent practicable, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA)."

Specific measurements throughout the pipe will be needed to characterize the source term more accurately and to confirm that there are no traps and no hot spots. Remediation and excavation of the contaminated pipes should then be implemented unless an ALARA analysis indicates that a substantial reduction in collective dose would not result or costs are considered unreasonable.

A determination of reasonableness may be based on a qualitative analysis requiring the exercise of judgment and consideration of factors that may be difficult to quantify. These factors could include nonradiological social or environmental impacts, the availability and practicality of alternative technologies, and the potential for unnecessarily increasing public exposures. Reasonableness may also be based on a quantitative cost/benefit analysis. Preparation of an ALARA cost/benefit analysis requires the use of a dollar value per unit dose averted. The staff recognizes that varying degrees of justification exist for a wide range of dollar values.

For example, after better measuring the pipe drains, if the licensee determines that the dose is large enough to adversely affect public safety, then remediation or excavation will be done. However, if the licensee's ALARA analysis justifies leaving the pipes in place, then a discussion, which may include the reasons given above, would entail the safety and environmental impact of the decision. If cost is a major factor, then the licensee should include an analysis of the cost and the available technologies that can be used to decontaminate pipes (e.g. freeze-dried carbon dioxide blasting technique, high-pressure blasting technique).

Additional guidance on ALARA programs can be found in several regulatory guides. While these guides deal primarily with occupational exposure and may be specific to one type of licensee, they contain programmatic information that may be useful to all licensees. They are as follows:

Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable."

Regulatory Guide 8.18, "Information Relevant to Ensuring that Occupational Radiation Exposures at Medical Institutions Will Be As Low As Reasonably Achievable."

Regulatory Guide 8.31, "Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Mills Will Be As Low As Is Reasonably Achievable."

Regulatory Guide 8.37, "ALARA Levels for Effluents From Materials Facilities."

Regulatory Guide 10.8, "Guide for the Preparation of Applications for Medical Use Programs," Section 1.3 and Appendix G.

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