



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20540-0001

May 14, 1996

MEMORANDUM TO: Cynthia D. Pederson, Director
Division of Nuclear Materials Safety, RIII

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

SUBJECT: TECHNICAL ASSISTANCE REQUEST; STATE OF ILLINOIS;
USE OF DU CONTAMINATED SANDS IN TRANSPORT CONTAINERS

I am responding to your technical assistance request (TAR) dated June 27, 1995 (Attached), transmitting two letters dated June 1, 1995, from the Illinois Department of Nuclear Safety (IDNS) and letters dated June 7, 1995, and April 27, 1996, from Stan A. Huber Consultants, Inc. (SAHCI), an Illinois radioactive material licensee. IDNS has requested NRC's evaluation of a proposal forwarded by SAHCI.

SAHCI has requested authorization to receive sand and soil contaminated with depleted uranium (DU) which SAHCI proposes to mix with high density concrete in steel drums. According to the information supplied by SAHCI, the concrete mix would be poured into these drums leaving a center void space so that the drums could be used as shielded Type A shipping containers. The DU contaminated sand/soil is a byproduct (waste) generated by another Illinois licensee's manufacturing process. SAHCI indicates it will need a license to receive the DU contaminated sand/soil because the concentration of source material could be as high as 2000 picocuries per gram thus exceeding the "unimportant quantity" limit of 0.05 percent provided in 10 CFR 40.13(a).

In its April 27, 1995, letter, SAHCI indicates it believes that recipients of these shipping containers would be exempt from 10 CFR Part 40 licensing requirements for the DU because of certain exemptions provided in 10 CFR 40.13, "Unimportant Quantities of Source Material." In particular, SAHCI provides that it intends to mix in sufficient concrete and dilute the DU sand/soil to ensure that the concentration of DU in the mix will be less than 0.05 percent. Thus users of the containers would be exempt pursuant to 10 CFR 40.13(a). SAHCI also states that the containers would be marked, "Caution - Radioactive Shielding - Uranium" and that the drums are constructed of "a mild steel or equally fire resistant metal with a minimum wall thickness of one-eighth inch." By including this information SAHCI is indicating that users would also be exempt pursuant to 10 CFR 40.13(c)(6) or equivalent Illinois regulations.

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After evaluating SAHCI's request, in collaboration with Robert Fonner from NRC's Office of the General Counsel, we have concluded that none of the exemptions provided in 10 CFR 40.13 would apply in this circumstance. First, we note, in agreement with Region III, that the low DU concentrations would add little, if any, additional shielding and that the proposal has the appearance of a process to dispose of licensed DU. The containers would not be exempt from licensing under the provision of 10 CFR 40.13(a), (less than 0.05%), because of NRC's longstanding understanding that 10 CFR 40.13(a) does not allow dilution for purposes of disposal. We note that the DU would have started out as "pure" DU metal and obviously was under license.

Further, the containers would not be exempt from licensing under provision of 10 CFR 40.13(c)(6), in part, because this provision specifies that the uranium must be encased in mild steel, as well as being effective shielding. According to Attachment 3 enclosed with SAHCI's April 27th letter, the drum void space is created using a cardboard Sono Tube and the DU/concrete mix is not encased near the drum top or at the bottom of the Sono Tube.

In conclusion, the containers SAHCI describes do not qualify for exemption under 10 CFR 40.13 and, therefore, must be treated as containing regulated material. You may wish to inform IDNS that NRC does not issue "E-type" distribution license for the source material products. IDNS may also want to note that SAHCI would need a license to receive and possess the DU contaminated sand/soil regardless of DU concentration.

Attachment: TAR dtd 6/27/95