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August 6, 2013

Jonathan D. Edwards, Director
Radiation Protection Division
U.S. Environmental Protection Agency
1200 Pennsylvania Ave., NW
Washington, DC 20460

VIA EMAIL

RE: Surface Dose Rate Measurements on Shielded Containers

Dear Mr. Edwards:

Southwest Research and Information Center (SRIC) has closely followed the approval process for DOE to "demonstrate a consistent complex-wide procedure to ensure that the shielded containers containing RH waste remain below the Land Withdrawal Act surface dose rate limit for CH waste of 200 millirem per hour." EPA Approval Letter, August 8, 2011, page 1.

SRIC appreciates the courtesy shown by EPA officials in discussing these matters and that the August 5, 2013 DOE submittal was promptly posted on the EPA WIPP website. SRIC also appreciates that EPA has appropriately insisted that the DOE complex-wide procedures address the uncertainty in dose measurements.

SRIC has been concerned about various aspects of the shielded containers from the first conversations about it in 2007. SRIC remains concerned because shielded containers will frequently have actual surface dose rates an order of magnitude or more higher than contact-handled (CH) containers. In normal operations when there is shifting of RH waste during handling or transportation, the surface dose rate could be 200 millirem per hour or more. If shielded containers fall during storage or disposal operations, the surface dose rate could be 200 millirem per hour or more. In the severe case of a breach of a shielded container because of manufacturing defect or accident, the surface dose rate could be 200 millirem per hour or considerably higher. In each circumstance, worker health and safety would be at risk, and there is the possibility of public health being at risk.

Given those concerns and possibilities and the provision of the 2011 EPA approval, SRIC believes that there are at least four deficiencies in the DOE procedures provided to EPA on August 5 that must be corrected before EPA's approval is warranted.

1. The procedure does not provide that the surface dose rate for shielded containers with RH waste will be below 200 millirem per hour, as specified in the 2011 EPA approval.
The procedure – CCP Shielded Container Assembly loading, Revision 2, 7/23/2013 – in fact specifically allows shielded containers with RH waste to have a surface dose rate of 200 millirem per hour. Five times the procedure repeats that the surface dose rate does not have to be below 200 millirem per hour:

(1) On page 8: 2.6.4 The Transportation Certification Official (TCO) shall be notified if any of the following radiological survey criteria are exceeded:
[A] Radiation contact dose rates exceed 200 millirem per hour (mrem/hr) at contact (beta+gamma+neutron).
[B] Alpha contamination survey results exceed 20 dpm/100 cm2.
[C] Beta/gamma contamination survey results exceed 200 dpm/100 cm2.

(2) On page 18:
The maximum contact dose rate measurement for each SCA shall be verified to be ≤200mrem/hr and recorded on Attachment 2 as the contact dose rate of record.

(3) On page 19:
[R] Radiation dose rate exceeds 200 mrem/hr at contact (beta + gamma + neutron).

(4) On page 19:
[W] Determine the highest of the total contact dose rate measurements, and verify it is ≤200 mrem/hr.

(5) On page 24:
Verify the highest total contact dose rate measurement is ≤200 mrem/hr.

Thus, in each circumstance, if the surface dose rate is 200 millirem per hour, the shielded container is approved for shipment to WIPP, contrary to the EPA requirement that the surface dose rate is below 200 millirem per hour. The procedure must be changed to require that the surface dose rate for shielded containers with RH waste be less than 200 millirem per hour.

2. The procedure does not require consistent complex-wide measurement instrumentation, nor even that the specific measuring equipment be identified.
On page 18, the procedure states:

> Prior to shipping the SCAs, a radiological survey of each SCA shall be performed in accordance with DOE/WIPP 02-3184 using site-specific procedures and calibrated instrumentation.

Therefore, each site will use its own radiological survey procedures and instruments, which are not necessarily consistent from one site to another. SRIC recognizes that such site-to-site variations have always existed, but the differences could be magnified since there could be some shielded containers with a surface dose rate close to 200 millirem per hour. SRIC would prefer that the actual measured surface dose rate be limited to significantly less than 200 millirem per hour to provide an adequate margin of safety and that the procedure be so modified.

At a minimum, the Shielded Container Assembly Contact Dose Rate Survey Form (Attachment 2) must be modified to include the instrumentation type and model number, and serial number and calibration due date. The serial numbers and calibration dates are required for torque

wrenches used for filter vent and SCA Lid Closure Bolts and for the Load Cell weight measurement (Shielded Container Assembly Loading Form – Attachment 1). But such requirements are not, inexplicably, included on the Contact Dose Rate Survey Form. That Form (Attachment 2) must be modified to include the instrumentation type and model number, and serial number and calibration due date before EPA can approve the procedure.

3. The procedure does not require consistent complex-wide requirements for putting RH waste in the 30-gallon containers that are loaded into shielded containers.
On page 16, the procedure states:

> 4.3 Payload Loading/Handling
> **NOTE**
> The 30-gallon payload drum shall be loaded, closed, and vented in accordance with site operating procedures.

Therefore, whether the RH waste is directly loaded into the 30-gallon drum or into smaller containers that are then placed into the 30-gallon drum will vary from site to site. Enclosure 2, #1 states Argonne has put two 7-gallon containers into a 30-gallon drum, which is then loaded into the shielded container. But that may not always be the procedure for all 30-gallon containers at Argonne or at other sites. With DOE's currently proposed procedure, there can be very substantial differences among the sites that could result in significant differences in the measured surface dose rates. Importantly, smaller containers inside the 30-gallon drum could move and shift during handling and transportation that could result in a shielded container surface dose rate of 200 millirem per hour or higher, even if the container was below that surface dose rate before the movement and shifting occurred.

SRIC believes that a consistent complex-wide procedure is necessary for the loading of the 30-gallon containers, so that there are actual consistent complex-wide procedures for shielded containers. Until such 30-gallon drum loading procedures are proposed by DOE and approved by EPA, SRIC does not believe that EPA should approve the overall complex-wide procedure.

4. The procedure does not require consistent complex-wide surface dose rate measurement of shielded containers at WIPP.
EPA's August 8, 2011 approval letter did not exempt WIPP from the "complex-wide procedure." A shielded container with a surface dose rate of 200 millirem per hour or greater cannot be managed as CH waste at WIPP as containers with such a surface dose would violate the Land Withdrawal Act (LWA) requirements. The EPA condition is supposed to enforce that requirement. Thus, the procedure must also be applied at WIPP, which is clearly part of the "complex" and is specifically covered by the LWA requirements.

However, enclosure 1 of the DOE August 5, 2013 submittal specifically states that the measurement procedure will not be used at WIPP:

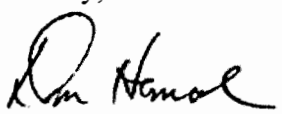
> At the WIPP, radiation dose rate surveys are performed, in accordance with approved procedures, on the payload assemblies at 30 centimeters for the purpose of determining radiological posting for worker safety (i.e., 10 CFR 835, *Occupational Radiation Protection*). WIPP RadCon technicians survey the entire payload assembly; individual containers are not surveyed at the WIPP. Page 3.

SRIC strongly disagrees with any such exception or variance for WIPP. On the contrary, the LWA requires, and EPA must ensure, that waste containers with a surface dose rate of 200 millirem per hour or greater at WIPP are managed as RH waste and placed in RH canisters. EPA cannot allow shielded containers to have a surface dose rate of 200 millirem per hour or more at WIPP. Instead, EPA should require consistent surface dose rate measurement at all sites, including WIPP, so that RH waste in shielded containers has a measured surface dose rate of less than 200 millirem per hour. Therefore, DOE must agree, and EPA should require, that the surface dose rate of shielded containers be measured at WIPP. The procedure must be modified to provide for such surface dose measurement at WIPP before EPA can approve the procedure.

SRIC also notes that the stated cited WIPP dose survey procedure is used only for CH waste. Each individual RH waste canister is surveyed at WIPP and the shielded container with RH waste at WIPP also should be measured for its surface dose rate. EPA must assure that such procedures are carried out at WIPP.

Thank you for your careful consideration of these comments.

Sincerely,



Don Hancock