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DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL
Scott T. Anderson
Director

July 15, 2016

Cindy Bladey
Office Administration
Mail Stop: OWFN-12-H08
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Concentration Averaging and Encapsulation Branch Technical Position
        (Contaminated Materials / Contaminated Trash)
        Docket ID NRC-2011-0022

Dear Ms. Bladey:

Thank you for the opportunity to respond to NRC's request to comment on the Branch Technical
Position on Concentration Averaging and Encapsulation and the specific issues associated with
contaminated materials and contaminated trash. Below are the Utah Division of Waste Management
and Radiation Control's comments to the questions raised in the Federal Register Notice of January 20,
2016 (81 FR 3167).

**Question 1: Is additional guidance needed to clarify the distinction between contaminated trash
and contaminated material?**

Response:

   Any additional guidance that clarifies rather than confuses the distinction can be helpful.
   However, it is very difficult to address all forms and types of waste that can be encountered;
   therefore, there will always be wastes that can be argued to fit in one category or the other.
   There is too much overlap between the two. Additional guidance could possibly provide some
   clarity for generators and licensees, but will inherently not be completely comprehensive.
   Additional stakeholder involvement may provide sufficient input to gain added clarity.

**Question 2: When filling out the Uniform Waste Manifest (UWM)(NRC Forms 540, 541, and 542),
how is contaminated equipment (UWM code 33) currently distinguished from contaminated trash
(UWM codes 39 and 40)?**

(Over)

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Response:

Waste generators are likely in a better position to answer this requirement. At the Clive, Utah disposal facility, generators submit waste profiles characterizing the waste for each waste stream. If the waste conforms to the acceptance criteria for the disposal facility, the waste stream is allowed to be shipped for disposal. The question is what distinguishes equipment from non-compactible trash. This is more appropriately a generator's determination. Intuitively, equipment could be discrete solid items, each item easily separable from one another; whereas, non-compactible trash could be a conglomeration of various items, e.g. demolition rubble containing wood, metal, masonry, etc. How the waste is characterized and activity quantified may suggest how the waste is categorized and subsequently described on the shipping manifest.

Question 3: Should numerical constraints be developed to clarify the distinction between contaminated materials and contaminated trash? If so, what basis should be used to develop the numerical constraints? If not, what qualitative factors should be considered?

Response:

Numerical constraints should not be imposed. Generators should not be inhibited from utilizing any and all possible means of characterizing wastes and quantifying radioactivity. In the waste profiling process, the generators need to be confident in the techniques and approaches to quantifying the radioactivity. Process knowledge may be relied upon but must be soundly based. The guidance may provide examples of what are acceptable approaches. Regulators will need to evaluate what generators are doing compared to those examples and judge whether the approaches are reasonable and therefore acceptable. This does little to resolve conflicts but the more examples that are provided may result to limit such conflicts. This is guidance that could evolve as more and more conflicts are satisfactorily resolved and published.

Question 4: If numerical values are developed would activity or concentration constraints be preferable? Would an option to use either be feasible to implement?

Response:

It is feasible and probably imperative to use either depending upon the complexity of the waste form and the quantification techniques utilized. However, it is our opinion, as stated in number 3 above, that numerical constraints should not be imposed.

Question 5: What challenges, if any, do you foresee with implementing numerical thresholds for distinguishing between contaminated trash and contaminated materials? How could these challenges be ameliorated?

Response:

What qualities/characteristics are to be quantified, e.g. densities, matrices, radioactivity distributions, elemental distributions? Some qualities can't be quantified with any level of accuracy or certainty. Because of the diversity in waste streams it would probably be impossible to place every waste within a finite number of categories.

In order to "ameliorate" the process, avoid classification by quantifying. Qualitative descriptions might better serve the objective. A general description of contaminated trash vs contaminated material followed with extensive examples of each may provide better guidance.

Question 6: Would an emphasis on using process knowledge be sufficient to avoid the unintended consequence of causing licensees to characterize individual pieces of trash that have radionuclide concentrations significantly less than the class limit?

Response:

From a practical perspective, process knowledge needs to be allowed to radioactively characterize waste; however, the conclusions must be based on some quantitative data, e.g. survey and/or assay data, relative distribution numbers of waste components, scaling factors, mass balances, etc.

Assuming that one does have the knowledge that individual pieces of trash have concentrations significantly less than the class limit, little would be gained to require that individual pieces of waste be assayed for radioactivity. However, the less quantified information that is available, the greater conservatism (estimating higher levels of radioactivity vs underestimating the actual level) should be exercised.

Question 7: The NRC understands that items referred to as "high rad trash" is placed in containers of contaminated trash and averaged. The NRC also understands that this practice reduces worker exposure as compared to evaluating each item of trash. Please provide examples of "high rad trash" estimated annual volume, areas of the facilities where this waste is generated, and typical contact dose rates (if available).

Response:

No comment.

Question 8: When classifying contaminated trash, is the same sample data (e.g., scaling factors) for determining the radionuclide content of "normal" contaminated trash used for classifying the "high rad trash"?

Response:

If this question is referring to a dose-to-activity calculation, the practice would be appropriate provided all relevant inputs (radionuclide mix, densities, geometry, shielding, etc.) are accurate and reliable.

Question 9: What process currently is used to determine whether items of "high rad trash" can be disposed of with lower-activity contaminated trash or whether items are treated as contaminated materials and averaged with the constraints described for contaminated materials under the 1995 CA BTP?

Response:

No comment.

Question 10: Is clarification needed for the term "component" in the definition of contaminated materials used in the 1995 and 2015 CA BTP?

Response:

No clarification should be necessary. It should be clear what a component is and any further attempt to define it would not eliminate differing of opinions. Any conflict will have to be resolved among the parties involved and regardless of what the guidance may say, an argument can always be made that it is "only guidance." Therefore, no great effort should be made for clarification in this regard.

If you have any questions, please contact Boyd Imai of my staff at (801) 536-0038 or by email at bimai@utah.gov.

Sincerely,

Scott T. Anderson, Director
Division of Waste Management and Radiation Control

STA/DGV/jr

c.   Christianne Ridge / Don Lowman, NRC, NMSS, DUWP
      Randy Erickson / Binesh Tharakan, NRC Region IV, RSAO