ELECTRIC POWER RESEARCH INSTITUTE

Proposed Modifications to the BTP EPRI Report 1016761

Lisa Edwards

EPRI Program Manager

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Increase Reference Volume

- Averaging for classification according to the BTP is limited to material contained within the boundaries of a container. This is not consistent with the volumes used for averaging and development of activity concentrations in NUREG-0782.

- **The volume over which averaging can be performed should be consistent with the exposure scenario. (232 m^3)**

- Allow averaging over a collection of containers without consideration of container boundaries or individual components within the containers.

Eliminate Averaging Constraints on Homogeneous Materials

- **Includes bead and powdered resins, filter aids, charcoal which are readily mixed**
- No advantage is gained from restrictions
  - Factor of 10 rule is unnecessary for miscible components within a package for both primary and non-primary gamma emitters
  - Factor of 1.5 Rule has little bearing on classification issue as the three nuclides targeted (Co-60,Cs-137, Nb-94) have dose impact at different time frames.
  - Disposal site risk is based on overall inventory
  - Blended package cannot be differentiated on the basis of disposal risk from an unblended package with the same activity content

Treat Dewatered Cartridge Filters as Equivalent to DAW

- The BTP allows for treatment of DAW as homogeneous waste
- **Filters do not meet the criteria for discrete items**
  - Filters will degrade in the disposal site
  - Activity is not portable with the filter material
  - Overall contribution to disposal activity inventory from mechanical filters is small
- Allow averaging of cartridge filters without additional intervention (current BTP cites such averaging as an example of potentially acceptable practice but requires case by case approval – averaging criteria could include bases defined as acceptable)

Recognize Differences Between Activated Metals and Sealed Sources (I)

- Significant differences between form and activity
- **Averaging constraints for activated metal are based on concerns related to sealed sources and exposures related to handling discrete items**
- Activated components are generally much larger and are not amendable to handling scenario even after processing to fit into a disposal container
- Activated metals have lower concentration levels than those typical of sealed sources.

Recognize Differences Between Activated Metals and Sealed Sources (II)

- Most activated hardware will remain intact in during the design life of the disposal site and will remain identifiable from soil and therefore cannot contribute to inadvertent intruder scenarios
- **Extend reference volume to emplacement volume for activated hardware**
  - If accessed within 300 years it will be identifiable
  - When the metal does breakdown it will be mixed with soil and/or grout filling the empty space in the disposal container, leaving the concentration comparable to what it would be if it was originally averaged over the volume of the package.

Remove Constraints on Averaging Irradiated Hardware

- Revisit the Factor of 10 rule taking into consideration the real risks associated with the distribution of radionuclides in the waste
- Eliminate the Factor of 1.5 Rule for primary gamma emitters
  - The Rule has little bearing on classification issue as the three nuclides targeted (Co-60,Cs-137, Nb-94) have dose impact at different time frames.