

# Discussion Points – Revision to the Branch Technical Position on Concentration Averaging

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Concentration Averaging and Waste Form

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# EPRI Comments on BTP Change

- Increase reference volume.
- Eliminate averaging constraints on homogeneous materials.
- Treat dewatered cartridge filters as equivalent to DAW.
- Recognize differences between activated metals and sealed sources.
- Remove constraints on averaging irradiated hardware.



## Positive Changes in Draft BTP (1 of 2)

- Restrictions on blending of homogenous wastes (resins and filter media) are essentially eliminated at the point of generation.
- Rules for concentration averaging of activated metals and cartridge filters are based on averaging around the concentration limits rather than on variations that may occur within a classification interval.
- Increased Class C limit for Cs-137 sources.



## Positive Changes in Draft BTP (2 of 2)

- Removed restrictions on 'absorbed liquids' from consideration as homogenous waste.
- Identified small, concentrated microcurie-level sources and gauges as acceptable for inclusion as DAW (as opposed to separate consideration and handling as high-activity sealed sources).
- Alternative classification methods that meet 10CFR61 performance objectives are more clearly endorsed with approval by the appropriate disposal site regulator.



# Areas Where Further Changes Are Warranted

1. Realistic well drilling intrusion scenario.
2. Impractical homogeneity test.
3. Cartridge filters remain as individual items and are not considered homogeneous.
4. Activated hardware averaging.
5. Waste to binder ratio not specified for solidified/encapsulated waste.



# Areas Where Further Changes Are Warranted Intrusion Scenario

- New Well-Drilling Scenario postulated as the limiting intruder event.
  - Assumptions have basis in ‘sealed source’ events that are not germane to a disposal environment.
  - Assumptions are deterministic (not risk-informed).
  - Assumptions are not realistic when compared to real-world well-drilling practices.
  - Assumptions do not account for current or future regulatory controls.



## Drilling Scenario Research Conclusions (1 of 2)

- Water well drilling is a highly regulated activity. Most States require the use of professional drilling operators and / or require a permit prior to drilling operations.
- Professional certifications for well-drillers and permitting requirements in most States address the potential for encountering hazardous material sites and specify regulations for sampling, handling and disposal of drilling materials in a hazardous site.
- All States require data collection and submittal of documentation of well drilling activities including the documentation of any problems or anomalies encountered.



## Drilling Scenario Research Conclusions (2 of 2)

- Most States require testing of well water prior to issuing occupancy permits for dwellings. Standards for radioactive material in water exist as part of testing requirements.
- All methods of drilling water wells require specific knowledge of the sub-strata expected to be encountered so that the correct equipment selections are made.
- All methods of drilling water wells use equipment and techniques that cause significant mixing of the drill tailings with other materials.
- A common practice for all well drilling techniques is to collect and bury tailings as the material is not typically suitable for finished grade. This is required where drilling on or near a hazardous site.







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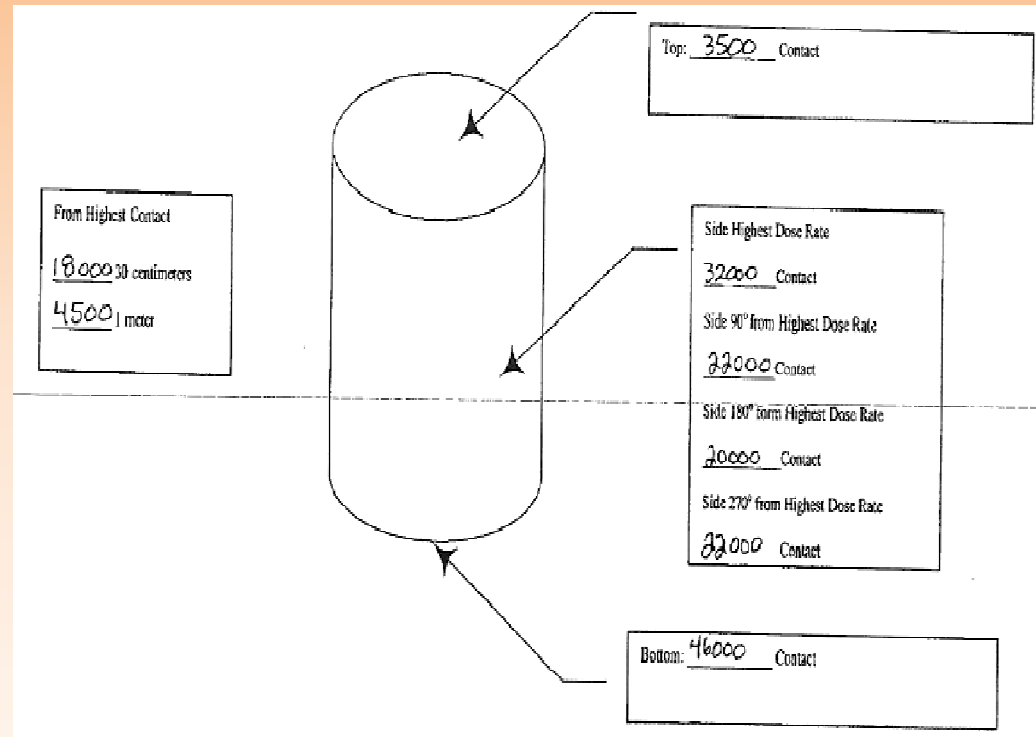
# Homogeneity Tests (Standard Error of Measurements)

- Additional tests for homogeneity and thorough mixing are required at sites that would perform ‘commercial’ blending of otherwise homogenous wastes.
  - It is arguable that the homogeneity tests add any real margin of safety to the final product
  - Implementation of these tests as proposed would likely pose an undue burden on waste processors seeking to implement ‘commercial’ blending with no demonstrated risk reduction or benefit to the general public.
- BTP states that tests are ‘not required’ at the point of generation unless ‘reason to suspect’...
  - Defacto requirement based on past enforcement practices.
  - Likely impossible to achieve under current system configurations.



# Resin in the Real World

- Resin is flowable, mixable and 'homogenous' in a macro context.
- Many factors affect deposition of radioactive material on/in resins.
- Utility liquid processing systems are designed for efficient operation not effective mixing.
- Mixing, diffusion and ion exchange continue in the disposal package over time and result from 'intrusion activities'.
- Test driven by assumptions that are less plausible than the assumption of homogeneity.



## Conclusion

- NRC engagement with industry and stakeholders has been very positive.
- There remain issues where additional research can assist with the development of reasonable assumptions.

