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General Comment

See attached file(s)

Attachments

NUREG 1757 Vol 2 Comments

1. (Appendix G.6) Does NRC have a position on formulating indistinguishable from background surveys using the Scenario B definitions in MARSAME (Section 4.2.4 and associated references) as opposed to that presented in MARSSIM Rev. 1 and NUREG 1505? Specifically the MARSAME approach shifts the gray region to consist of an action level as the lower bound of the gray region (typically zero or background) and a background discrimination level (e.g., a standard deviation multiple, etc.) as the upper bound of the gray region, which does not necessarily require a DCGL. This approach evaluates "site vs accepted extent of background" rather than "site vs a heterogeneous background within a DCGL", and may be more relevant for partial site release prior to a final site characterization (analogous to a CERCLA removal action) and for situations where a DCGL is not or will never be developed. Additionally, if the upcoming MARSSIM revision adopts this language for consistency with MARSAME, the reference to NUREG 1505 will become outdated.

2. (Appendix O) Has NRC considered the use of composite sampling in final statis survey outside of formal statistical testing (i.e., Sign Test, WRS Test, etc.) with the intent of maximizing sample representativeness and minimizing variance rather than for detection purposes as presented in Appendix O? True population variance is very significant in systematic MARSSIM samples for statistical testing, but the focus of other samples (e.g. biases or characterization samples) may shift to acquiring the best possible representation of mean activity over a defined/bounded area rather than identifying every potential instance of a radionuclide over what may already be assumed heterogeneous. Examples include 100 square meter areas for UMTRCA and either a well-bounded or pre-defined contiguous EMC area, either of which may be internally heterogeneous. In these cases, characterizing or even detecting local variability is less important than acquiring a reliable approximation of the mean activity for comparison against an established limit over the same area (i.e., over 100 square meters for UMTRCA or a DCGLemc per a defined area). Table O.1 lists lost spatial variability information as a disadvantage, but in this context that's actually the incentive. A properly homogenized composite consisting of many increments doesn't overvalue the influence of any single increment and instead provides a more representative measure of the mean activity over a discrete sampling area than would the mean of discrete samples. While the specifics may differ, this intent is more so consistent with the Interstate Technology and Regulatory Council (ITRC) Incremental Sampling Methodology (ISM) than that presented in Appendix O.

3. (Appendix O) If composite samples have been considered with this intent, has NRC considered method uncertainty requirements as the primary measurement quality objective (MQO) as in MARLAP (Appendix C) and MARSAME (Sections 3.8.1 and 7.3.1) rather than the detection objective captured through the "modified investigation level" in Appendix O? Specifically in this case, the composite samples are individually answering the question "is the mean activity over this discrete area within some specified limit?" not "has a particular radionuclide been detected in this discrete area?" For this reason the primary MQO is better suited to support the actual decision by ensuring the sample uncertainty is sufficiently low to allow that decision to be made (i.e., the mean activity is less than the limit) with specified confidence.