

## ABSTRACT

### Decommissioning Survey and Site Characterization - Issues and Lessons Learned

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- The paper presents an overview of several topical areas pertaining to issues and lessons learned for decommissioning characterization and survey, including: subsurface sampling and survey; dose modeling & derivation of DCGLs for survey units; buried pipes survey and characterization; characterization of solid materials for release; and survey & monitoring for detection of leakages & spills. The specific topical areas are briefly discussed below:
- The paper discusses key subsurface survey and characterization issues pertaining to: lack of sampling, modeling, decision framework approach; and lack of quality in the decision-making throughout the site investigation and remediation processes. Calculation of a  $DCGL_W$  is a problematic issue for subsurface due to formulation of an appropriate exposure scenario that would occur in the subsurface. Similarly, the  $DCGL_{EMC}$  is also a problematic parameter to derive, as the statistical hypothesis testing for surface assumes that the samples come from the same population which may not be the case for subsurface. The paper focuses on a difficulty arising from the fact that investigators cannot completely scan the subsurface (e.g.; due to lack of comprehensive coverage easily gained at the surface, which now presents a real obstacle in determining activity levels at depth). Other issues pertaining to dealing with volumetric (not area) samples present an added complexity; thus, increasing sampling requirements and scrutiny.
- The paper addresses key dose modeling issues including: selection of a scenario, treatment of uncertainties in support of decision-making, and assessment of contaminant transport through concrete structures or barriers, and considerations for selection of a period of performance to convert risk/dose criteria into radionuclide concentration release limits.
- The paper addresses a key issue pertaining to survey and characterization of buried pipes and infrastructure components. In this context, the paper discusses issues associated with: survey and detection techniques; remediation and decontamination, as well as, technique used to overcome inaccessibility; blockage and debris depositions; use of techniques such as robotic crawlers; and other techniques involving remote ultrasonic and magnetic flux leakages testings.
- The presentation discusses briefly the need to have a unified approach for survey, detection, and release of materials and equipment using MARSAME approach.
- Finally, the presentation provides an over view of issues regarding characterization and survey of spills & leakages and how to use monitoring data to support decommissioning. The paper ends with outlining variety of issues and lessons learned based on regulatory review of numerous decommissioning facilities.