

Title: Radiological Characterisation – know your objective

**Authors: Veronica Lindow and Jennifer Möller, Vattenfall Research & Development,
BU Engineering, Radwaste & Decommissioning**

Abstract

When developing a programme for mapping the radiological characteristics of a facility to be decommissioned it is important to take into account the objectives of the programme. Will the results be used to plan for radiological control and selection of appropriate decontamination and dismantling techniques? Will the radiological inventory be used for dimensioning of future waste repositories? These are two examples of the applications for such studies, which could require that a radiological characterisation programme be adapted to provide the data appropriate to the intended use.

The level of detail and scope needed for a radiological characterisation will also vary depending on how the data will be used. An application to free-release a facility requires a comprehensive survey and well-documented analysis in order to ensure that no radioactive contamination above prescribed levels is present. A bounding calculation to determine the maximum anticipated volumes and activity of radioactive waste requires a different approach.

During the past few years, older decommissioning studies for the Swedish nuclear power plants have been updated (or are in the process of being updated). The decommissioning study's main purpose is to estimate the cost for decommissioning. The cost estimation is based on material and activity inventories, which in turn is based on previous and, in some cases, updated radiological characterisations of the facilities. The radiological inventory is an important part of the study as it affects the cost of decommissioning but also the uncertainties and accuracy of the cost estimation.

The presentation will discuss the challenges in specifying a radiological characterisation programme with multiple objectives, together with insights on how data delivered can be applied to yield results suitable for the intended purpose, without introducing excessive conservatism. The intent of the presentation is to define issues that can be of use in various aspects of radiological characterisation: preparation of a specification, execution of a characterisation programme and application of the results, with the goal of optimizing the process and minimizing unnecessary work.