Organisation for Economic Co-operation and Development - Nuclear Energy Agency

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ABSTRACT

Validation of activity determination codes and nuclide vectors by using results from processing of retired components and operational waste

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Decommissioning studies for nuclear power reactors are performed in order to assess the decommissioning costs and the waste volumes as well as to provide data for the licensing and construction of the LILW repositories. An important part of this work is to estimate the amount of radioactivity in the different types of decommissioning waste.

Studsvik ALARA Engineering has performed such assessments for LWRs and other nuclear facilities in Sweden. These assessments are to a large content depending on calculations, senior experience and sampling on the facilities. The precision in the calculations have been found to be relatively high close to the reactor core. Of natural reasons the precision will decline with the distance. Even if the activity values are lower the content of hard to measure nuclides can cause problems in the long term safety demonstration of LLW repositories.

At the same time Studsvik is processing significant volumes of metallic and combustible waste from power stations in operation and in decommissioning phase as well as from other nuclear facilities such as research and waste treatment facilities.

Combining the unique knowledge in assessment of radioactivity inventory and the large data bank the waste processing represents the activity determination codes can be validated and the waste processing analysis supported with additional data.

The intention with this presentation is to highlight how the European nuclear industry jointly could use the waste processing data for validation of activity determination codes.