

**Assessment of Radioactivity Inventory –
a key parameter in the clearance for recycling process**

Arne Larsson and Klas Lundgren
Studsvik Nuclear AB

ABSTRACT

Decommissioning studies for nuclear power reactors are to be 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 has performed these assessments for all Swedish NPPs as well as other nuclear facilities in Sweden using thorough on-site sampling and robust calculations developed by Studsvik's team of senior experts. Precision has been found to be relatively high close to the reactor cores, but then declines as distance from the core increases.

The decommissioning waste from a LWR can be separated into different categories such as:

- Material affected by the neutron flux from the reactor core
- Process systems
- Waste handling systems
- Contaminated structures

The determined specific activities for different systems (or part of systems) are combined with data on weights and contaminated surface areas in order to assess the total activity.

A key issue in the assessments has been efforts to reduce the uncertainties. Combining the unique knowledge in assessment of radioactivity inventories, the large data bank the waste processing represents and the knowledge and records from the laboratories, the activity determination codes can be validated and the waste processing analysis supported with additional data.