

TREND OF SPENT FUEL MANAGEMENT (SFM) IN THE WORLD

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ABSTRACT

Presently, spent nuclear fuel is mostly stored wet in at-reactor (AR) or away-from-reactor (AFR) facilities. Because many AR pools are approaching their full capacity, storage of spent fuel under dry and inert atmosphere is being used increasingly. Spent fuel storage for long periods of time will continue to be a key consideration for a number of countries. Spent fuel may have to be stored for extremely long periods of time; e.g. for up to 100 years and beyond. In addition, target discharge burnup is steadily increasing and results in increased cladding corrosion and fission gases leading to increased cladding stress.

A trend toward extended storage duration is seen in most countries as they wait for final resolution to the back-end of their domestic fuel cycles. Wet and dry storage continue to demonstrate good performances and provide system flexibility pending further progress in the back-end of the nuclear fuel cycle. It is important to confirm the viability of extended storage by continuing to study and share results regarding fuel and materials behaviour in storage through spent fuel performance assessment.

The IAEA has provided assistance in the evaluation and research of the long term behaviour of fuel and storage components in order to realize the anticipated long storage periods. One of the recent activities of the IAEA in these areas is the Spent Fuel Performance Assessment and Research (SPAR) Coordinated Research Programme (CRP). The overall objective of the SPAR-III CRP is to develop a technical knowledge base on long term storage of power reactor spent fuel through evaluation of operating experience and research by participating member states.

This presentation will summarize the trend of spent fuel management and introduce IAEA's activities.