

International Conference on the Management of Spent Fuel from Nuclear Power Reactors 2019: Learning from the Past, Enabling the Future



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Spent Fuel Management - India

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India follows closed fuel cycle option for spent fuel management. Wet storage of spent fuel is the predominant mode of storage therefore the discharged fuel from the reactors is stored at the reactor pools which have capacity for ~10 reactor-years of operation. After appropriate cooling, the spent fuel is moved to the storage locations either on or off reactor site depending on the spent fuel management strategy. Transport of the spent fuel is carried out adhering to national and international safety guide lines in “type B” packages. Lower capacity fuel ponds are provided for interim storage of spent fuels at recycling facilities. PUREX process using TBP is employed for reprocessing spent fuel from PHWRs. Spent fuel reprocessing from FBRs and futuristic reactors is demonstrated using TBP based solvent extraction processes. The safe management of radioactive wastes envisages two distinct modes of final disposal in respect of radioactive wastes viz. near-surface engineered, extended storage for low and intermediate level radioactive wastes and deep geological disposal for high-level and alpha bearing wastes. HLLW treatment is carried out in waste immobilization plants and interim storage of vitrified HLLW is carried out in solid storage and surveillance facilities. Extensive R&D in partitioning of long-lived actinides and fission products has lead to the development of solvent extraction based process flow-sheets using indigenously synthesized solvents which are deployed at engineering scale. This has resulted in the reduction of waste volume generation and extended time of repository requirements. This has also resulted in the recovery of several useful radionuclides such as ^{137}Cs , ^{90}Sr , ^{106}Ru etc. which are used for societal benefits.

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Country or International Organization

India

Primary authors: Mr YADAV, Jata Shankar (BARC, Mumbai, India); Mr AGARWAL, Kailash (BARC, Mumbai, India)

Presenter: Mr YADAV, Jata Shankar (BARC, Mumbai, India)

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