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# Joint ICTP-IAEA Workshop on Modelling for Encapsulated Intermediate Level Waste (ILW) and High Level Waste (HLW) During Long-Term Storage | (smr 3920)

## Thursday 29 February 2024

**Radiation modelling using MCNP SOURCE APP codes - Budinich Lecture Hall / LBLab (LB)**  
**(09:00-17:00)**

time	title	presenter
09:00	Given a (Nuclide,Activity) ( $N_i;A_i(t)$ ) inventory, calculate radiation emission source terms using (1) the utility code MCNP_SOURCE_APP as well as SCALE ORIGEN	JOHANN VAN ROOYEN
09:50	Development and execution of MCNP calculation models  Case study 1: Dose rate calculation for radioactive waste — point source	JOHANN VAN ROOYEN
10:40	Coffee break	
10:55	Development and execution of MCNP calculation models  Case study 2: Dose rate calculation for radioactive waste. Point source — volume sources	JOHANN VAN ROOYEN
11:30	Development and execution of MCNP calculation models  Case study 3: Concrete drum filled with a simple radionuclide content. Calculation of required wall thickness of the concrete	JOHANN VAN ROOYEN
12:45	Lunch & Poster session	
13:50	Development and execution of MCNP calculation models  Case study 4: Hematite or barites concrete drum filled with cemented liquid radioactive waste from (n,f) ( $^{99}\text{Mo}$ ) production. Calculation of the contact dose rate and Transport Index (TI) after a selection of decay times	JOHANN VAN ROOYEN
14:30	Calculations in support of the isotopic characterisation of irradiated nuclear fuel assemblies from research reactors and power reactors.  ORIGAMI → EXCEL → MCNP. Examples of spent fuel dose rate and cask evaluation calculations using the above toolchain	JOHANN VAN ROOYEN
15:00	Coffee break	
15:25	Modelling with MCNP: Charged particle interactions with glass, cement, ceramics and graphite. Calculation of dose-depth curves for $\alpha$ -particles, electrons, positrons and ionising photons.	JOHANN VAN ROOYEN
16:30	Defects in Pyrochlore structure for waste management	ATHIRA KUMARI USHA VIJAYA RAJ