

INVESTIGATION OF WASTE MANAGEMENT OF CONTROL ROD,
IRRADIATION BOXES, AND STEEL LINING OF TEHRAN RESEARCH
REACTOR AFTER DECOMMISSIONING

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Abstract: Prediction of the radioactive behaviour of different components of a research reactor during the cooling time is important regarding their waste management and decommissioning. The present work investigate the radioactivity behaviour of control rod, aluminium irradiation box and steel lining of Tehran Research Reactor during the cooling times after the reactor shutdown. MCNPX and ORIGEN computational codes were used to estimate the behaviour. A benchmark study was done to evaluate the conformity of the experimental measurement with the simulation data. The carried out study showed the aluminium parts would be easily handled after at least 6 months after the reactor shutdown by means of the usual shield are used to transfer the radioactive components to the spent fuel pool or radioactive waste storage sites. In the case of the steel lining also after 6 months of cooling the gamma dose rate decreases noticeably. The gamma dose rate of control rods are very high and decreases slowly during the years after the reactor shutdown.

Keywords: *Gamma dose rate, decommissioning, waste components, Tehran Research Reactor*