

Computational investigation of isotopic signature of radioxenon released from Tehran research reactor

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Abstract

This paper presents the early radioxenon emission inventory for Tehran research reactor (TRR) based on comparison of the two computational analyses of MCNPX2.6 and ORIGEN 2.1. To determine the possible xenon isotopic signature of TRR's releases under normal operational condition, the TRR fresh fuel burn-up through a total 400 days operational reactor power cycle is simulated. Ratios of the radioxenon isotopes are calculated as a function of time during an operational cycle. There are 10.55 and 3.37 % differences between the results of these two codes for the calculation of ^{133}Xe and ^{135}Xe activity, respectively.