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A temporary storage for activated UCx targets at SPES

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SPES (Selective Production of Exotic Species) is a project of the INFN (Istituto Nazionale di Fisica Nucleare) for the production of radioactive ion beams, through direct irradiation of a fissile target with high intensity proton beams.

The irradiation of the uranium carbide target with protons at 40 MeV energy and 200 uA current during an irradiation cycle of two weeks, causes an activity of approximately 10^{14} Bq. Less than 0.5% of the total activity is due to species of half-lives longer than one month. The replacement of the target takes place at each irradiation shift, ideally once per month, taking into account two weeks of irradiation and two weeks for the facility set up. During the first years of operation, a temporary storage will host the exhausted targets.

This work presents the evaluation of the residual dose rate due to the presence of several irradiated targets in order to design the needed shielding for the storage area and to allow the access nearby. The simulations have been performed with the FLUKA Monte Carlo code.

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