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Radiation protection studies for the ISOLDE Beam Dump Replacement Study (IBDRS)

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In 2021, in order to evaluate the technical feasibility and the resources required to replace the ISOLDE beam dumps, a dedicated study (IBDRS) was launched. The beam dump replacement activity is divided in two main phases:

1. The dismantling worksite: it consists in safely removing and storing the present beam dumps and their shielding, including several thousands of cubic metres of soil (part of which is radioactive) presently covering the ISOLDE target area;
2. The consolidation worksite: it involves the installation of new beam dumps and related infrastructure (e.g. cooling system) and shielding able to cope with a potential beam power increase.

This contribution will provide an overview on the status of the studies performed to address the radiation protection aspects of the project; the main challenges will also be discussed. A particular focus will be dedicated to the consolidation studies for the new operational beam parameters (2 GeV beam energy and up to 6 uA beam current): the design and optimisation of the new shielding, the evaluation of the residual dose rate for interventions in the target area and the estimation of atmospheric releases from air activation.

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