

Ar - Kr - Xe dose calculator

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After the last official release by the EA in 2002, and the arrival of the ERICA assessment tool, the EA R&D 128 methodology has been gradually superseded by ERICA. However, there is one aspect in which the R&D 128 version 1.2 has remained in use, namely, the calculation of doses to biota arising from external exposure to Ar-41 and Kr-85, which fall outside the current ERICA tool's capabilities. However, a limitation exists in that the R&D 128 version 1.2 tool does not have the ability to calculate doses from Kr-88, Xe-131m and Xe-133, which can be significant in discharges from nuclear reactors. An additional problem is that the tool can only calculate doses for the R&D 128-defined biota, but not for ERICA reference organisms, which are based on the more modern ICRP reference animals and plants (RAPs).

To rectify this, the Belgian Nuclear Research Centre has prepared a variant to the R&D 128 tool (version 2). This now includes the ability to calculate doses for all the environmentally relevant Ar, Kr and Xe isotopes, and covers not only the original R&D 128 organisms but also the ICRP reference animals and plants that the ERICA tool considers. This is no longer a release from the EA, but an adaptation to convey the additional features until this approach can be incorporated in a future release of the ERICA tool.

Reference: Vives i Battle, J., Jones, S.R. and Copplestone, D. (2015). [A methodology for Ar-41, Kr-85,88 and Xe-131m,133 wildlife dose assessment](#). Journal of Environmental Radioactivity 144, 152-161.

[Terrestrial ecosystem SCK-CEN release version 2.xls](#)

Note: please be advised that this Excel spreadsheet does not work on French computers (encryption incompatibility).