

# Beresford et al. Assessment of risk to wildlife from ionising radiation - can initial screening tiers be used with a high level of confidence JRP

**Beresford, N.A., Hosseini, A., Brown, J.E., Cailles, C., Beaugelin-Seiller, K., Barnett, C.L., Copplestone, D. 2010.**

Assessment of risk to wildlife from ionising radiation: can initial screening tiers be used with a high level of confidence?

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A number of models are being used to assess the potential environmental impact of releases of radioactivity. These often use a tiered assessment structure whose first tier is designed to be highly conservative and simple to use. An aim of using this initial tier is to identify sites of negligible concern and to remove them from further consideration with a high degree of confidence. In this paper we compare the screening assessment outputs of three freely available models. The outputs of these models varied considerably in terms of estimated risk quotient (RQ) and the radionuclide--organism combinations identified as being the most limiting. A number of factors are identified as contributing to this variability: values of transfer parameters (concentration ratios and  $K_d$ ) used; organisms considered; different input options and how these are utilised in the assessment; assumptions as regards secular equilibrium; geometries and exposure scenarios. This large variation in RQ values between models means that the level of confidence required by users is not achieved. We recommend that the factors contributing to the variation in screening assessments be subjected to further investigation so that they can be more fully understood and assessors (and those reviewing assessment outputs) can better justify and evaluate the results obtained.

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