Beresford et al. ERICA Background exposure rates JER 99

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It has been suggested that, when assessing radiation impacts on non-human biota, estimated dose rates due to anthropogenically released radionuclides should be put in context by comparison to dose rates from natural background radiation. In order to make these comparisons, we need data on the activity concentrations of naturally occurring radionuclides in environmental media and organisms of interest. This paper presents the results of a study to determine the exposure of terrestrial organisms in England and Wales to naturally occurring radionuclides, specifically 40K, 238U series and 232Th series radionuclides. Whole-body activity concentrations for the reference animals and plants (RAPs) as proposed by the ICRP have been collated from literature review, data archives and a targeted sampling campaign. Data specifically for the proposed RAP are sparse. Soil activity concentrations have been derived from an extensive geochemical survey of the UK. Unweighted and weighted absorbed dose rates were estimated using the ERICA Tool. Mean total weighted whole-body absorbed dose rates estimated for the selected terrestrial organisms was in the range 6.9×10^{-2} to 6.1×10^{-1} Gy h^{-1}.

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