Beresford et al. Estimating the exposure of small mammals JER 99

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An essential step in the development of any modelling tool is the validation of its predictions. This paper describes a study conducted within the Chernobyl exclusion zone to acquire data to conduct an independent test of the predictions of the ERICA Tool which is designed for use in assessments of radiological risk to the environment. Small mammals were repeatedly trapped at three woodland sites between early July and mid-August 2005. Thermoluminescent dosimeters mounted on collars were fitted to Apodemus flavicollis, Clethrionomys glareolus and Microtus spp. to provide measurements of external dose rate. A total of 85 TLDs were recovered. All animals from which TLDs were recovered were live-monitored to determine ^{90}Sr and ^{137}Cs whole-body activity concentrations. A limited number of animals were also analysed to determine ^{239,240}Pu activity concentrations. Measurements of whole-body activity concentrations and dose rates recorded by the TLDs were compared to predictions of the ERICA Tool. The predicted ^{90}Sr and ^{137}Cs mean activity concentrations were within an order of magnitude of the observed data means. Whilst there was some variation between sites in the agreement between measurements and predictions this was consistent with what would be expected from the differences in soil types at the sites. Given the uncertainties of conducting a study such as this, the agreement observed between the TLD results and the predicted external dose rates gives confidence to the predictions of the ERICA Tool.