

# Beresford et al. Estimating the transfer of radionuclides to arctic biota RP 40

**Beresford, N. A., Wright, S.M., Barnett, C.L., Golikov, V., Shutov, V. Kravtsova, O., 2005**

Approaches to Estimating the Transfer of Radionuclides to Arctic Biota.

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We review collated data and available models for estimating the transfer of radionuclides to terrestrial biota within the European Arctic. The most abundant data are for radiocaesium and radiostrontium although many data for natural radionuclides are available. For some radionuclides no data are available for describing transfer to Arctic biota. Allometric-kinetic models have been used to estimate transfer for radionuclide-biota combinations. Predicted values were in good agreement with observed data for some radionuclides although less so for others. There are no bespoke models to enable the dynamic prediction of radionuclide transfer to Arctic biota. A human Arctic foodchain model has been adapted to estimate <sup>137</sup>Cs and <sup>90</sup>Sr transfer to some Arctic biota. There are many factors of Arctic ecosystems which may influence radionuclide behaviour including short growing seasons, prolonged soil freezing, and effects of low temperatures on biological rates. If exposure to ionising radiation in Arctic ecosystems is to be robustly predicted such factors must be fully understood and incorporated into models.

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