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Beresford N.A., Wright S.M., Barnett C.L., Wood, M.D., Gaschak S., Arkhipov A., Sazykina T.G., & Avila R. 2005.
A case study in the Chernobyl zone - part 1: predicting radionuclide transfer to wildlife.
Radioprotection, Suppl. 1, 40, S291-S297.

A number of frameworks have been proposed to assess the protection of wildlife from ionising radiations. In this paper we compare the predictions of transfer parameters recommended by one of these frameworks (FASSET) with observed whole-body ^{90}Sr and ^{137}Cs activity concentrations in a range of mammal and invertebrate species sampled within the Chernobyl exclusion zone. Predicted activity concentrations are generally within the observed ranges and mean predictions for reference organisms are similar to, or circa one order of magnitude higher than, the observed means. However, some predictions are more than one order of magnitude lower than observed values. No data were available for animals to test predictions for the other radionuclides released by the Chernobyl accident. In a separate paper the outputs of this assessment will be used to estimate doses to reference organisms and compare these to observed radiation induced effects reported within the Chernobyl zone.

http://dx.doi.org/10.1051/radiopro:2005s1-044