

Session: Poster Session 06: Radionuclides speciation & ecological

Presentation code: P-104

RECENT DEVELOPMENT OF WILDLIFE TRANSFER DATABASES

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The transfer of radionuclides to wildlife in the environmental radiological assessment models developed over the last two decades is most often described by the whole organism concentration ratio ($CR_{wo-media}$). This parameter relates whole organism activity concentrations to those in environmental media (typically soil for terrestrial ecosystems and water for aquatic ecosystems).

When first released in 2007, the ERICA Tool contained the most comprehensive and well documented $CR_{wo-media}$ database available for wildlife. It was subsequently used in the USDOE RESRAD-BIOTA model and formed the initial basis for the international wildlife transfer database (WTD; www.wildlifetransferdatabase.org/) developed to support IAEA and ICRP activities. Subsequently, many additional data were input to the WTD, including the outputs of a review of Russian language literature and data from Canadian monitoring programmes associated with nuclear power plants, U-mining and related industries. Summarised data from the WTD in 2011 were used to provide CR_{wo} values in ICRP 114 and the IAEA's handbook on wildlife transfer parameters (<http://www-ns.iaea.org/projects/emras/emras2/working-groups/working-group-five.asp?s=8&l=63>).

This paper provides an update on the development of the WTD subsequent to 2011 and its application to derive revised default $CR_{wo-media}$ parameter values of the ERICA Tool. Since 2011, some *circa* 17,000 additional $CR_{wo-media}$ values have been added to the WTD. The new inputs include original data for: representative species of the ICRPs Representative Animals and Plants (RAPs) from a UK forest; monitoring data from Japanese estuaries and Finland; Canadian wildlife; plutonium uptake data from US weapons testing programme sites; wild plants and invertebrates from north western USA; refereed literature published after 2011. Additionally, data already in the WTD from Australia were reviewed with reference to original source reports not previously considered and amended where required.

The revised WTD was quality checked by considering the degree of variation in the data for each organism-element combination and the change between the WTD versions. This identified a number of errors (e.g. double entry of data, unit conversion errors and entries based on a dry matter rather than the required fresh weight basis) all of which have now been rectified.

Statistical analyses of the WTD have demonstrated that there is currently no justification to subdivide

CR_{wo-media} from e.g. mammal to mammal herbivore and mammal carnivore etc.. In revising the ERICA Tool, a more generic categorisation of organisms has subsequently been used. Even with the increase in available data, there are still many radionuclide-organism combinations for which data are lacking. To provide default values where there are no data, a set of rules have been derived including the use of Bayesian statistics.
