

Title	EcoDoses. Improving radiological assessment of doses to man from terrestrial ecosystems: A status report for the NKS-B activity 2006
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ISBN	978-87-7893-250-1
Date	March 2009
Project	NKS-B / ECODOSES
No. of pages	44
No. of tables	18
No. of illustrations	44
No. of references	49
Abstract	<p>The overall aim of the NKS-B EcoDoses activity is to improve the prediction of doses to humans from consumption of radioactively contaminated food. For this purpose, various published and unpublished datasets have been compiled and applied in developing refined parameterisation for existing food dose models. The ECOSYS model developed in Germany after the Chernobyl accident has been applied as the basis for the investigations. This model can be operated both with discrete releases adequately representing a nuclear power plant accident, and with continuous or multiple releases, as observed in the nuclear weapons testing period. The modelling has revealed that it is essential to ensure that case-specific values are applied for a range of parameters, adequately reflecting the actual conditions with respect to geology, season, climate and demography. In connection with this year's work on the activity, sensitivity studies have been conducted with the ECOSYS model, in which the influence on ingestion dose estimates of a number of parameters has been evaluated in relation to Faroese conditions. The importance of applying location specific data to estimate dose is pinpointed, and it is also concluded that dose predictions for a small and distinct area like the Faroese, where not all of the many parameters required to run ECOSYS optimally have been adequately assessed in recent years, can be associated with considerable uncertainty. A Finnish study has been made in relation to modelling of radiocaesium behaviour in lakes. This study was carried out using a compartmental model that is included as a module in the DETRA dose assessment tool. A total of nine different input parameters (distribution coefficients, run-off from the catchment, erosion from the catchment, sedimentation rate in the lakes, lake water exchange rate, and biological half-lives in four fish species) were varied, and particularly distribution coefficients and lake water exchange rates were demonstrated to have high influence on doses. The model showed reliable performance when compared with Chernobyl data. Also a study of consumption habits and leaf area indices in Denmark has been made and the new datasets exhibit significant differences compared to the ECOSYS default values. ECOSYS model runs highlight the importance of these findings for dose estimates. Also the influence of local deviations in weathering half-lives, feeding regimes, aerosol particle sizes and deposition velocities have been studied.</p>
Key words	Nuclear weapons fallout, deposition modelling, food-chain modelling, ecological half-lives radiological sensitivity, Chernobyl accident