

## Validation of ecological $^{131}\text{I}$ transfer models using experimental data of the “Plavsk scenario”

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Environmental Modelling for Radiation Safety (EMRAS) programme was organized by IAEA in 2003. Within this project experimental data of  $^{131}\text{I}$  measurements following the Chernobyl accident in the Plavsk district of Tula region, Russia, (Plavsk scenario) were used to validate the calculation results of some ecological models. Nine participants were involved in the project. Data on  $^{137}\text{Cs}$  contamination of soil in settlements,  $^{131}\text{I}/^{137}\text{Cs}$  isotopic ratios in deposition in several locations, selected information upon the lifestyle of residents, methods of agriculture and stocking, climate and meteorological data were used as input information for model calculations. Model outputs were compared with the results of  $^{131}\text{I}$  measurements performed in May-June 1986 on milk and thyroids of local people. The results of  $^{131}\text{I}$  time-dependent reconstruction in the air and fresh grass, as well as inhalation and ingestion doses to the thyroids of inhabitants in 18 localities were compared with each other.

Results of model calculations and observed data comparison are presented in the report. More than 50% of predicted  $^{131}\text{I}$  concentrations in milk fit in a range of (3×observed, 1/3×observed) for most of the models that gives only one order of magnitude uncertainty of predictions. From 23 to 71 % predictions of  $^{131}\text{I}$  content in thyroid according to different models for separate dates of people's measurements, stay within this range. Discrepancies between the average thyroid doses estimations produced by most participants did not exceed a factor of ten. The time when cows were brought to the pasture is the most bearing factor for thyroid dose estimations.