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Calculation of the Stochastic Mode of Individual Thyroid Dose for the Cohort's Member

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There is now little doubt that the increase in the incidence of pediatric thyroid cancer in radioactively contaminated areas is related to some extent to radiation exposures resulting from the Chornobyl accident. The exact nature of the relationship between thyroid dose and thyroid cancer, however, remains to be quantified.

Ukrainian cohort includes 13,204 individuals who were less than 19 years old on April 26, 1986. All cohort members were subjected to the direct thyroid activity measurement between April 30 and June 30, 1986 and were staying at the north part of one of three most radioactively contaminated oblast of Ukraine: Kyiv, Zhytomyr, Chernihiv.

The methodology used to estimate the thyroid absorbed doses resulting from intakes of ^{131}I by the Ukrainian cohort subjects is described. The model of thyroid dose estimation is run in two modes: deterministic and stochastic. In the stochastic mode, the model is run 1000 times for each subject using a Monte Carlo procedure.