

Reconstruction of Internal Doses for the Alpha-Risk Case-Control Study of Lung Cancer and Leukaemia Among European Nuclear Workers

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The Alpha-Risk study required the reconstruction of doses to lung and red bone marrow for lung cancer and leukaemia cases and their matched controls from cohorts of nuclear workers in the UK, France and Belgium. The dosimetrists and epidemiologists agreed requirements regarding the bioassay data, biokinetic and dosimetric models and dose assessment software to be used and doses to be reported. The best values to use for uncertainties on the monitoring data, setting of exposure regimes and characteristics of the exposure material, including lung solubility, were the responsibility of the dosimetrist responsible for each cohort. Among 1721 subjects, the median absorbed dose to the lung from alpha radiations was 2.1 mGy, with a maximum dose of 316 mGy. The lung doses calculated reflect the higher levels of exposure seen among workers in the early years of the nuclear industry compared to today.

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