133 MODELLING LEUKEMIA RISK ASSOCIATED TO CHRONIC EXTERNAL RADIATION EXPOSURE IN A FRENCH COHORT OF NUCLEAR WORKERS

Camille Metz-Flamant,[1] Eric Samson,[1] Sylvaine Caer-Lorho,[1] Alain Acker,[2] Dominique Laurier[1] *[1]IRSN, Fontenay-aux-Roses, France; [2]AREVA NC, Paris, France*

10.1136/oemed-2011-100382.133

Objectives Leukemia is one of the first long term health effects to be noted after acute exposure to relatively high doses of ionising radiation. Leukemia mortality after external exposure at low doses and low-dose rates has been investigated at the French atomic energy commission (CEA) and nuclear fuel company (Areva NC).

Methods The cohort includes monitored workers employed more than 1 year between 1950 and 1994 at CEA or Areva NC companies. Leukemia mortality after X and γ rays exposure was estimated using excess relative risk (ERR) models and time dependent modifying factors were investigated using time windows.

Results More than 36 700 workers, followed-up for an average of 28 years, are included into the cohort. A total of 73 leukemia deaths occurred between 1968 and 2004. Among exposed workers, mean cumulative external dose per worker was 21.7 milliSievert (mSv). A significant association between leukemia mortality and dose has been observed with a 2-year lag time. The association was of larger magnitude for myeloid leukemia. ERR per Sv was larger between 2 and 15 years after exposure and no association was observed for doses received at exposure-rates lower than 10 mSv per year.

Conclusions Analyses show a risk of leukemia after chronic external ionising radiation exposure in the French CEA-AREVA NC cohort. Results are consistent with those found in other nuclear workers studies. Further analyses of modifying factors should be conducted on the bases of pooled nuclear worker cohorts.