

Cohort study of the population exposed to dioxin after the Seveso, Italy accident: Cancer incidence results, 1977-2012

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Abstract

Introduction On July 10, 1976 an explosion in a factory near Seveso, Italy caused the contamination of a surrounding area with 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD). The area was divided in three zones named A (very high pollution, N=700 residents at the time of the accident), B (high pollution, N=4,800), and R (low pollution, N=31000). The population living in that area and in a surrounding non-polluted (non-ABR, N=181,000) zone is under surveillance for mortality and cancer incidence. We present preliminary results of the extended (1997-2012) cancer incidence follow-up.

Methods In 1977-2006, potential cancer cases were identified with linkages with hospital admission databases and final diagnosis (cancer site, morphology, incidence date) was ascertained after manually reviewing clinical records. For the period 2007-2012 we exploited the Brianza Cancer Registry data. Using non-ABR zone as reference, we calculated age-adjusted rate ratios (RR) and 95% confidence intervals (CI) using Poisson regression models.

Results We recorded about 27,500 cancer cases overall (11% death certificate only). Overall cancer incidence was similar across zones. Rectal cancer was elevated in zone B in both genders (RR=1.4; CI: 1.0-1.9, N=39 deaths), without clear patterns by time since the accident. In women, lymphatic-hematopoietic cancers were elevated in zone A (RR=1.7; CI: 0.8-3.8; N=6) and B (RR=1.4; CI: 1.0-2.0; N=31), without excesses 30+ year after the accident. Breast cancer incidence was elevated only after 10-19 years after the accident in zone A (RR=1.7; CI: 0.7-3.6; N=4). In men, in zone B, lymphoid leukemia was in excess 20-29 year after the accident (RR=3.8; CI: 1.4-10.9, N=5).

Conclusions In general, considering low numbers and the different incidence patterns observed by gender and latency, the study extension did not show clearly increased risks in most polluted zones.

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