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## **Cancer incidence in people with residential exposure to a municipal waste incinerator: An ecological study in Modena (Italy), 1991–2005**

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### **Abstract**

We conducted a retrospective ecological study to assess cancer incidence during the period 1991–2005 in proximity of a municipal waste incinerator (MWI) in Modena (Italy). We identified three bands of increasing distance from the MWI, up to a radius of 5 km and used the residence as surrogate marker of the exposure. Residential history for Modena's population was reconstructed and residents were associated to the most appropriate census unit. Age-standardized incidence ratios (ASR) and standardized incidence ratios (SIR) were estimated for all cancers and selected sites. Variations in cancer incidence were investigated using space and space–time scan statistic. Deprivation index was taken into account as potential confounding factor. During the 15-year study period, 16,443 new cases of cancer were diagnosed among residents in Modena. The space–time clustering test identified three significant clusters but their shapes were not associable to the MWI exposition. The purely spatial analysis not showed statistically significant clusters. The SIR computed for all cancers and selected sites did not show any excess of risk in the area closest to the plant. Higher SIR for leukaemia was found in the second band from MWI (2–3.5 km) for females (SIR, age and DI adjusted: 1.35, 95%CI: 1.01–1.79) and for both sexes (SIR, age and DI adjusted: 1.28, 95%CI: 1.03–1.57), but not a spatial trend was observed, thus excluding a possible link with MWI. In conclusion, bearing in mind the intrinsic limits of the study, the results suggest that there is no detectable increase of cancer risk for people living in proximity to the Modena MWI.