

# MORTALITY ANALYSIS IN ITALIAN POLLUTED SITES (IPS) WITH INDUSTRIAL WASTE LANDFILLS AND DUMPING SITES

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**Background and Aims:** SENTIERI project describes mortality in 44 Italian polluted sites (IPS) “of national concern” for their contamination documented in Ministerial Decrees. IPS are classified for the presence of environmental exposures: chemical industry/petrochemical plants&refineries/asbestos or other mineral fibers/steel plants/thermoelectric power plants/mines or quarries/landfills/incinerators. For each site, Standardised mortality ratios, crude and deprivation adjusted, were calculated for 63 groups of causes (reference regional population, 1995-2002). We aim at estimating the health impact of residents in 24 sites (205 municipalities; 3,964,425 inhabitants at 2001 census) where industrial waste landfills or illegal dumping sites are located.

**Methods:** Twelve mortality causes were selected for analysis on the basis of the epidemiological evidence evaluation completed in SENTIERI project. Metanalysis of mortality results, by SMR adjusted for Deprivation Index, was completed overall (24 sites) and separately for the two categories of industrial waste landfills (10 sites) and illegal dumping sites (14 sites). In the analysis presence/absence of other sources of environmental contamination were included as covariates when applicable (crude and adjusted SMR estimates). A negative binomial regression model by STATA 10 software was used.

**Results:** The main results are for illegal waste dumping sites. Significant increases ( $p$ -value $<0.05$ ) are observed for lung cancer among men (crude: SMR=1.12; adjusted: SMR=1.13) and in both genders for liver (men: SMR=1.13; women: SMR=1.21) and bladder cancer (men: SMR=1.05; women: SMR=1.12). Mortality for congenital malformations did not show significant increases. Same results are found when the largest waste illegal dumping sites were excluded from the analysis.

**Conclusions:** The results suggest a contribution of waste illegal dumping sites in the increased mortality for lung cancer. A role for bladder and liver cancers can be envisaged. The ecological approach, the diversity and mixtures of environmental exposures sources do not allow conclusions on specific etiological hypothesis and hinder a causal interpretation of study results.

**References:** Blettner M, Sauerbrei W, Schlehofer B, Scheuchenpflug T, Friedenreich C. Traditional Review, Meta-analyses and Pooled Analyses in Epidemiology. *Int J Epidemiol* 1999; 28: 1-9.