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## **Infant Mortality in 27 Italian Municipalities With Solid Waste Incinerators (1981-2001)**

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### **Objective:**

Recently, an epidemiological study was carried out to verify the hypothesis of an association between infant mortality and residence near incinerators (Tango, 2004). Limits to the study were represented by rarity of death events and heterogeneity of infant mortality. However, availability of mortality data and of an incinerator database has allowed performing an exploratory investigation.

### **Materials and Methods:**

Infant mortality was investigated over 2 periods (1981-1991, 1992-2001) in 27 municipalities with active incinerators in the 1981-2001 time frame. For each municipality the observed/expected ratio (O/E) was obtained. To calculate expected mortality, municipalities were included inside a 50-km radius circle. A pooled estimation of the O/E ratio obtained by meta-analysis was performed for the 27 municipalities. A multiple metaregression model was used to analyze the study, activity and latency periods, the incinerator burning capacity, the number of resident newborns, the residence density, the deprivation index.

### **Results:**

Mortality analysis was performed on resident population for the whole period on approximately 250,000 infants under 1 year of age. In the overall period 1673 cases of infant mortality were observed. The pooled estimation of the O/E ratio resulted 1.04 (CI 95%: 0.97-1.11) for total cases. The multiple metaregression model showed the incinerator burning capacity as a statistically significant factor ( $P=0.011$ ). Municipalities having incinerators with a burning capacity >50,000 ton/year showed a higher mortality excess (O/E=1.11, CI 95% 1.03-1.20) compared to municipalities with incinerators of <50,000 ton/year (O/E=0.95; CI 95%: 0.86-1.04).

### **Conclusions:**

Findings call for further insight by analytic epidemiologic studies to confirm possible association between infant mortality and living near incinerators.

