

Poster presentation 4

Epidemiological and environmental study by GIS in Pisa suburbs (Italy)

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Background: public concern about possible health risk associated with residence near waste sites has increased in the last decade. Some epidemiological studies reported increasing risk for acute and chronic diseases. Studies consistency, statistical power, methods' standardisation are weak, and environmental data often very poor. GIS represents a useful tool to thoroughly investigate when residence information is available.

Objective: in the Pisa south-east area an incinerator, small factories and a high traffic route are located. The study main objectives are to evaluate the environment and population health status and to set up indicators for monitoring.

Materials: the study area within 4 Km radius of the incinerator includes 5,168 families, totalling 12,477 residents. To evaluate the population health status, mortality, morbidity, and reproductive outcomes from routinary data, that includes the residence addresses, will be considered. Acute and chronic effects will be collected by questionnaire on a population sample of 1,500 subjects. Environment status will be studied through chemical and biological characterization of soil, surface/ground water and air matrices.

Methods: the location of soil samples was determined by five concentric circles, partitioned by twenty sectors each, with a decreasing granularity of the samples from the centre to the external ring. Subsequently the granularity of soil samples was incremented in the area of higher concentration of population, by merging together buffer areas around buildings. Sample size was determined considering the statistical power. Statistical analyses based on surface smoothing along with multivariate techniques will be performed to evaluate the effects on the surrounding area and residents.