

The “Triangle of Death”: a case study from Campania region (Italy)

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In September 2004, Senior and Mazza published a paper on *The Lancet Oncology* where the villages of Marigliano, Nola and Acerra were included within the vertices of a so-called "triangle of death" where the local population resulted to be strongly affected by a cancer incidence higher than the regional average [1]. The aim of this work has been the evaluation of the geochemical-environmental conditions of this north-eastern sector of the metropolitan city of Naples covering a total surface of ca. 100 sqkm. This area is of a great socio-economic interest due to the presence of urban settlements, productive activities, infrastructures and other natural resources.

For the purpose, a total of 154 samples were collected from the study area to determine the concentrations of potentially toxic elements (PTEs) and polycyclic aromatic hydrocarbons (PAHs) in topsoils. The analytical data were statistically processed in order to carry out an environmental assessment of the area based on a geostatistical approach and a multivariate analysis of the data.

The results showed how the distribution patterns of contaminants in the area are mostly related with the presence of industrial and human settlements in the study area.

Diagnostic ratios were applied to PAHs data to assess their origin and distribution.

A preliminary quantitative risk assessment (PQRA) was also performed to evaluate the potential effect of soil contamination on local population health conditions.

[1] Senior and Mazza (2004) *The Lancet Oncology* **5**, 525-527.