Italian "Triangle of death"

The Reportage *Italian "Triangle of death" linked to waste crisis,* published in *The Lancet Oncology,*[1] has obtained wide press coverage in the Italian media and has raised many open questions.

The dumping cycle in Campania, Italy, is a critical problem nested in the framework of a social, environmental, and health setting. About $2{\cdot}6\times10^9$ kg of municipal wastes are produced in Campania every year.[2] The waste is treated in seven plants for production of waste solid fuel, dumped in landfills, or transported out of the region. The rate of separate waste collection is still very low (1·8% regional mean), although some municipalities have achieved good results.[2] Production of mixed waste (ie, hazardous and non-hazardous waste produced by service, research, and sanitary activities) is estimated at $2{\cdot}0\times10^9$ kg a year, with recycling processes accounting for about 60%.[2]

The number of uncontrolled or illegal dumps has multiplied in Campania (1230 estimated). There are no operating incinerator plants, and the construction of the first incinerator in the municipality of Acerra has become a social and political issue. Relevant difficulties affecting large areas of the region are related to waste-emergency management, contaminated-land reclamation, and environmental and health data collection for monitoring and assessment purposes.

The report by Senior and Mazza[1] focuses on a specific part of Campania in which some hazardous-waste sites are located, but ostensibly the triangle area of concern has not been selected on the basis of adequate epidemiological and environmental data. Actually, the surrounding municipalities of Naples and Caserta have hundreds of waste sites, and some adverse health effects have been signalled. Nevertheless, the situation in Campania is much more complex: descriptive studies done in Campania have shown excesses of early mortality (0–14 years) and congenital malformations in several municipalities with main landfill sites of primary interest, but have shown a heterogeneous pattern in the triangle.[3] An investigation on mortality in an area north of the triangle, including 39 waste sites (District 58, ASL Naples 2), shows excesses of lung, pleural, laryngeal, bladder, liver, and brain cancer.[4] The 1990–2003 mortality data from the Campania registry (http://www. epicentro.iss.it/) shows a patchy pattern, with some causes of death showing excesses. However, these findings need to take into account factors such as sex and age, birth cohorts, occupational exposures, contiguity of environmentally similar areas, specific features of the region, and use of regional, provincial, or national standards because these factors could substantially change the results.

The Campania region is characterised by cause-specific mortality and morbidity rates are very different from the Italian national average. The role of waste-related exposures should be investigated in view of the probable occurrence of many other environmental, societal, lifestyle, and health-care-related risk factors.

Delimitation of areas at higher risk is always a difficult and delicate task that must be done on the basis of valid and adequate data that characterises the environmental and health status in relation to a reference context. An approach based on over-concentration of the context leads to results difficult to interpret in view of the post-hoc nature of the exercise. Simplifications can convey false messages in which the association between waste treatment plants and adverse health outcomes is proved or easily shown. Moreover they are also of no help to local populations and authorities nor to those in external areas that are potentially involved: first, they do not provide any useful indication on how to reduce or solve problems; second, they fuel controversy around the issue and make the conduct of current epidemiological work more difficult.

A multidisciplinary group including WHO, the Italian Institute of Health in Rome, the National Research Council in Pisa, the Health and Environment Agencies of the Campania Region, entrusted by the National Department of the Civil Protection, is working to produce an environment and health profile of the Naples and Caserta provinces by analysis of mortality, hospital discharge records, cancer incidence, congenital malformations in newborns, and induced abortions of the population residing in several municipalities and sub-areas. Results will be available from November, 2005, and will be communicated promptly.

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