

## BENZENE, CHILDHOOD LEUKEMIAS AND HEMATOPOIETIC LYMPHORETICULAR CANCERS

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CHILDHOOD LEUKEMIA & SOURCE APPORTIONMENT OF BENZENE AND DIOXINS: IMPACT ON RISK  
OF CHILDHOOD LEUKEMIA

Taranto, the historic town of Magna Graecia in Southern Italy, is one of the most polluted European areas. A complex multisource, multipollutant scenario is due to the environmental impact of the largest integrated cycle steel plant in Europe (over 10 million tons of steel produced every year), an oil refinery (processing about 6.5 million tons of crude oil), a cement plant and two incinerators.

A recent report by the European Environmental Agency estimated that the annual economic cost of the health effects of the industrial air pollution at Taranto is over five hundred million Euros.

It ranks among the top cities in the emission inventory of dioxins, PM10, NO<sub>x</sub>, benzene.

No compliance with PM10 air quality standards in the residential area close to the steel plant.

Target value for PM-10 bound benzo(a)pyrene exceeded (ng/cm).

2003: a study based on emission modeling as well as a network of passive samplers shows relatively high air benzene level (mean >10 mcg/cm), whereas current studies after IPPC permit show lower levels (below the 5 mcg/cm) both based on the fixed network of air quality monitoring stations and on passive samplers).

Dioxin levels in the flue gas at the sinter plant dropped from >8ng/Ncm TEQ to >0.4ng/Ncm TEQ over 3 years.

However very high dioxin levels in the liver and milk of sheep and goats in farms around the steel plant, as well as in mussels and sea sediment in the inner sea. Both dairy products and mussels cannot be commercialized.

Most of benzene and dioxin air levels in the neighborhood around the steel plant are attributed to the industrial emissions (fugitive emissions of coke oven shops and sinter plant, respectively).

Traditional "control & command" approach of environmental agencies is not adequate for the governance of complex scenarios.

A cohort epidemiological study carried out in the criminal law case against the steel plant proved a proxy exposure indicator (primary industrial PM10 associated with several health outcomes, including childhood cancers). An 8-million Euros grant issued by the Apulian Regional Administration has just been approved to establish an environmental health center in the area.