

PM 10 CONCENTRATIONS AND HUMAN ACTIVITIES: A STUDY IN CATANIA

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ABSTRACT

The WHO estimates that every year in the Italian cities thousands of peoples die because of very high concentration of thin powders; many more are the illnesses linked to their presence.

The PM₁₀ is a mixture of particles of different nature and composition which, due to its small size ($< 10\mu\text{m}$), can easily disperse in the atmosphere and, as a consequence, it reaches an almost uniform value on the whole urban conglomeration.

Through this study we want to draw the picture of the problem in the city of Catania in the year 2004 from the environmental point of view; data obtained were also compared to known data from other Italian cities.

Many are the Cities where legal limits are not respected, and many more will be in the future, since those limits will be put at lower levels up to 2010. Many cities, however, pushed by the national norms, have taken measures in order to oppose such a pollution. Unfortunately, efficacy of those interventions are limited and insufficient to bring back pollution within legal limits. To protect peoples' health we need major structural interventions which would change, among other factors, the urban mobility.

In order not to go on living in a continuous state of emergency, it is necessary that the problem of pollution by PM₁₀ becomes a priority for public administrations, and a point of reference not only for actions which concern the environment as such, but also for all actions concerning economy and city planning.

Filters were situated in special stations displaced by the Catania city council in different areas of the city; they were collected over the whole springtime-summer period. Filters were of two types: cellulose ester made, and glass fibers made; after being metallized, they were examined at the scanning electron microscope (SEM) which had linked a Xrays detector. Data analysis shows nine main types of samples taken from the different sites: particles rich in: carbon, carbonates, soyates, silica, silicates, iron, metals, vulcanic ashes, carbon with heavy metals.

In this study we tried to make clear which characteristics of PM₁₀, beyond differences of values due to environmental concentration, are related to the specific type of the sample site and to human activities performed there.