

Caratterizzazione della frazione toracica (PM10) del particolato aerodisperso in un sito urbano ed in un ambiente *indoor* limitrofo

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KEY WORDS

PM10; SEM/EDX; particle analysis

SUMMARY

«Characteristics of the thoracic fraction of the airborne particulate matter (PM10) in an urban area and in an adjacent office building». *The aim of this study was to describe from a physico-chemical point of view the particles constituting the thoracic fraction of the airborne particulate matter (PM10) collected in two sampling stations: one in an urban area and another in an adjacent office building. The different sources contributing to the PM10 were identified and the relationship between the indoor PM10 and the outdoor PM10 assessed. Also the seasonal trend of PM10's physico-chemical characteristics was evaluated. Four particulate samplings were conducted between April 1999 and February 2000. The samples were analyzed by scanning electron microscopy with EDS X-ray attachment. The data sets, consisting of the atomic concentrations of the constituent chemical elements of the particulate, were subjected to Hierarchical Cluster Analysis to determine the principal components of PM10. The statistical analysis method allowed us to identify seven groups (clusters) of similar particles in the particulate matter: C-rich particles, carbonates, silica, silicates, sulphates, Fe-rich particles, metals. The seasonal trend of PM10 showed an increase in the alumino-silicates particles and a minor increment in sulphate particles in the summer. Moreover carbonaceous particles with a surface coating containing S were observed in the fine fraction of both outdoor and indoor particulate. This sulphurous coating turned out to be a strongly season-dependent feature. On the whole, the results suggest that the characteristics of indoor PM10 largely depend on the characteristics of outdoor PM10; the outdoor particulate quality had a major influence on the indoor particulate particularly during the summer season.*

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