



Elemental and ionic analysis of pm-10 airborne particulate at a Mediterranean coastal site.

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The aim of this work is the study and characterization of inorganic phases present in the atmospheric aerosol at the ceramic cluster of Castellón, a city in the Mediterranean Spanish coast. A daily sample was collected by means a medium-volume sampler equipped with a PM-10 inlet. Sampling period ranges for one year between September 2003 and September 2004. Ambient concentration levels were also measured. Mean daily PM-10 levels were compared with the limit values of the EU Air Quality Directive EC/30/1999. Results showed that the daily limit values would meet requirements for 2005 year but not the requirements for 2010.

Elemental chemical analysis of samples obtained was performed by a Bruker X-ray fluorescence spectrometer (SEM/EDX) and a LEO analytical scanning electron microscope (SEM/EDS). Ionic composition (anions and cations) of the aerosol was determined by a Metrohm ion chromatograph.

By SEM/EDX and SEM/EDS we have identified presence of sodium, aluminium, silicon, sulphur, chlorine, potassium, calcium, vanadium, chromium, iron, zinc, zircon, and lead. By ion chromatography we have determined the concentration of sulphate, nitrate, fluoride, chloride, bromide, ammonium, sodium, potassium, magnesium and calcium.

Particles containing sulphate, nitrate and ammonium are secondary particles formed by oxidation reactions in the atmosphere. Silicon, aluminium, potassium, calcium and iron could be a primary component of soil dust. The main source of chlorine and sodium is sea spray. Vanadium, chromium, zinc, zircon and lead are originated by

ceramic industry emissions.

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