Analysis of Aerosol Particles and Coarse Particulate Matter Concentrations in Chillán, Chile, 2001?2003

Celis, José E.

Flocchini, Robert G.

Carvacho, Omar F.

Morales, José R.

Zaror, Claudio A.

Inzunza, Juan C.

Pineda, Mario J.

Daily particle samples were collected in Chillán, Chile, at six urban locations from September 1, 2001, through September 30, 2003. Aerosol samples were collected using monitors equipped with a Sierra Andersen 246-b cyclone inlet on Teflon filters. Average concentrations of coarse particulate matter (PM10) for the 2001?2003 period ranged from 43.4 ?g/m3 to 81.8 ?g/m3 across the six sites. Annual PM10 concentration levels exceeded the European Union concentration limits. Mean PM10 levels during the cold season (April through September) were more than twice as high as those observed in the warm season (October through March). Average contributions to PM10 from organic matter, soil dust, nitrate (NO3 ?), elemental carbon, ammonium (NH4 +), and sulfate (SO4 2?) were 31%, 27%, 11%, 8%, 7%, and 5%, respectively. The chemical analyses indicated that carbonaceous substances were the most abundant components of PM10 in cold months, whereas crustal material was the most abundant component of PM1