

PM_{2.5} and PM₁₀ chemical characterization in Tula.

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The results of the study on PM_{2.5} and PM₁₀ chemical composition at Tula are presented. Samples were collected at two sites during March - April, 2006. Several trace elements, organic carbon (OC) and elemental (EC), polycyclic aromatic hydrocarbons (PAH) and six ions were analyzed to characterize aerosols. Results showed that there were no exceedences to the PM_{2.5} standard (65 µg/m³ 24-h average) and concentrations were between 16.3 µg/m³ (Tepeji) and 23.8 µg/m³ (Subestacion). PM₁₀ average concentrations were 59.7 (Subestacion) and 33.7 µg/m³ (Tepeji), therefore the standard (120 µg/m³, 24-h average) was not exceeded. PM_{2.5}/PM₁₀ ratios were 0.42 and 0.68 at Subestacion and Tepeji, respectively, which shows that combustion processes are more important in Tepeji. Chemical analysis of PM_{2.5} and PM₁₀ samples provided a picture of spatial variation across Tula, showing that fugitive dust was one of the largest PM₁₀ contributors in Subestacion while PM_{2.5} was dominated by secondary particles (sulfate, nitrate and ammonium) carbon and some dust in the case of Subestacion. Data validation showed a good agreement between analytical techniques (K⁺ vs. potassium, Ca²⁺ vs calcium, Na⁺ vs sodium).