

Daily Variations of Particulate Matter (PM10) in Industrial Sites in an Suburban Area of Sour El Ghozlane, Algeria

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Abstract : In this study, particulate matter (PM10) which are hazardous for environment and human health were investigated in Sour El Ghozlane suburban atmosphere at a sampling point from March 2013 to April 2013. Ambient concentration measurements of polycyclic aromatic hydrocarbons were carried out at a regional study of the cement industry in Sour El Ghozlane. During sampling, the airborne particulate matter was enriched onto PTFE filters by using a two medium volume samplers with or without a size-selective inlet for PM10 and TSP were used and each sampling period lasted approximately 24 h. The organic compounds were characterized using gas chromatography coupled with mass spectrometric detection (GC-MSD). Total concentrations for PAHs recorded in sour el ghozlane suburban ranged from 101 to 204 ng m⁻³. Gravimeter method was applied to the black smoke concentration data for Springer seasons. The 24 h average concentrations of PM10 and TSP of Sour El Ghozlane suburban atmosphere were found in the range 4.76-165.76 µg/m³ and 28.63-800.14 µg/m³, respectively, in the sampling period. Meteorological factors, such as (relative humidity and temperature) were typically found to be affecting PMs, especially PM10. Air temperature did not seem to be significantly affecting TSP and PM10 mass concentrations. The guide value fixed by the European Community «40 µg/m³» not to exceed 35 days, were exceeded in some samples. However, it should be noted that the value limit fixed by the Algerian regulations «80 µg/m³» has been exceeded in 3 samplers during the period study.

Keywords : PAHs, PM10, TSP, particulate matter, cement industry