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The Effect of PM10 Dispersion from Industrial, Residential and Commercial Areas in Arid Environment

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Abstract : A comparative area-season-elemental-wise time series analysis by Dust Track monitor (2012-2013) revealed high PM10 dispersion in the outdoor environment in the sequence of industrial> express highways>residential>open areas. Time series analysis from 7AM-6AM (until next day), 30d (monthly), 3600sec. (for any given period of a month), and 12 months (yearly) showed peak PM10 dispersion during 1AM-7AM, 1d-4d and 25d-31d of every month, 1500-3600 with the exception in PM10 dispersion in residential areas, and in the months-March to June, respectively. This time-bound PM10 dispersion suggests the primary influence of human activities (peak mobility and productivity period for a given time frame) besides the secondary influence of meteorological parameters (high temperature and wind action) and, occasional dust storms. Whereas, gravimetric analysis reveals the influence of precipitation, low temperature and low volatility resulting high trace metals in PM10 during winter than in summer and primarily attributes to the influence of nature besides, the secondary attributes of smoke stack emission from various industries and automobiles. Furthermore, our study recommends residents to limit outdoor air pollution exposures and take precautionary measures to inhale PM10 pollutants from the atmosphere.

Keywords : aerosol, pollution, respirable particulates, trace-metals
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