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Seasonal Variations in Fine Particulate (PM 2.5) Concentration in Urban and Rural Environments in Pune, India

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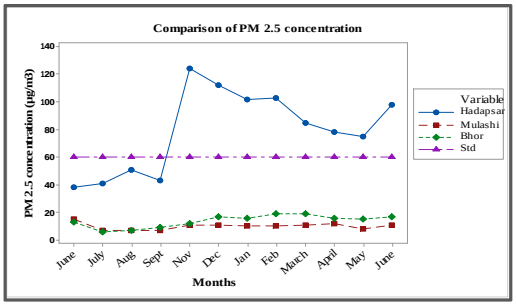
ABSTRACT

Particulate matter (PM) is a term used to describe the mixture of solid particles and liquid droplets in the air. It can be either human-made or naturally occurring. Human-made sources of PM 2.5 are more important than natural sources, because natural sources make a small contribution to the total concentration. Particulate matter (including soot) is emitted during the combustion of solid and liquid fuels, such as for power generation, domestic heating and in vehicle engines. Particulate matter varies in size (i.e. the diameter or width of the particle). In today's scenario its pollution has become a growing health concern over the past few decades globally and its ambient concentrations are of concern with respect to effects on human health and environment. Inhalation of particulate pollutants can have adverse health impacts even its exposure to high concentrations (e.g. during short-term pollution episodes) can also exacerbate lung and heart conditions, significantly affecting quality of life, and increase deaths and hospital admissions. In present work study was carried out to monitor concentration of PM 2.5 for an about one year in urban (Hadapsar and Manjari) and rural (Bhor and Mulashi) area of Pune city. Sampling was carried out by using ambient dust sampler and its quantitative analysis was done by gravimetrically. The observations were statistically analyzed using minitab18 software. The concentration of particulate matter in all the four areas is variable as per the season. In Hadapsar and Manjari the concentration were increased as compare to Bhor and Mulashi. This indicates the particulate matter pollution rate was increased in Hadapsar and Manjari due to urbanization.

Graphical Abstract



Comparison of PM 2.5 concentration in Hadapsar

Keywords: Particulate Matter 2.5, Urbanization, Air Pollution, Concentration, Environment