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PM_{10} and PM2.5 Concentrations in Bangkok over Last 10 Years: Implications for Air Quality and Health

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Abstract : Atmospheric particulate matter particles with a diameter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$) have adverse health effect. The impact from PM was studied from both health and regulatory perspective. Ambient PM data was collected over ten years in Bangkok and vicinity areas of Thailand from 2007 to 2017. Statistical models were used to forecast PM concentrations from 2018 to 2020. Monitoring monthly data averaged concentration of PM_{10} and $PM_{2.5}$ were used as input to forecast the monthly average concentration of PM. The forecasting results were validated by root means square error (RMSE). The predicted results were used to determine hazard risk for the carcinogenic disease. The health risk values were interpolated with GIS with ordinary kriging technique to create hazard maps in Bangkok and vicinity area. GIS-based maps illustrated the variability of PM distribution and high-risk locations. These evaluated results could support national policy for the sake of human health.

Keywords : PM_{10}, $PM_{2.5}$, statistical models, atmospheric particulate matter
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