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EXPOSURE ASSESSMENT OF TRAFFIC-RELATED AIR POLLUTION ON HUMAN HEALTH - A CASE STUDY OF A METROPOLITAN CITY

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Abstract

The present study aims to examine and model the adverse effects of vehicular emission on urban air quality and consequently on human health. It will facilitate the town planners to quantify the ill effects of vehicle generated air pollutants on human health to enable them to decide due weightage to be given to this attribute at planning level. Allahabad, a metropolitan city of India has been selected as the study area. Monitoring was conducted at various locations in the study area to evaluate the status of air pollutants e.g. NO₂, SO₂, Respiratory Suspended Particulate Matters (RSPM) and Suspended Particulate Matter (SPM). It is observed that concentration of NO₂, SO₂, RSPM, SPM are in excess of permitted levels in the study area, especially in sensitive and the residential zones. A door to door health survey was conducted, the peak expiratory flow rate (PEFR) measurements were made and the hospitalized persons from the study area were also interviewed. The acquired data was analyzed for the air quality determination and vulnerability status for assessing the pollution scenario of the study area. The data was also analyzed through the Spearman's rank correlation and Regression analyses to determine the correlation of pollutants concentration with the observed respiratory diseases like cough, asthma, breathing problem, wheezing and bronchitis in the present study. The analysis indicates that NO₂ and RSPM have relatively higher correlation with breathing problem and a moderate correlation with cough and asthma, which shows that NO₂ and RSPM are of serious concern in the study area.

Key words: air- pollution, air quality, adverse health impact, vehicular emission

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