Nature Environment and Pollution Technology
An International Quarterly Scientific Journal

Vol. 9	No. 3	pp. 643-644	2010

Short Communication

Assessment of Air Pollution in Shivamogga City, Karnataka

Adamsab. M. Patel and Hina Kousar
Department of Environmental Science, Kuvempu University, Shankarghatta-577 451, Shivamogga District, Karnataka, India

Nat. Env. Poll. Tech.
ISSN: 0972-6268
www.neptjournal.com

Key Words:
Urban air pollution
Vehicle emissions
Traffic congestion

ABSTRACT

Contribution of automobiles is in the range of 40 to 80% of the total air pollution. The challenge facing cities is how to reduce the adverse environmental impacts and other negative effects of transportation without giving up the benefits of mobility. The dilemma becomes most pressing under conditions of rapid urban growth, which is likely to increase travel demand significantly. The growing number of automobiles in urban Shivamogga poses a serious threat to its air environment. Ambient air quality in the city was monitored for concentration of SPM, SO_2 and NO_x at different traffic areas namely MRS, Gandhi Bazar, Aamer Ahemad circle, Bus stand and Mandli.

The air quality crisis in cities often attributes in large measures (40-80%) to vehicular emission. Because of the emissions of CO, NO_x, toxicants and particulates, there are serious public health implications (Anon 1997, Utell et al. 1998). The improved performance of technology is presently insufficient to counteract the growth of vehicles. Thus, it is necessary to evaluate the status of urban air pollution and to assess its impact on human health so that proper control measures can be implemented. In this study, attempt has been made to know the status of air pollution in Shivamogga city.

Shivamogga city (13°55'N, 75°34'E, 584 m above MSL) is an important city of Karnataka state and situated on the banks of river Tunga spreading over an area of 50 km² with a total population of 2,19,976 as per 2001 census. The city is adversely affected by continues growth of small scale industries and motor vehicles. The highways NH-13, NH-206 and other state highways pass through the city. The heavy traffic on these highways has also been significantly contributed air pollution in the city. The earth moving activities related to the construction of flyovers and widening of roads in the congested areas further add to this menace.

Ambient air quality was monitored from June to October 2009 for major air pollutants, viz., suspended particulate matter (SPM), sulphur dioxide (SO_2) and oxides of nitrogen (NO_X). High volume sampler was used for sampling SO_2 and NO_X, which were analysed by West and Gaeke method and Griess-Saltzman method respectively. SPM was collected on preweighed Whatman glass fibre filter paper and expressed as µg/m³ of air. The monitoring was done for 24 hours. Five sampling stations were selected to represent five different traffic volumes and activities, i.e., MRS, Gandhi Bazar, Aamer Ahemad circle, Bus stand and Mandli. At each place monitoring was done for 3 different days to get the average concentration of pollutants. A questionnaire was prepared and survey was conducted particularly in case of suspected allergic population by inquiring the recurrence of the type of allergic symptoms. The occasion of this onset was recorded with each individual to assess the allergic status.

Table 1: Average concentration of SPM, SO_2 and NO_x (µg/m³) at different sampling stations from June to October 2009.

SPM	SO_2	NOx
675.5	13.0	35.61
697.3	10.16	38.7
905.0	14.61	40.65
1005.5	16.42	49.0
516.2	9.15	18.6

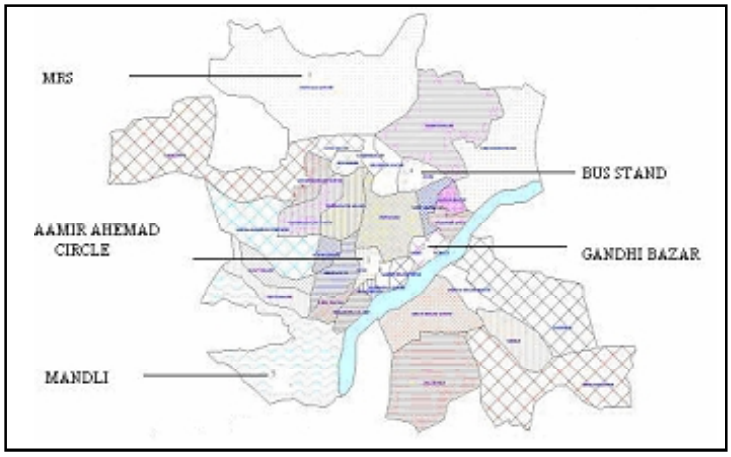

Fig. 1: Map showing sampling sites in Shivamogga city.

The observed ambient air quality values with respect to SPM, SO_2 and NO_x are represented in Table 1. It is observed that at the all five sites, the concentration of SPM varies from 516.2 to 1005.5 µg/m^3 which crossed the threshold limit prescribed by CPCB in all five sites. The high concentration of SPM is mainly due to the increased volume of traffic, high rate of automobile pollution and construction of flyovers in congested areas, and construction of buildings. The problem is further aggravated by the absence of proper dust control measures.

SO_2 concentration ranged from 9.15 to 16.42 µg/m^3, and NO_x concentrations from 18.6 to 49.0 µg/m^3. Both the concentrations of SO_2 and NO_x are well within the standards of CPCB at all five sampling sites.

The first author is grateful to University Grant Commission, New Delhi, India for financial assistance to carry out this study.

REFERENCES

Anon, 1997. Monitoring of Human Exposure to Air Pollution in Highly Industrial Area, Central Pollution Control Board, New Delhi.

CPCB 1996. Ambient Air Quality-Status and Statistics (93-94). NAAQ Monitoring Series NAAQMS/7/1995-96, Central Pollution Control Board, New Delhi.

CPCB 1993-94. Pollution Statistics. Central Pollution Control Board, New Delhi.

Utell, M., Warren, J. and Sawyer, R. F. 1998. Public health from auto emissions. Annu. Rev. Public Health, 15: 157-158.