

## AIR POLLUTION BY AUTOMOBILE SOURCES – A CASE STUDY FOR BANGALORE CITY

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### Introduction

At the global level, there is a rapid growth in motor vehicles especially in India and the developing countries for the last 2 decades; this has serious energy security and climate change implications. The transport sector may consume nearly half of the world's oil. The rapid growth in motor vehicle activity is the challenges to overcome in urban areas in Bangalore during the last and this decade. This has brought a serious range of socio-economic, environmental, health, and welfare impacts on environmental degradation in many cities. Aditama (1999) has been predicted that around 60%–80% of urban populations around the world are living in bad air quality that is some pollutants are almost same over to national ambient air quality standard. Based on Indonesian Environmental Status Report (2002), most of air pollution (70%) in big cities in Indonesia comes from transportation activities, and other 30% comes from industrial activity and human settlement. A study by SOEHODHO and TAUFICK (2005) based on “*A study based on Correlation and motor Vehicles Emission*”. Their observation denotes that air pollution concentrates on few respiratory disease cases show similar problems. Goyal (2004) has studied “*Air Quality Management of particulate Matter Emitted from Vehicular sources from Delhi*” has come to a conclusion that the permutable air suspended particles is more compared to national policy and to install emission test and air quality management, centers in Delhi. Marino J Molina and Luisa T Molina of Massachusetts Institute of Technology in their study based on “*Improving Air quality in Mega Cities –Mexico city a case study*” recommends that it is necessary to have active and informed participation of society, private sector, academic community, social organizations, and Government, Since dealing with pollution requires the implementation of different specific strategies in multiple fields of action

The rapid growth in motor vehicles in Bangalore is important not only because of their locally harmful air pollution effects, but also because of their regional and global impacts. So this paper deals with the study of air pollution caused by the automobiles in the city of Bangalore.

The air pollution levels in Bangalore, are very high compared rural areas and other cities due to increase in vehicles in multiple ratios since the last decade, and their impact is not confined within the city boundaries. The concerns have heightened recently because long-range transport of these pollutants could influence air quality in regions far from their sources.

Thus, rapid increase in population growth, uncontrolled urban expansion, industries, economic growth, increased energy consumption and increased motorization has led to serious air pollution problems in the city of Bangalore. The objectives of the study are to identify the types and source of air pollution and to control the emissions from automobiles and reducing it.

### **Methodology**

An important criterion to validate any research study lies in the methodology adopted. To get relevant data with reasonable accuracy, it is essential to conduct a research study in an appropriate manner.

As the study was based on the secondary data, it has to be collected from different various files and records of Karnataka state pollution board, Bangalore, Central Pollution control board, New Delhi, internet survey etc. so for this some important journals and magazines and periodicals like Pollution control journals, registered vehicles from RTO, Transport journals are used for the analysis of data.

The city of Bangalore has a rapid development in urban area in population, migration, transportation, or industrial sector, IT etc since last two decades. Bangalore is one and only city having a highest population and a metro city in Karnataka, which it has 94 lacks of population as per the 2011 census. The intensity, quantity, and frequency of both urban, suburban and movement with other cities are same factor of increasing transportation problem in the Bangalore area; particularly in transportation utility development could not comply with the demand. The dependency of urban population on transportation systems on fossil fuels is quite high.

The Bangalore is one of the cities having 41 lacks registered vehicles apart from other vehicles of neighboring city and towns apart from the plying vehicle of neighboring district, towns and states.

*Air Pollution from transport sources:* The air pollution is that adding the unwanted or unburnt, harmful gaseous, liquid or solid particles or substances emitted by vehicles and released to atmosphere. This may lead to damaging of the environment, human health on quality of life in urban area.

The automobiles are the major source of pollutants in Bangalore city as per the Central Pollution Control Board (CPCB) has performed air quality monitoring at the breathing level for PM<sub>10</sub>, PM<sub>2.5</sub> and NO<sub>x</sub> at four traffic intersections (including idling time) and found that the concentrations are 2 to 5 times higher than the national standards. While, transport acts as a major source for economic activity, development and redistribution of resources. The agglomeration of area to Bangalore has lead people to commute for a longer distance within the city. By this population has increased aggregate transport demand for greater number of trips and also demand for public transport is less efficient, delays and comfort.

### **Discussion and Conclusion**

Two-wheelers account for about 72 percent of the total vehicular population in Mysore. Because of inherent drawbacks in the design of 2- stroke engines, 2-wheelers emit about 20-40% of the fuel un-burnt/partially burnt. The three wheelers population in Bangalore city registered 3 percent this includes petrol, diesel and LPG, powered by 2-stroke engines. It is widely believed that petrol is adulterated with kerosene which results in emissions of thick black smoke. The city is having 18 percent of 4 wheelers which occupies maximum space on the road it is one of the air pollutants in the city. Apart from this the heavy vehicles is about 3 percent in number consists of State run Buses (BMTC, KSRTC, NWKRTC, NEKRTC, Private buses, trucks of BBMP, CHESCOM, BWSSB etc.). The worst polluters should be taken off the heavy traffic corridors and high density areas. Similarly, for trucks, enforcement of laws related to overloading requires to be enforced vigorously to state owned buses etc. These buses will stop near the junctions and signal

lights due to congestion of vehicles as it emits more pollutants results in higher smoke emissions due to over load during the peak hours, these vehicles are also high emitters of carbon monoxide and hydrocarbons as emissions in the city.

In this present study, emission from vehicles was analyzed with the number of registered vehicles in Bangalore. These emissions were based on the secondary sources such as Central Pollution control Board, Regional Transport Office, Karnataka State pollution Control Board and the earlier case studies. The emissions were considered on the types of vehicles and type of fuel consumption. As the data shows an increasing trend in vehicles even the low emitting vehicles is introduced in future as a due to increase in population, migration and purchasing power of the people.

The increase in population is likely to lead to substantial increase due to passenger and freight travel demand in the city. By introducing the Metro, Monorail, BRTS, the demand for private automobiles may come down in future and should encourage the people to use public transport. So, for this some of the recommendations may reduce the pollution in Bangalore for future.

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