

## Assessment of Vehicular Emission and Its Impact on Urban Air Quality

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**Abstract :** Air pollution rapidly impacts the Earth's climate and environmental quality, causing public health nuisances and cardio-pulmonary illnesses. Air pollution is a global issue, and all population groups in all the regions in the developed and developing parts of the world were affected by it. The promise of a reduction in deaths and diseases as per SDG No. 3 is an international commitment towards sustainable development. In that context, assessing and evaluating the ambient air quality is paramount. This article estimates the air pollution released by the vehicles on roads of Lahore, a mega city having 13.98 million populations. A survey was conducted on different fuel stations to determine the estimated fuel pumped to different types of vehicles from different fuel stations. The number of fuel stations in Lahore is around 350. Another survey was also conducted to interview the drivers to know the per-litre fuel consumption of other vehicles. Therefore, a survey was conducted on 189 fuel stations and 400 drivers using a combination of random sampling and convenience sampling methods. The sampling was done in a manner to cover all areas of the city including central commercial hubs, modern housing societies, industrial zones, main highways, old traditional population centres, etc. Mathematical equations were also used to estimate the emissions from different modes of vehicles. Due to the increase in population, the number of vehicles is increasing, and consequently, traffic emissions were rising at a higher level. Motorcycles, auto rickshaws, motor cars, and vans were the main contributors to Carbon dioxide and vehicular emissions in the air. It has been observed that vehicles that use petrol fuel produce more Carbon dioxide emissions in the air. Buses and trucks were the main contributors to NO<sub>x</sub> in the air due to the use of diesel fuel. Whereas vans, buses, and trucks produce the maximum amount of SO<sub>2</sub>. PM<sub>10</sub> and PM<sub>2.5</sub> were mainly produced by motorcycles and motorcycle two-stroke rickshaws. Auto rickshaws and motor cars mainly produce benzene emissions. This study may act as a major tool for traffic and vehicle policy decisions to promote better fuel quality and more fuel-efficient vehicles to reduce emissions.

**Keywords :** particulate matter, nitrogen dioxide, climate change, pollution control

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