

Impact of Air Quality due to Traffic Congestion on Human Health

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Escalating concerns about air pollution in Sri Lanka, especially affecting respiratory health, require urgent attention. Rapid urbanization is exacerbating the problem with emissions from transport, industry, agriculture, smoking and deforestation. This study investigates the effects of traffic congestion on air quality, focusing on Kandy, a vulnerable city due to its unique geographical location. The study uses a multidisciplinary approach, combining atmospheric data collection with surveys targeting residents' respiratory health. Field measurements of atmospheric particulate matter were collected using a PM_{2.5} and PM₁₀ counter (AEROQUAL Series 500 portable air quality monitoring device), at three targeted locations in Kandy. Further a questionnaire survey was conducted focusing on respiratory disorders among residents, where 150 questionnaires were gathered. This interdisciplinary approach allowed for a comprehensive analysis of air quality and its impact on public health. The results indicated higher particulate fraction in the sites with longer dry periods and elevated traffic intensity. Further, the questionnaire survey indicated that in the high exposure category, exceeding 6 hours of exposure significantly correlated with an increased incidence of respiratory issues. Overall, these findings contribute to a nuanced understanding of the complex interactions between particulate matter and traffic intensity, and health outcomes in a few hotspots close to Kandy. The findings underscore a correlation between traffic-related emissions and respiratory disorders. Effective interventions with air-born particulate matter pollution contributors CO₂, NO₂, SO₂, mineral dust, carbon particles, and heavy metals are essential. The insights gathered provide a basis for policies and initiatives aimed at reducing the adverse effects of air pollution in Kandy and similar areas.

Keywords: Air Pollution, Respiratory Disorders, Traffic Congestion, PM_{2.5} Monitoring, Public Health

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