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Project Report

A STUDY ON EFFECT OF TRAFFIC DENSITY ON AIR POLLUTION LEVELS:

A CASE STUDY ON TIRUPATI SMART CITY

Submitted to

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY in partial fulfilment of the requirements for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

CIVIL ENGINEERING

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SRI VENKATESWARA COLLEGE OF ENGINEERING

(APPROVED BY AICTE, NEW DELHI & AFFILIATED TO JNTUA, ANANTHAPURAMU)

KARAKAMBADI ROAD, TIRUPATI – 517 507 (A. P) INDIA.

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Certificate

This is to certify that the project report entitled "*A STUDY ON EFFECT OF TRAFFIC DENSITY ON AIR POLLUTION LEVELS: A CASE STUDY ON TIRUPATI SMART CITY" a *bonafide record of the project work done and submitted by

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ABSTRACT

Traffic density is the average number of vehicles that occupy one mile or one kilometre of road space, expressed in vehicles per mile or kilometre. In urban areas, traffic is one of the major sources of air pollutants. The mixture of vehicle exhausts, secondary pollutants formed in the atmosphere, evaporative emissions from vehicles, and non-combustion emissions (e.g., road dust, tire wear) is referred to as traffic related air pollution (TRAP). Exposure to this complex and variable mixture of gasses and particles has been linked to a range of health effects.

Nowadays, traffic density is very high in most of the urban areas, because of the increase in the number of vehicles. Traffic congestion is a very common problem that leads to more lay-out time in traffic. Traffic congestion increases vehicle emissions and degrades ambient air quality, and recent studies have shown excess morbidity and mortality for drivers, commuters and individuals living near major roadways. Presently, our understanding of the air pollution impacts from congestion on roads is very limited. This study demonstrates an approach to characterize risks of traffic for on- and near-road populations.

The study focuses on correlating traffic density and air pollution. We will be taking the busiest areas in Tirupati city. The correlation is attempted to be done by taking air pollution data from Air Quality Index made available by local Pollution Control Board on a 24x7 basis and linking this data to the traffic density at different areas in Tirupati city. We would also be looking into local municipal authorities' data in the city. The study attempts to extract the traffic density by conducting traffic volume studies at different stretches of interest, including the carbon emissions in the city and a manual study of data will be conducted and studied accordingly. Once the traffic density and air pollution are positively correlated, the efforts would naturally get channelized to remedial measures that can be adopted from an engineer point of view.

Keywords: Traffic density, Air pollution, Urban areas, Health effects,Vehicle emissions ,Traffic-congestion, Air Quality Index, Municipal Authorities, Remedial Measures, Engineering Solution, Tirupati City, Traffic Volume Studies, Air Pollution Data

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LIST OF ABBREVIATION

CO - Carbon Monoxide

SO2 - Sulphur Dioxide

NO2 - Nitrogen Dioxide

PM - Particulate Matter

RSPM - Respirable Suspended Particulate Matter

SPM - Suspended Particulate Matter

NOx - Nitrogen Oxides

HCs - Hydrocarbons

Pb - Lead

O3 - Ozone

AQI - Air Quality Index

NCT - National Capital Territory

AQI - Air Quality Index

PM - Particulate Matter

SOx - Sulfur Oxides

VOC - Volatile Organic Compounds