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REVIEW ON ROAD TRAFFIC NOISE POLLUTION

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Abstract: Molecules vibration creates sound and it can pass through any substance whether it is a solid, liquid or gas but vacuum has no molecules, and that's the reason, the sound cannot travel through. Noise pollution is displeasing human being, animal or machine created sound that disturbs the activity or balance of human and animal life. Due to increasing population and industrialization, the transportation in the city has increased to un-imaginary highs and causes want of efficient mass transfer system. The increased vehicular numbers on existing roads has considerably pushed traffic to create noise that adversely affects the human beings and living creatures. In the present study efforts were made to study the noise levels at different locations by using sound level meter so that the negative aspects of harsh sound can be mitigated. The collected data will be analysed to know the traffic behaviour and characteristics of different roads and location of the Gandhinagar city like hospitals, school, office's and residences etc. and then the maximum noise level will be estimated.

Keywords: Noise, Pollution, Road, Traffic, Vehicle



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INTRODUCTION

Nowadays transportation noise becomes a major problem. There are some noises sources like motor-cycle, bus, trains, aero planes and cars. Road traffic has been the major source of annoyance. It is due to the large number of automotive vehicle in comparison with other machines. The mechanism of radiation of noise to outside from a vehicle has been different from the generation of noise inside the vehicle. The noise pass off depends on the relative levels, characteristics and the interaction of the directly spread noises from the vehicles. The most important noise source of the vehicles is the engine and its accessories. According to WHO the most important effects regarding traffic noise are: psychological & physiological effects, work-related stress and increased risk of accidents. Environmental noise caused by traffic, industrial and recreational activities as their main local environmental problem especially in urban areas. It has been estimated that around 20 percent of inhabitants in Indian suffer from noise levels that health experts consider to be insufferable, where most people become irritated. The same survey showed a significant rise in the public's willingness to take action to reduce noise.

Sound is define as the vibration that travel through the air or another medium and can be heard when they reach a person's or animal's ear. Noise is unwanted and unpleasant sound .In developing country like INDIA suffering from several environmental problems. These environmental problems include water, air, and noise pollution. Out of three, noise pollution is one of a major issue for people residing in urban areas. The factor contributing high noise levels because of increase in population, urbanization and increase in the traffic volume. For example the difference between normal conversation (65 dB) and someone shouting (80 dB) is only 15 dB but the shouting is 30 times as intensive. Traffic noise is create a problem for a people who residing near highway.

TABLE: 1.1 as per IS: 3028

Category of vehicles	Maximum permissible noise level
Two wheelers (petrol driven)	80 dB (A)
All passengers cars , all petrol driven three-wheelers and diesel driven two wheelers	82 dB (A)
Passenger or light commercial vehicles including three wheelers vehicles fitted with diesel engine with gross vehicles weight up to 4000 kg	85 dB (A)
Passenger or commercial vehicles with gross vehicles weight above 4000 kg and up to 12000kg	89 dB (A)
Passengers or commercial vehicles with gross vehicles weight above 12000kg	91 dB (A)

Effects of traffic noise pollution:

- A sudden noise can cause damaged to the eardrum.
- Noise increases the chance of occurrence diseases such as headache, blood pressure, heart failure.
- In the presence of noise we not are able to hear the person saying.
- Due to noise, emotional and behaviour stress may be increased.
- Noise leads to increase the heartbeat

LITERATURE REVIEW

Transportation and noise (2006):

Land use planning options for a quieter New Zealand, (2006) this research carried out in Christchurch in 2004 and 2005 looks at the problem of land transport noise in New Zealand and examines the effects of noise, and the options for its reduction. Lessons from international examples show that land use planning methods can be applied to New Zealand to ensure sustainable transport and development outcomes. Land use planning is most effective as a preventive tool while technical options may be more effective for existing noise problems. A key lesson from international case studies is the need for integration of policies within different government departments to achieve sustainable outcomes. An approach that integrates traditional land use planning measures with transport planning has proved effective in many European countries and is being used by state planning authorities in Australia and the United States.

A Case Study of BALASORE Town, Orissa India; Goswami, (2008):

Transportation sector is one of the main contributors to noise in the urban areas. The traffic noise environment in Balasore, a city of Orissa, India in terms of standard noise offensives, community response and community health effects are worked out in the present study. A preliminary survey adopting questionnaire method amongst 212 local inhabitants also carried out to gather secondary information about the suffering of noise related physical condition problems. Noise pollution is not properly recognized despite the fact that it is steadily growing in Developing countries like India and in particular in the state Orissa. It is well conventional now that noise is a potential hazard to health, communication and pleasure of social life. Transportation sector is one of the main contributors to noise in this urban area. The present study explicitly reveals that the noise levels are greater than the permissible limit in all the six locations including 24 sites. Of noise pollution associated with the proposed project should be established

- Launchings programs to monitor and control noisy vehicles on the high ways.
- controlling noise from heavy vehicle exhausts, engine, brakes and acceleration
- restricting trucks traffic within the area
- awareness to use public transport

- Driver education Programmed
- sustainable traffic management
- proper town planning

Road Traffic Noise A study of Skåne region, Sweden (2008):

The aim of this thesis was to generate a GIS tool which can count traffic noise Levels in the Skane region, Sweden. Calculators for noise traffic level exist but they are business area or they cannot calculate noise maps for large regions. The thesis work implemented a tool that produced noise maps based on the available equations from Nordic Prediction Method for Roads Noise calculation the main goal of the thesis is to present maps of noise levels on roads for region Skane in Sweden. Australia, England, USA have the noise level calculators open for civilian. Another professional calculator, Sound Plan, is a program that can perform a very accurate calculation for traffic noise but only for small areas. Because of these demerits, the request for my thesis was to provide a program which can calculate traffic noise level for wide areas. One of the most important introductory information found in Nordic prediction the aim of this thesis was to develop a software system that can calculate the noise levels for largearea, such as Skane. Also, after the calculation, the GIS tool provides a table with noise level on all roads. The Arc Map GIS tool can enlarge (zoom in) into areas of interest seven tools were implemented to decomposition noise levels varying from entire regions like Skåne to several streets detail.

Serkin Ozer (2009):

Noise pollution and its effectiveness on environment and life quality of human. Since there are no enough studies on noise pollution in Turkey, this study was carried out to determine motorway noise levels in Tokay city Centre, located at the northern part of Turkey. Noise measurements were taken in the evening to calculate noise pollution all over the city as motorway transportation noise. The similar sound levels - Leq- were measured at 65 points, between 17 and 19 p.m. in the city. High noise levels on these streets were observed throughout the area. At fifty of sixty-five measurement points (76.9%), noise values exceeded 65 dB (A), limit value according to Turkish noise control. In addition, vehicle number according to their types was acquiring from city's traffic administration. On these streets, the most suitable 65 measurement points were selected in the light of observations and data acquired. Data from 65 selected points were acquired at a height between 1.20 m and at a distance 2 - 3 m from noise sources as defined by the previous studies of Ramis et al. (2003), Piccolo et al. (2005) and Jamrahet al. (2005). Because the acquired raw data was given according to the limit value of Turkish noise control regulation, Leq and sound ranges are wide in traffic noise, values were converted into Leq Measurements were performed considering noise control regulation in Turkey and WHO and international standards used in previous studies it was found that noise pollution reached considerably high levels; long and large vehicles should not pass through the city Centre. Routes of public transportation vehicles should be reorganized so as not to accumulate at one point in the area.

Mukesh Chandra Mishra (2010):

The main contribution of the traffic noise, regards overall noise pollution scenario, is a well-known established fact. Vehicular traffic noise problem is accumulated by different kinds of vehicles like heavy, medium trucks/buses, automobiles and two wheelers. In India, the transportation sector is growing fast and number of vehicles on Indian roads is increasing at a very fast rate. This has led to overcrowded roads and pollution. So, a need is being felt to develop a noise prediction model suitable for Indian conditions. The present work discusses the fundamentals of acoustics and analysis of vehicular traffic noise. A mathematical model is developed in Patiala city (Punjab) for a site at Patiala Sangrur Highway (NH-64) (1.5Km from Rajindra Hospital). A large number of sets of data were recorded for 15 minutes duration at different dates/timings in a random/staggered manner in order to account for statistical temporal variations in traffic flow terms. Collected data on noise generating parameters was applied to determine the predicted noise level with the help of regression analysis.

Urban Corridor Noise Pollution: A case study of Surat city, India, by Bhaven tandel (2011):

On all study corridors the maximum noise limits were ranging between (112-118) dB which was almost 1.5 times the permissible limits for business zone. The least noise level values were ranging between (69-78) dB, which was still crossing permissible limits. Mean noise level values were between (92-98) dB which was crossing permissible limits.

Dr. Indrajit Roy chowdhury; scenario of traffic noise pollution and its impact on human health: an empirical case study of Kolkata city (2016):

The different sources, effects, reactions and suggestions for controlling the noise pollution. The analysis shows that automobiles are the major sources of noise pollution. The adverse impact of noise may result in improper communication, sleepless and hearing impairment, nausea, low blood pressure, insomnia. In the majority of cases the affected civilian prefers a request to stop the noise. In this survey public education is found to be the most important tool to control the noise pollution in the city of Kolkata. Besides this the NGOs and government can also play a significant role in the process of controlling the excessive noise.

CONCLUSION

After reviewing mentioned research paper, it clearly depicts that the transportation sector is one of the major contributor's to noise in this city. Such noise measurements and questionnaire survey could be helpful in understanding the problem of noise pollution and contribute to improve city administration in abatement of noise pollution.

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