Noise levels of vehicles in the City of Colombo

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Introduction

•City of Colombo is vulnerable to pollution by noise.

•Vehicular traffic is one of the main sources of noise in the city.

•No data available on noise levels of the vehicles in city of Colombo.

Objective

•Objective of this study was to determine the noise emitted by different categories of vehicles within the city of Colombo.

Methods

•Vehicles which travel within the city of Colombo could be categorized into 16 types depending on the type (e.g. buses, cars etc.), technology (two-stroke and four stroke three wheelers etc.) and size (light, heavy etc.) of the vehicle.

•This categorization was done by expanding the categorization of vehicles used in the transport laboratory of the Department of Civil Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka.

•Nine to 16 vehicles were selected from each category by quota sampling.

•Total of 184 vehicles included.

•Sound pressure level (SPL), maximum sound level (LAmax) of the engine and horn were measured in all the vehicles selected for the study.

•All the measurements were carried out according to the ISO 5130:2007(E) standards.

•The SPL and Lamax (engine) measured at the exhaust pipe of the vehicle and LAmax (horn) measured at the horn of the vehicle.

Definitions

•SPL – average sound pressure level over a period of time

•LAmax (engine) – maximum sound pressure level of the engine

•LAmax (horn) – maximum sound pressure level of the horn

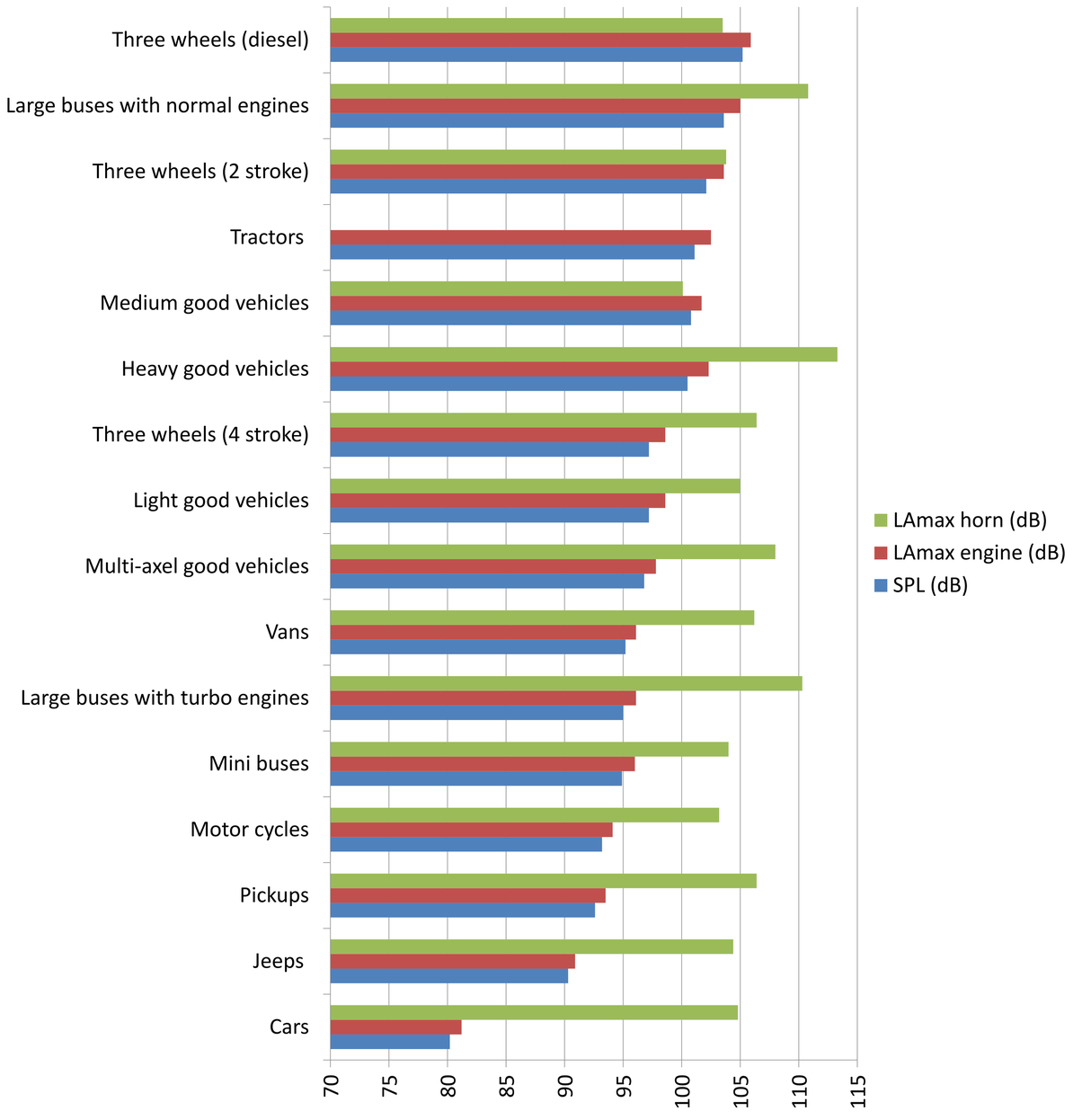
Results

•Median SPL of vehicles ranged from 80.2 dB (cars) to 105.2 dB (diesel three-wheelers) (graph 1).

•Diesel three wheelers recorded the highest SPL (105.2 dB); large buses with normal engines and two stroke three wheelers recorded 2nd (103.6 dB) and 3rd (102.1 dB) highest SPL values respectively.

•Cars recorded the lowest SPL (80.2 dB); Jeeps and pickups recorded 2nd (90.3 dB) and 3rd (92.6 dB) lowest SPL values.

Graph 1. Sound pressure levels, LAmax (engine) and LAmax (horn) of different types of vehicles in the city of Colombo area



•Large buses with turbo engines recorded SPL value about 8.0 dB less than that of large buses with normal engines.

•Out of two types of petrol three wheelers four stroke three wheelers' SPL was about 5.0 dB less than that of two stroke three wheelers.

•The pattern of distribution of LAmax (engine) was almost same as pattern of distribution of SPL of the vehicle.

•LAmax (horn) values were more than 100.0 dB for all types of vehicles.

Conclusions

•Noise levels of different categories of vehicles ranged from 80.2 dB (cars) to 105.2 dB (diesel three wheelers).

•Diesel three wheelers, large buses with normal engines and petrol two stroke three wheelers were the noisiest vehicles while cars, jeeps and pickups were the least noisy vehicles.

•Vehicles of same category show marked difference in noise levels when technology of making the vehicle is different.

•Irrespective of the category of vehicle, all vehicles possessed horns which had noise level (LAmax) more than 100.0 dB.

Recommendations

•Curtailing of importation of diesel three wheelers and large buses with normal engines will help to make the county less noisy.

•New regulations should be introduced to reduce the LAmax of the horns of the vehicles.

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