

**A STUDY ON  
EVALUATION OF NOISE REGULATIONS NO.1 OF 1996  
AND PREPARATION OF NOISE ZONE MAP FOR  
DEHIWALA MOUNT LAVINIA  
MUNICIPAL AREA**

**SARATH WIJESKERA**

539308

**Dissertation submitted in partial fulfillment of  
The requirements for the degree of  
MASTER OF SCIENCE of the UNIVERSITY OF COLOMBO  
SRI LANKA**

**April 2006**

## Abstract

Noise pollution is becoming a severe environmental issue in Sri Lanka. The main tool of combating noise pollution in the country is noise regulations No.1 of 1996 gazette under the National Environmental Act (NEA). The regulations are mainly addressed the noise emanating from industrial and construction activities. However, the noise regulation for community activities is yet to be gazette.

After having experience on handling public complaints, on industrial and community noise with the use of existing noise regulations, it was revealed that the existing noise regulations are to be revived according to the current situation of the country. In order to fulfill the requirement of reviewing the noise regulations, Dehiwala-Mount Lavinia municipal council (DML) area has been selected to conduct a noise study.

Main objectives of this study were to identify the existing noise environment in DML MC area, identify the adequacy of current noise level standards for abating complaints and control further deterioration of noise environment in the area and propose a noise zone map for the area.

Two types of noise monitoring locations were selected to conduct noise level monitoring, such as short term (S/T) and long term (L/T). S/T sites were anticipated to show existing daytime, evening time and nighttime noise levels at specific locations by short duration grab sampling. 6.00 pm to 10.00 pm period was considered as the evening time for the study. The S/T sites consisted 152 locations randomly selected by computer from existing land use map and comprised, 78 prime residential (RES-1) and 19 congested residential (RES-2) and 27 mix residential (RES-3) and 27 commercial (COM) and 9 silent zones (S/Z) and 2 industrial (IND) sites. Mean and median equivalent continuous noise level (LAeq) and statistical levels (L90, L50 and L10) were used to analyze the existing noise environment in the area.

L/T sites have been selected in such a way so as to represent at least one S/T premise type. Measurements have been conducted to cover hour by hour in order to get the 24 hour average. Twenty-four hour equivalent continuous noise level (LAeq, 24h) and percentile noise levels (L90, L50 and L10) were used to analyze the existing noise situation in the area. Also automated noise profiles were used to compare the different premises.

Comparison of mean LAeq of different premises types shows that noise environment in deference premise types has significant difference ( $\alpha < 0.05$  set significance limit) with each other. Also the comparison shows the selected alpha level is zero ( $\alpha=0$ ) for day, evening and night times. Existing standard is too restrictive for some areas like COM and too liberal for RES-1 premises. It was indicated that same standard is inappropriate for whole area of DML and noise limits are to be introduced according to the premise types.

Also comparison of mean LAeq levels of different time periods of the day show that mean LAeq levels of day and evening time has no significant differences except RES-1 premises. It shows that noise environment in day and evening time has no deference except RES-1. It also shows that starting night time at 6.00 pm is not appropriate and night time noise limit is stringent for evening time. The mean LAeq of evening time has significant difference from mean LAeq of night time ( $\alpha = 0$ ) for all premise types and therefore same standard for evening and nighttime is inappropriate and important to have different standards for evening and nighttime.

Comparison of mean LAeq of S/Z sites with mean LAeq of RES-1, RES-2 and RES-3 premises shows that mean LAeq levels have no significant differences ( $\alpha > 0.05$ ) with each other and therefore allowing stringent noise standard for S/Z premises is not appropriate and not helpful to abate complaints.

It was also revealed that mean LAeq levels of RES-2 and RES-3 premises have not significantly difference with each other ( $\alpha > 0.05$  of selected significance limit). It has indicated that eventhough the features and premise type are different, noise environment of two premise types are the same. Therefore, same standard for RES-2 and RES-3 premises can be introduced.

The long term monitoring data shows that 24 hours noise levels (LAeq, 24h) are well above the WHO standard limit of creating annoyance except RES-1 premises (55 LAeq, 24h). Also LAeq, 24h of COM, AIR and IND sites were at or above the WHO limit of creating heart diseases risk (above 65-70 LAeq, 24h).

It shows that the area is becoming noisier and many public complaints can be expected in future. During the survey it was revealed that vehicular noise is the main source of noise in the area creating the requirement of noise standard for vehicles. An awareness program is to be launched for the motorists in this regard including courteous driving.

In general, noise regulation No.1 of 1996 is not appropriate to abate complaints and the noise environment in some areas is deteriorating. Also too stringent for some areas like COM. Therefore, the current standards are to be revived according to the existing noise levels at different premises.