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Road Traffic Noise Pollution a Hazard

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Abstract

A road traffic noise study was conducted in Lahore at 18 busy places of high traffic flow in peak working hours of the day. It has been found that the day time average noise level has crossed the permissible limit of 85dB(A) at 90% busy points in the city. The maximum average noise level recorded in Lahore was 104 dB(A). This high level attributed to vehicular traffic specially auto rickshaw with ineffective silencers (without filters) and frequent use of the pressure horns by buses, wagons and trucks etc. The findings of the survey provide enough baseline data for engineering controls and interim legislation against traffic noise pollution.

Key words: Noise pollution, Traffics load , Community health, Lahore city

Introduction

Noise is unwanted sound with a random intensity, a signal that bears no information. Each of us is exposed to sound that one finds annoying and unpleasant and from which there is never any protection. Nature provided the majestic elephant and the lowly ass with ear flaps that would at least partially cut down the noise level to their ear. But man is not so favored and is in a constant effort to make his existence more comfortable. He has inflicted severe punishment to his helpless ears. It has been rightly pointed out that civilization itself is noise and man's progress through the ages has been accompanied by activities involving ever increasing noise intensities. Transportation noise is a key problem in the cities of the world today. Long exposure to noise due to traffic affects our health and comfort. Noise from road vehicles produces disturbance to more people than from any other source of noise and has been increasing very fast over the last few decades. On any road there is a general noise level as long as any traffic is moving. This general level varies with traffic density and time of the day. Distinctive and regular peaks in the noise level occur in the morning and evening as people travel to and from schools and work places (Ahmad and Khan 2003) .Traffic noise survey conducted in

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Karachi and Hyderabad (Sheikh *et al.* 1987, Sheikh *et al.* 1997) shows that the levels of traffic noise vary in range of 61 to 97 dB(A). The level is high and much above the community annoyance limits recommended by the International Standards and some other countries. Road side dwellers and traders are constantly exposed to such a high level noise for about more than 12h a day. The results of other surveys in Karachi, Lahore, Faisalabad, Hyderabad and Sukkur presents that the levels of traffic noise in these cities vary in the range of 72-95, 74-90, 70-92, 60-90 and 60-85 dB(A) respectively (Ahmad 1992, 1994) . However, the methodology used in these surveys have some objections like, most of the readings taken in dB instead of dB(A) , distance from vehicle was not correct, readings was few , average values was based on minimum and maximum readings and incorrect range of values raises questions about the credibility of the results and inference to made thereof (Sheikh and Sheikh 2000, Sheikh 2003).

Passing of individual vehicular at any given point leads to the super imposition of peak traffic noise levels of a few seconds duration on the federal noise level, at the point. For community annoyance for cities with business, trade and administration, like Lahore international standard organization ISO-1996 (1982) allows 55-65, 50-60 and 40-50 dB(A) noise level for day, evening and night time respectively. The ISO recommendations "Assessment of noise with respect to community response" suggests that a basic outdoor noise criterion of 35-45dB be applied for the case of residential area (ISO Recommendation 1969-1971). A person exposed to high noise level goes deaf more quickly than the one who is major chronic effect of the noise is the so called noise induced hearing loss. At high levels of about 150dB(A),immediate permanent hearing impairment cause (Kryter 1973, Kroak *et al.* 1974). Therefore, in order to have detailed assessment of prevailing road traffic noise in different areas and localities, traffic Noise survey was conducted at 18 sites on busy roads with heavy traffic density in the residential and commercial areas of Lahore city thereby help in the formulation of a noise reduction programmes. The survey findings provide quality data for engineering controls and interim legislation against traffic noise pollution.

Materials and Methods

The sound level meter used in this study was Delta OHM Padova Italy HD8701, with auto calibrator. Measurements were kept as slow response and A weighted sound level. A grade weight is generally preferred internationally for road traffic noise. The instrument read A grade weight values directly the microphone was kept 1.2m above the ground , recommended a distance of 1.5m for motorways and 5m in city situation (Hassel and Zaveri 1998). At each site ,noise level measurements were taken at intervals of three

minute. To cover the business hours of the city, from 7.0 a.m to 8.0 p.m.

Results and Discussion

A survey of the traffic noise levels in Lahore city has been carried out during Nov-Feb 2004. The road traffic noise levels were measured at 18 busy sites as described in Table I, which indicates that the average Noise Level at the sites is between 84-99dB (A).The minimum noise level ranges from 72-80dB(A) while maximum 94-104 dB(A).From starting point i,e Kalma Chowk to Muzang are seven sites located on Ferozpur Road. At all these points the average noise level was found to cross the per-

Table I. Road traffic noise level at some busy points of Lahore city

Sr. No	Type of locality	Type of locality	Type of traffic	Density of traffic	Average noise level dB(A)	Minimum noise level dB(A)	Maximum noise level
1	Kalma Chowk	Commercial	B,C,MC,P,T,AR	Heavy	90	78	100
2	PCSIR main gate	Main Road	B,C,MC,P,T,AR	Heavy	87	80	96
3	Muslim Town	Commercial/ Residential	B,C,MC,P,T,AR	Heavy	91	79	103
4	Shah Jamal	Commercial/ Residential	B,C,MC,P,T,AR	Heavy	88	77	98
5	Ichra	Main Road	B,C,MC,P,T,AR	Heavy	89	75	102
6	Shama	Commercial	B,C,MC,P,T,AR	Heavy	88	76	99
7	Muzang	Commercial	B,C,MC,P,T,AR	Heavy	92	82	104
8	Chaburgi	Main Road	B,C,MC,P,T,AR	Heavy	87	75	101
9	Secretariat	Main Road	B,C,MC,P,T,AR	Heavy	96	75	101
10	OldAnarkali	Commercial/ Residential	B,C,MC,P,T,AR	Light	92	73	94
11	Mayo Hospital	Commercial	B,C,MC,P,T,AR	Light	87	75	99
12	Lahori Gate	Commercial	B,C,MC,P,T,AR	Heavy	83	73	97
13	Delhi Gate	Commercial	B,C,MC,P,T,AR	Heavy	84	72	99
14	Yadgar Chowk	Commercial	B,C,MC,P,T,AR	Heavy	88	78	102
15	New Anarkali	Commercial	C,MC,T	Light	89	77	100
16	Neela gumbad	Commercial	B,C,MC,P,T,AR	Heavy	86	78	98
17	Akbari Mandi	Commercial	B,C,MC,P,T,AR	Heavy	98	79	100
18	Crown Adda	Commercial	B,C,MC,P,T,AR	Heavy	99	78	104

Note: B,Bus; C,Car; MC,Motor cycle; P,Pedestrian; T,Truck, AR, Autorickshaw

missible limit of 85 dB(A).The major noise contributors are Mazda buses and Wagons that cover the route of Lahore to Kasur and Lahore to Kahana and vice-versa respectively. Their condition is very bad and they are heavily loaded by passengers .Autorickshaw, motorcycles are other major contributors of noise pollution (Sheikh and Sheikh 2000, 2001, Sheikh *et al.* 1995, Sheikh *et al* 2006). Chuburgi, Secretariat and old Anarkali were the next points ,these were also heavily loaded by traffic and have average noise level above the limit. Among the next monitoring sites i,e Mayo Hospital, Lohari gate,Dehli gate, Yadgar Chowk,New Anarkali, Akbari mindi and Crown Adda. Lohari and Dehali gate have acceptable value of noise, while condition is worst at crown adda, where the average Noise level was 99 dB(A) and ranged from 78-104 dB(A).It is therefore supported the evidence that in the areas surveyed, the people at their work places, in business, residential, shopping and outsider are constantly exposed to considerably higher noise level for major part of the day .Most of these localities comprise of residential buildings, business, offices, schools and hospitals where noise is objectionable, the need for taking effective measures for noise abatement is obvious.

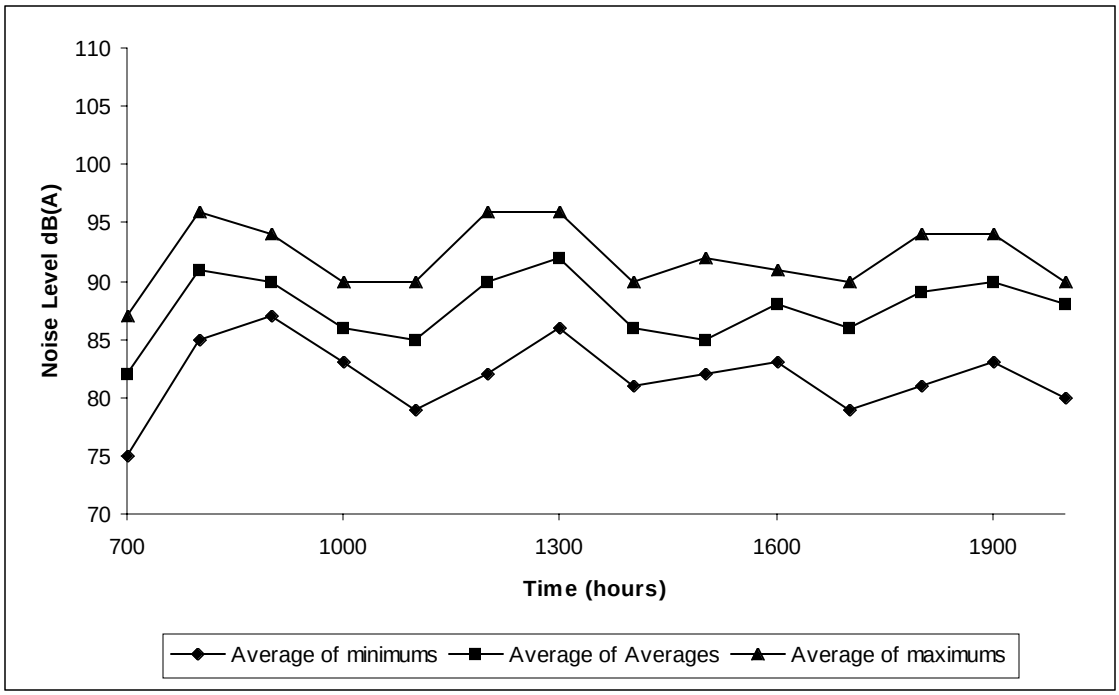

Fig 1. The averge diuranl variations in noise level during thirteen hours of day time

In the morning before schools and offices started, the values for maximum, minimum and average noise level was found to be (87,75,82) which is lower than the values in peak hours but grater than desirable annoying limit. After this time the situation of high noise remains the same throughout the day with slight decline after 1000hrs and 1300hrs (Fig 1). Any body who has been visited to any one of the above sites mentioned, knows well the sadistic pleasure that the drivers of the buses drive with their air driven horns. Here not only the public is at risk but the drivers himself damages his hearing because the major chronic effect of the noise pollution is the so called noise-induced hearing loss. A person exposed to high noise level goes deaf more quickly than the one who is exposed to a relatively noise free environment during his day to day activities (Dara 1995). This situation of high noise level is seems to be everywhere in the city and affecting the community health. It is a continuous pollution problem and health hazardous to the society in future.

Conclusion and Recommendation

To mitigate the problem, a phased programme of implication is required as art of which, staff of relevant enforcement agencies would be properly trained and equipped to carry out their functions. Rickhaw silencers and bus wagons horns are major contributor to increase of noise level. In traffic noise level, reduction at the source can be affected by suitable silencing the offending vehicles. Regulation of exposed personnel should be made confirmatory i.e. supply of ear protective device and lowering of their exposure time to the traffic police. General public has an important role to play in noise abetment, with an adjusting attitude, tolerance, and approach to communal harmony, they can diminish the noise level to a great extent,. Plantation of trees, restricted use of pressure horns, loud speakers, record players will definitely lessen the magnitude of the problem. However in spite of the best effort, noise level cannot be eliminated. There are two remedies available against all unwanted noise. First to suppress noise at the source, where such a possibility exists and secondly to prevent its transmission into places where it is unwanted. Control noise level by reducing vehicular noise using proper muffler and acoustic treatment.

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