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NOISE ABATEMENT

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ABSTRACT

The study appraises the quandary of noise pollution for the wake of its bad and severe effect upon the life of the people. Cross-section surveys of the population in Delhi State points out those main sources which are responsible for noise pollution are loudspeakers along with automobiles. However, female population is much affected from the religious noise a little more than male population. Major effects which are been caused due to noise pollution include or involves interference with communication, sleeplessness as well as reduced efficiency. The extreme effects e.g. deafness and mental breakdown neither is proscribed. In this paper we discussed some issues related to noise .

Keywords: Pollution, Human Health, Noise Standards, Social And Religious Ceremonies, Noise Effects, Noise Reduction, Public Education.

I. INTRODUCTION

Noise is derived from the Latin word "nausea" implying 'unwanted sound' or 'sound that is loud, unpleasant or unexpected'. The noise originates from human activities, especially the urbanization and the development of transport and industry. Though, the urban population is much more affected by such pollution, however, small town/villages along side roads or industries are also victim of this problem. Noise is becoming an increasingly omnipresent, yet unnoticed form of pollution even in developed countries. According to Brigitte and Lindvall (1995), road traffic, jet planes, garbage trucks, construction equipment, manufacturing processes, and lawn mowers are some of the major sources of these unwanted sounds that are routinely broadcasted into the air. Though noise pollution is a slow and subtle killer, yet very little efforts have been made to ameliorate the same. It is, along with other types of pollution has become a hazard to quality of life. Kiernan (1997) finds that even relatively low levels of noise affect human health adversely. It may cause hypertension, disrupt sleep and/or hinder cognitive development in children. The effects of excessive noise could be so severe that either there is a permanent loss of memory or a psychiatric disorder (Bond, 1996). Thus, there are many an adverse effects of excessive noise or sudden exposure to noise. In India, the problem of noise pollution is wide spread. Several studies report that noise level in metropolitan cities exceeds specified standard limits. It is responsible for rising incidence of deafness among the inhabitants (Bhargawa, 2001). A study by Singh and Mahajan (1990) conducted in Delhi and Calcutta, found that the noise level is 95dB as against the ambient limit of 45dB. Even at the "calm" places, it does not fall below 60dB. Murli and Murthy (1983) also found that traffic noise in Vishakhapatnam exceeds 90dB even in morning hours that acts as a source of nuisance.

Figure 1: This figure shows the problem people face by the noise

II. METHODOLOGY

This empirical study is based on a sample survey of the State of Delhi. 150 respondents were interviewed personally. The samplerepresents a cross-section of different age groups,sex, geography, educational levels; income levels of respondents and therefore it could be treated as a representative sample for such an exploratory study. Delhi was chosen for the study because it is one of the most populous cities in India and reflects both the modern and traditional,infrastructure (roads, localities, buildingsetc.) Moreover, its inhabitants represent a cross-section of Indian culture. The data was collectedby using a structured questionnaire blended with suitable open-ended questions. The analysis has been carried out with the help of percentages and cross-classifications on sources of noise, effects of noise, reactions to noise, and suggestions to control noise in terms of age as well as sex.[4]

Figure 2: Noise Reduction

2.1 Sources

Sources of noise pollution include inter alia, vehicular traffic, neighborhood, electrical appliances, TV and music system, public address systems, railway and air traffic, and generating sets. Even we fall prey to the noise generated by household equipments used by us[5]. Most of the people inhabiting metropolitan cities or big towns and those working in factories are susceptible to the adverse effects of noise. Characteristically, it affects the rich and the poor alike. The problem of noise pollution is less in small towns and villages. But, those residing in villages/ towns along the national/ state highways or close to railway tracks do bear the burnt of excessive noise. Indiscriminate use of horn by the vehicles and widespread use of loud speakers in Indian social and religious ceremonies cause several health hazards to the urban inhabitants. It may cause deafness, nervous breakdown, mental disorder, heart troubles and high blood pressure, head-aches, dizziness, inefficiency and insomnia (Bhargawa, 2001). [2]The noise level and exposure area depends on its source and its strength. Road

noise, especially at some distance from the road can be described as a steady state noise that does not fluctuate much. But, rail and aircraft noise are acoustically characterized by high noise levels of relative short duration. Noise from industrial installations, construction sites and fixed recreation facilities radiates from a point source and the shape of the exposure area is generally a circle. The noise from various sources may either be steady for a long period or fluctuate over a specified period considerably. Road traffic is a key source of noise in big cities. The speed and exhaust system determines the noise released by road traffic. The contact between tyres and the road surface is dominant source of noise at speeds above 60km/h for light vehicles. In future, tyre to surface noise is likely to become an important issue to be addressed in noise abatement strategies. In urban areas, fast acceleration and re-starting the engine in traffic could result in emissions up to 15dB higher than the normal levels of emission resulting from smooth driving. Another major source of noise is public address system used by temples, mosques etc. Indian Constitution under Article 25-28 guarantees freedom of religion to all persons. But, this freedom of religion is not an absolute one. Freedom of religion is subject to public order, health and morality. In a recent decision, Supreme Court held that no religion prescribes that the prayers should be performed by using loudspeaker or by beating drums. Further, it was held that if religious people make use of such equipment, it should not affect the right of other people. The High Court of Tamil Nadu allowed a petition filed by the Welfare Association of KKR Nagar (Chennai) against Church, and directed the respondent that the noise level should not exceed the permissible decibels. Thus, the State can put a restriction on an institution for maintaining public health. Since the noise disturbs the living and leaves the bad impact on the health of the people, restriction imposed by a state on the noise level does not amount to violation of fundamental right.[3]

Figure 3: Wall Panels to reduce Noise

III. EFFECTS

There is no doubt that the noise affects human health adversely. The noise may result in loss of hearing, stress, high-blood pressure, loss of sleep, distraction affecting productivity, and a general reduction in the quality of life. The effects of noise are difficult to quantify because tolerance levels among different populace and types of noise vary considerably. There is a large amount of scientific literature assessing the effects of noise on human beings. Indiscriminate use of horn by the vehicles and wide spread use of loudspeakers in Indian social and religious ceremonies caused several health hazards to the urban inhabitants. It may cause deafness, nervous breakdown, mental disorder, heart troubles, high blood pressure, dizziness and insomnia (Bhargawa, 2001). Exposure to noise pollution exceeding 75 decibels for more than eight hours daily for a long period of time can

cause loss of hearing. The hazards increase with the intensity of the noise and the period of exposure. The sound produced by a bursting cracker, exceeding 150dB, can cause a ringing sensation called 'tinnitus' and can impair hearing permanently. In general about 1 percent of the population suffers from noise-induced pollution. Nagi et al. (1993) found that the noise level produced by household equipment and appliances sometimes reaches up to 97 dB which is more than double the acceptable (45dB) noise level. This excessive noise could carry several ill-effects viz. annoyance, speech interference,sleep disturbance, mental stress, headache, andlack of concentration. Similarly Singh (1984) noted that the workers exposed to high noise levels have a higher incidence of circulatory problems, cardiac diseases, hypertension, pepticulcers, and neurosensory and motor impairment.The adverse effects of noise have not even sparethe birds (Robins, sparrows, wrens and blackbirds). Those living near busy roads could not hear each other and thus unable to contact for propagation (Deutche Presse-Agentur, 2003). We can visualize (Table 3) that noise interferes with communication, disturbs the sleep and reduces the efficiency of individuals under its umbrella. Majority of sample respondents exposed to noise pollution report occurrence of annoyance and hearing problem. As many as35% reported the deafness and almost equalnumber reported mental breakdown. The survey data shows that the effect of noise is not similaramong various age groups. Generally, growing age bears the brunt of excessive noise pollution.For example, the rising proportion of samplerespondents in higher age groups acknowledgesdepression, sleeplessness and deafening effect. A very large proportion of respondents feel that noise interferes with inter-personal communication and causes annoyance. Extreme effects (i.e. mental breakdown and deafness) are acknowledged by one third of survey population. However, there is a much higher incidence of deafness effects on old people (above 60 years of age). Further, a general perusal of table shows that psychosomatic (e.g. depression, sleep) andphysiological (deafness) disorders are acknowledgedby a smaller proportion of respondents.

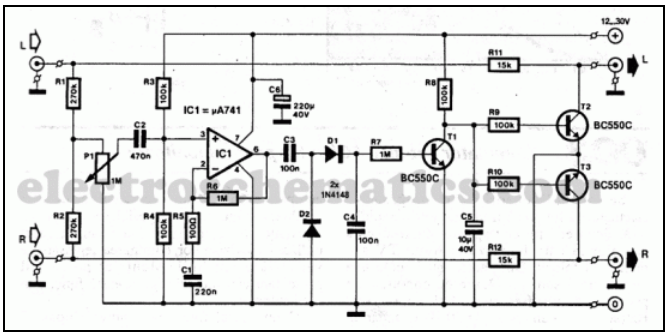

Figure 4: Circuit for Noise Reduction

IV. SUGGESTIONS FOR NOISE ABATEMENT

In general, a set of a significant proportion of respondents feel that public education programmes and government can help us control the noise-level. The police and civil administration, if empowered, could also facilitate checking of noise-levels. However, the data suggests need for a multi-dimensional approach i.e. a single measure cannot achieve the goal of noise-reduction. In terms of age, significant proportion persons between 20-40 years and 40-60 years feel that civil authorities should be empowered along with other measures. It strengthens the belief that public education is needed direly because people are not aware of legislation/rules of environment ministry of Delhi. The younger (< 20 years) and older generation (above 60 years) appears to

emphasize *inter alia*, need for empowering the police. Each of age groups feels that a combination model could work better for a public cause. Male and female groups do not seem to differ regarding alternative methods of controlling the noise-level. Predominantly, male as well as female respondents advocate public education. Empowering the police is rated as a tool for control of noise by smaller proportion of people in total sample. Thus, change in public attitude by programmes of government/NGO and civil measures (fines etc.) could help us reduce or prevent the noise pollution ab initio.[1]

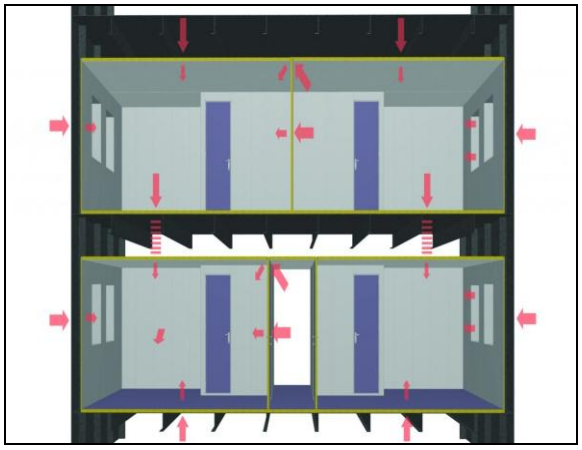

Figure 5: Panels for Noise Abatement

V. CONCLUSION

This research paper explores the sources, effects, reactions and suggestions for controlling the excessive noise. Automobiles and public address system (loudspeakers) turns out to be major sources of noise pollution. It appears that loudspeakers are frequently used for religious functions (and temple prayers). Disturbance by loudspeakers and automobiles is felt by age groups of 20-40 years somewhat lesser than other groups. Across various age groups, there is almost an equal proportions of respondent reporting neighborhood, music and religions functions as sources of noise. There are no variations among male and female population. Proportion of female population vis-à-vis proportion of males' population is same for each of sources of noise. The survey indicates that noise affects individuals in several ways. It results in improper communication, sleeplessness and reduced efficiency[4]. In a majority of cases, the affected party tenders a request to stop noise. A substantial proportion of respondents among various age-groups complain to administration. Interestingly, about one-third of young people (below 20 yrs) prefer to quarrel with the erring party. Public education appears to be the best methods as suggested by the respondents. However, government and NGOs can play a significant role in the process[9].

Figure 6: Reduce Noise

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