

DURATIONAL ASSESSMENT AND IMPACT OF NOISE LEVELS IN DIFFERENT LOCALITIES IN DEHRADUN VALLEY: A CAPITAL CITY OF UTTARAKHAND

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ABSTRACT Present study focuses on the assessment of noise level from clock tower (a central place of Dehradun city) towards various nodal points within the radius of 25 km in all possible directions. 14 locations were assessed with sound level meter at two different times in a day i.e. day time (6:00am-10:00pm) and night time (10:00pm-6:00am). It was finely observed that this evolving smart city is witnessing way higher noise level in comparison to the standard norms set by CPCB (central pollution control board), India . Dehradun is a proposed smart city growing fastly as an more urbanized colony. such development comes with inevitable sound levels adversely affecting its surroundings. Besides, infrastructural development , the population of the city has grown manifolds leading to congestion, traffic issues, high levels of noise and various other urban problems. The paper also enlists the effective solution to the discussed problem.

Keywords: Noise level, Zonal variations, Dehradun. Uttarakhand.

INTRODUCTION

noise is any unpleasant, unwanted sound that has an adverse affect on its surroundings. Human ears can hear sounds ranging from 0db to 140 db (decibel) with 0db being the hearing threshold and 140db being the painful threshold. The decibel (dB) scale begins from zero , which represents the faintest sound, which is audible to a normal ear. Decibel (dB) is used in environmental noise pollution as a measure of sound power level, sound intensity level and sound pressure level. A decibel is a physical unit based on the weakest sound that can be detected by the human ear. It is named after Alexander Graham Bell, the inventor of the telephone. Our human ear sensitivity to noise in the range of 20 to 20,000. According to who, sound levels less than 70db are not damaging to living organisms, regardless of how much loud or consistent the exposure is. Exposure for more than 8 hours to constant noise beyond 85 dB may be hazardous. If you work for 8 hours daily in close proximity to a busy road or highway, you are very likely exposed to traffic noise pollution around 85db. According to WHO guidelines for community noise, such exposure to higher noise cause various health problems. The growing noise pollution has many causative factors. Ever increasing population , growing urban sprawl, as very evidently happening in dehradun city, both play a vital role to cause noise pollution.

Mark Huber, communication director for noise free America says “ A lot of money is being made by disturbing the peace”, staunchly criticizing the development happening at cost of destroying peaceful surroundings. In 2011, The Centre for science and environment (CSE) conducted a decibel survey which showed that noise pollution in cities is directly linked to 64% of hearing loss. However , the standard set by CPCB is 50db for a silent zone and 55db for residential area. The CSE study says that India lacks monitoring capacity and data on noise. According to 2007 WHO estimate, almost 6% people in India suffer from hearing loss. Prolonged exposure to noise above 60 db can lead to irreversible noise induced hearing loss (NIHL). There are other serious health implications as well such as deafness, heart condition , sleep disorders and cognitive impairment in children. In 2011 WHO said that sleep disturbance and annoyance were the major components of health burden due to noise.

METHODOLOGY

The ambient noise monitoring was carried at various palces in the city. The 14 places selected were : karanpur, patel nagar, Nehru colony, vasant vihar, Raipur , sahastradhara, I.S.B.T , rajpur road , clock tower , survey chowk , prince chowk, chakrata road , CMI chowk, FRI .The ambient monitoring carried out was similar to the one followed by state pollution control board with only difference being that the former is on half yearly basis 2019 while latter is carried out on yearly basis. Data was collected through field visits which also involved use of Digital app that are well equipped with measuring noise levels in different parameters.

Study area Dehradun is the capital city of the north Indian state of Uttarakhand. It is also a district, which covers an area of 3088 sq km and lies at an altitude of 2100 ft above sea level. It is located in the Doon Valley on the foothills of the Himalayas

nestled between the river Ganges on the east and the river Yamuna on the west. The city is famous for its picturesque landscape and slightly milder climate and provides a gateway to the surrounding region. The area under study taken was 25 km radius from the clock tower , a centralized location of the city,in all directions. The latitude of Dehradun is 30.31 and the longitude is 78.03. The city is famous for its picturesque landscape and slightly milder climate and provides a gateway to the surrounding region. It is well connected and in proximity to Himalayan tourist destinations such as Mussoorie, and Auli and the Hindu holy cities of Haridwar and Rishikesh along with the Himalayan pilgrimage circuit of Chota Char Dham. It is between latitudes 29 °58' N and 31°2'N and longitudes 77° 34' E and 78° 18'E.[20] This district consists of six tehsils — Dehradun, Chakrata, Vikasnagar, Kalsi, Tiuni and Rishikesh — six community development blocks — Vis, Chakrata, Kalsi, Vikasnagar, Sahaspur, Rajpur and Doiwala — 17 towns and 764 villages. Out of these 746 villages are uninhabited; 18 are uninhabited.

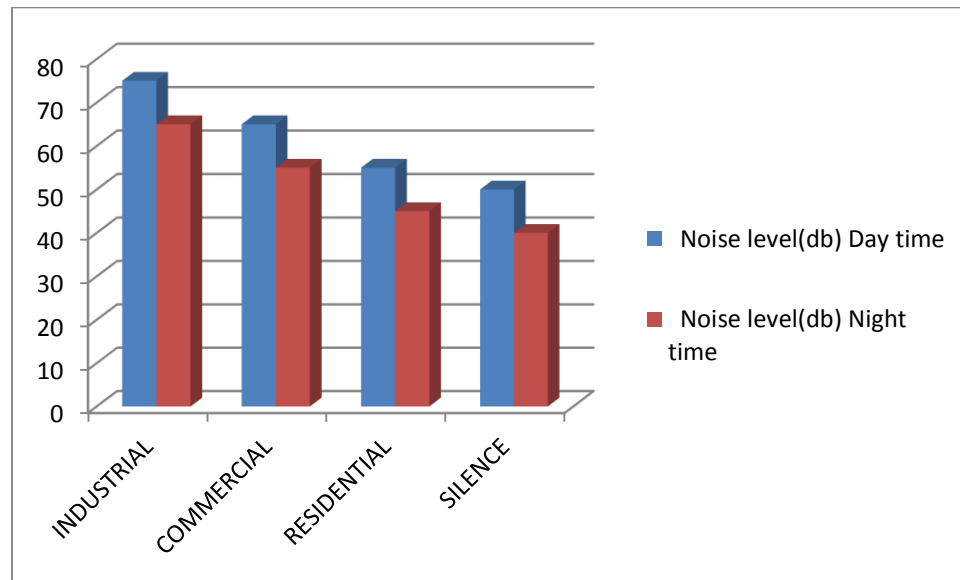


Fig 1: Ambient noise standards (as per environmental protection and pollution control board, Govt. of Uttarakhand).

NOTE: 1. Day time shall mean from 6:00am to 10:00pm

2. Night time shall mean from 10:00pm to 6:00am
3. Silence zone is an area which is declared as such by competent authority.
4. Mixed categories of areas maybe declared as one of the four above mentioned categories by the competent authority.

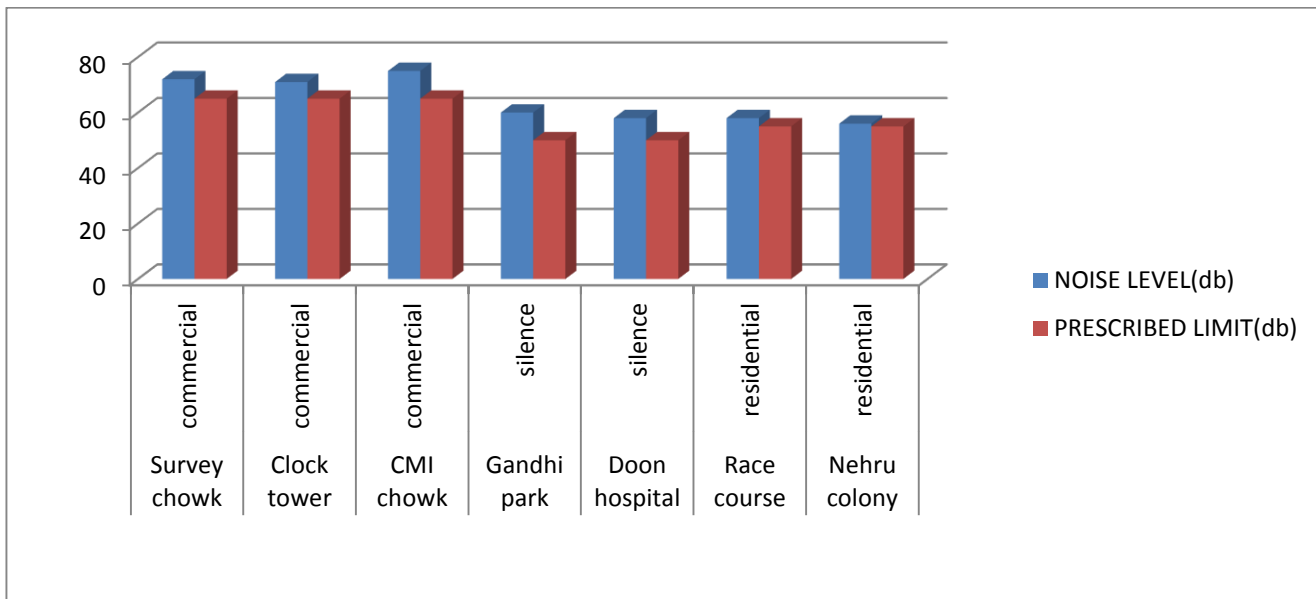


Fig 2: Noise level in the year 2019.

What the local experts says:

Dr.Piyush Tripathi (Senior physician , Coronation hospital): He says that a normal conversation should range between 40-50db.our ears can bear noise upto level of 60-65 db,but level above this have direct consequences on ear drum.if a person hears a noise above 70db on daily basis, then he is very likely to develop hearing illness which in a long run can cause deafness. Other than this, anxiety and heart ailments could also be results of noise pollution.

Amit Pokhriyal (Nodal officer: district pollution control board): The present situation of the noise level in the city is unsatisfactory. Advisories are issued by PCB (pollution control board) from time to time to curb the cusative factors of noise pollution, which if strictly followed would definitely reduce such adeversity.

Table 1: noise level (db) in dehradun city at day time and night time.

	AREA	NOISE LEVEL IN DAY TIME (db)		NOISE LEVEL IN NIGHT TIME(db)
		MORNING TIME	AFTERNOON TIME	
RESIDENTIAL	KARANPUR	82-86	83-87	45-55
	PATEL NAGAR	95-99	94-99	82-90
	NEHRU COLONY	75-80	76-80	45-50
	VASANT VIHAR	70-80	72-79	50-59
	RAIPUR	73-75	65-70	40-45
	SAHASTRADHARA	71-80	60-67	45-50
COMMER	I.S.B.T	88-95	86-100	80-90
	RAJPUR ROAD	88-96	85-95	60-65
	CLOCK TOWER	95-104	95-105	75-85
	SURVEY CHOWK	76-80	75-82	50-60
	PRINCE CHOWK	90-97	90-95	51-59

	CHAKRATA ROAD	85-95	85-94	55-63
SILENT	C.M.I HOSPITAL	95-105	96-103	40-45
	F.R.I DEHRADUN	45-50	45-48	37-40

More accuracy the day time has been divided in two parts i.e morning time(6:00am to 12:00 noon) and afternoon time (12:00 noon to 6:00pm).

Observations and results

Fig 1 shows the noise level standard as set by state pollution control board,uttarakhand. Fig 2 shows the data published in the newspaper in july,2019. Table 1 shows the noise levels in decibel at various pplaces in dehradun. The range of noise level varied from from 60-99 db in residential area in the daytime. whereas, it ranged from 40-90 db at night time for the same zone. Clearly the data in residential area indicates abnormal condition of noise level than the prescribed limit in both the day time and night time with only Raipur being an exception during night. The noise level in commercial zone ranged between 75-105db during daytime with no place under noise control norm. The range for the same zone varied from 50-90db at night time which was too showed unsatisfactory results.

Two Silent zones of FRI and CMI showed wide variation. For the day time it ranged between 45-105 db and from 37-60 db at night time. FRI was observed to be under satisfactory noise level at both the times whereas, CMI noise levels were very concerning. A promimnent hospital in the city getting such level of noise is alarming .such a situation as this demands hospitals to be located far from such noisy places.

Various Causes of noise pollution in Dehradun were also identified during research duration such as Industrial Causes, Agricultural Machinery, Household Utilities, Transportation, Public Addresses and Alarm Systems, Social Events, Construction works, blasting, stone crushing, bulldozing, welding, automobile repair activities, quarrying and so on are miscellaneous causes of noise pollution. People involved in these activities at times have to wear earplugs to prevent them from deafening exposure. The residents of areas boarding where these activities take place normally complain of unpleasant and intense noise.

Steps to be taken:

- 1. Sound proofing:** As the Dehradun city is becoming smart it should develop smart ways to curb noise too. Sound proof residential areas especially the silent zones should be developed. The buildings should be sound proofed to cut unwanted noise to enjoy mental peace.
- 2. Plant trees:** Trees have been established to be effective in reducing noise levels within urban settings, around major highways, and even at the places we stay. Therefore, numerous plants and trees in an area mean less noise pollution. In addition to that, trees have various aesthetic advantages and improve air quality.
- 3. Replacement of old automobiles with new ones:** Old automobiles are a major source of noise pollution in the city. They create unappealing and very loud sounds. Their replacement with new ones will go a long way in reducing noise pollution. It will also lessen the emission of soot and toxic substances into the atmosphere.
- 4. Creating awareness and education on the consequences of noise pollution:** The creation of awareness on noise pollution and its effects on both humans and wildlife can generate positive outcomes on efforts to reduce noise pollution. This is perhaps the most effective tool of curbing noise pollution or any kind of environmental adversities.

Conclusion

The research findings clearly showed the alarming situation of noise pollution in the city. The primary source of pollution was traffic followed by construction activities etc. It was also observed that such problem was not seen as a problem till it adversely affected the health of the people exposed to abnormal noise. the hearing ailments and health related issues due to noise pollution has seen a marked increase in the last one decade. It was evidently found that noise level were found above standard values set by CPCB and SPCB. It was also seen that people in the city lacked awareness about the adverse effects of noise on their health.

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