



NOISE POLLUTION IN CHANDIGARH: AN EMERGING ISSUE

Geography

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ABSTRACT

Chandigarh, described as “The City Beautiful” is well planned city for comfortable living and built primarily to provide the best amenities. Today Chandigarh has grown beyond expectations in terms of the population and at the same time various problems also grew between the human activities and the environment. Therefore, corrective action is needed with proportions. For the last few decades this fast-growing Union Territory have shown an increase in noise level and this is a serious issue, which should be tackled as soon as possible. The present study is an attempt to examine the most prominent sources of noise pollution in the city. It will focus on the reasons that have led to an increase in the noise pollution in the planned city of Chandigarh. It will suggest recommendations, so that immediate remedial actions should be formulated to promote sustainable development of the area.

KEYWORDS

Noise Pollution, Sources, Reasons

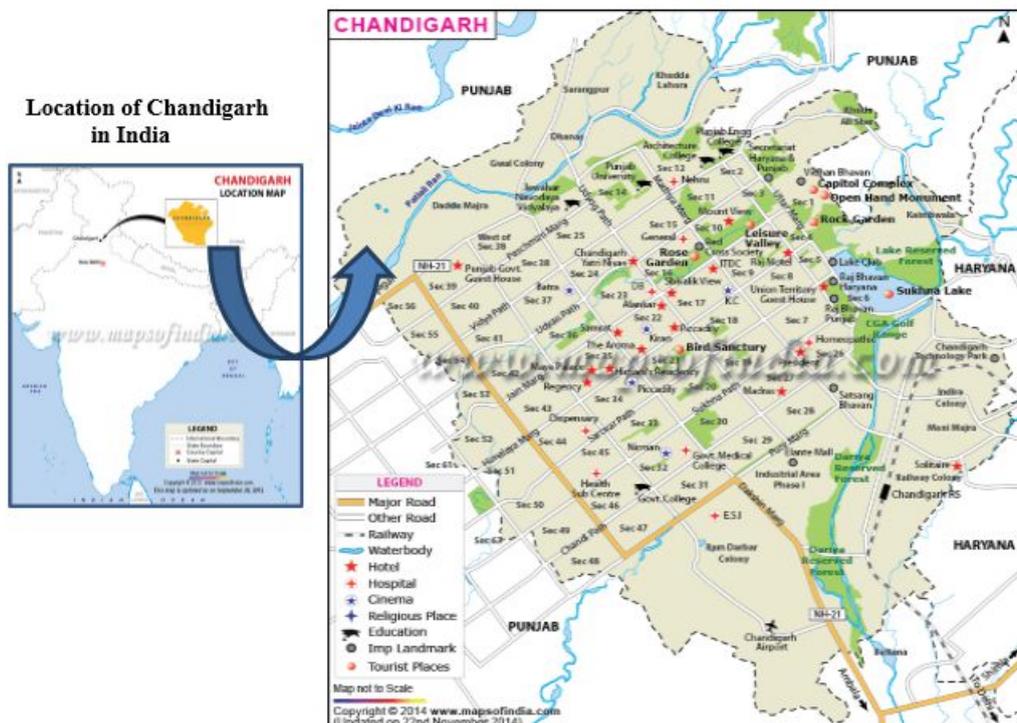
I. INTRODUCTION:

Noise is defined as 'unwanted or offensive sound that unreasonably intrudes into our daily activities' and adversely affects human beings mentally or physically. It is any undesirable or harmful sound created by human activities such as from traffic, industrial and construction activities, loud speakers, festival sounds, music system etc. Noise may not seem as harmful as the contamination of air or water, but it is a pollution that not only affects human health but can contribute to deterioration of environmental quality. It is recognized as an air pollutant under the Environmental Protection Act, 1986 by the Government of India. Therefore, any sound becomes unwanted when it either interfere the normal activities such as sleeping, conversation, studying, teaching or disrupts or diminishes the quality of life. Hence, it is necessary to control and regulate it. Keeping this in mind the present study is an attempt to examine various possible reasons of noise pollution in the city and will suggest recommendations to reduce nuisance from noise. In spite of various measures taken to avoid the noise pollution during its planning, this problem has grown steadily with time. Therefore, suitable strategies are required to minimize increasing noise in the city of Chandigarh.

II. THE STUDY AREA:

Chandigarh is located near the foothills of the Shivalikh range of the Himalayas in northwest India. It covers an area of approximately 114 km². It shares its borders with the states of Haryana and Punjab (Map 1.). It is located between the 76°47' East Longitude and 30°44' North Latitude. The surrounding cities are Mohali, Patiala, Zirakpur and Roopnagar in Punjab, Panchkula, and Ambala in Haryana. Chandigarh is situated 114 km southwest of Shimla, 45 km (28 miles) northeast of Ambala, 229 km (143 miles) southeast of Amritsar and 250 km (156 miles) north of Delhi. Chandigarh derives its name from the temple of Goddess 'Chandi' (the goddess of power) located in the area and the fort or garh lying beyond the temple. It was planned by the famous French architect 'Le Corbusier'. The city is one of the best experiments of urban planning in modern India. Founded in 1952 as the new capital of eastern Punjab after partition, the Chandigarh area was carved out of the erstwhile Ambala District. Subsequently, at the time of reorganization of the state in 1967 in to Punjab, Haryana and Himachal Pradesh, the city assumed the unique status of being the capital city of both Punjab and Haryana. However, being a Union Territory as well as Capital of both Punjab and Haryana, this beautiful city is experiencing every kind of pollution including noise pollution.

Map 1. The Study Area



III. OBJECTIVES

1. To reflect the significant sources of noise pollution in the city.
2. To discuss and focus on the major reasons for an increase in noise pollution.
3. To conclude the findings of the study.
4. To provide recommendations and actions to be undertaken.

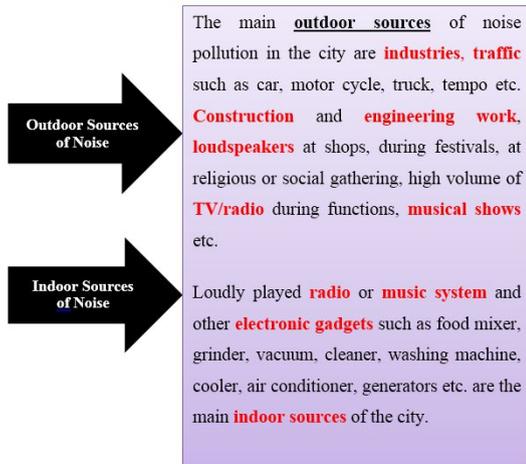
IV. DATA BASE: Secondary data from Census handbooks, Statistical Abstract, City Development Plan Chandigarh, Ministry of Urban Development (JNNURM) Government of India, <http://chandigarh.gov.in/deptcpc.htm>, <http://chandigarhenvi.gov.in>

1. SOURCES OF NOISE POLLUTION IN CHANDIGARH

The sources of noise pollution in Chandigarh may be broadly divided into two classes:

- a. Outdoor Sources of Noise Pollution
- b. Indoor Sources of Noise Pollution

Fig 1. Sources of Noise Pollution in Chandigarh



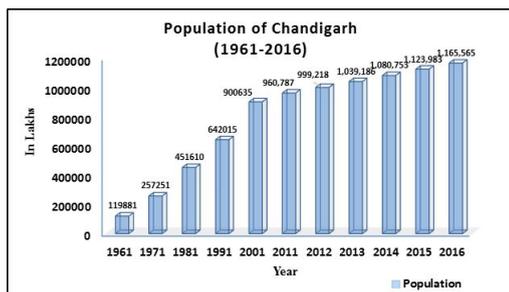
2. MAJOR REASONS BEHIND AN INCREASE IN NOISE POLLUTION:

The study area is one of the fastest growing cities in the country due to rapid expansion of industries, increase in vehicular transport, increased trade opportunities coupled with high population growth rate. However, these activities have resulted in unsustainable economic development of the city and therefore have led to an increase in urban environmental problem like noise pollution.

In the following paragraph, the main possible reasons for noise pollution in the study area has been discussed.

1. Population Expansion:

Table 1.



Data Source: Census and Statistical Abstract of Chandigarh

Rapid increase in population of Chandigarh is one of the major possible reason for noise pollution. As Chandigarh was planned for a finite population of half-a-million. However, now it has grown beyond its planned capacity.

In the last decades from 1961 to 2016, the population has rapidly increased as shown in **Table 1**. For instance, between 1961 and 1971, the population increased by 144.59 percent, one of the highest for urban areas in India.

Similarly, in 1981 it grew by another 75.55 percent, followed by 42.16 percent in 1991 and by 40.33 percent in 2001 and there is an increasing trend of population till 2016. It is estimated that the population of the city is increasing at a very rapid rate with an average growth rate of 4% every year.

In addition, migration of people from Punjab and other states of India to settle in this mega city has witnessed a rapid growth in its population density.

There are various factors which have played a significant role in an increase in population such as:

- Possibility to become Hi-tech city by setting up of large number of foreign/Indian based I.T. companies.
- High profile education and specialized medical facilities are also attracting people to come here from other parts of India and overseas.
- Migration from the states of Punjab, Haryana, Bihar and U.P. has also contributed to a large extent in an increase the population in city.
- It's obvious that with an increase in population there is also an increase in human activities which are responsible for present noise pollution in the city.

2. Increase in Traffic:

Another significant reason for a continuous increase in noise pollution in the city beautiful is traffic. The city of Chandigarh not only enjoys the status of being the power of three governments: as a Union Territory and the Capital of the states of Punjab & Haryana, but also it occupies a special status in terms of having the maximum number of vehicles per person in the country. Therefore, during the recent year's vehicular traffic has become the major source of noise in Chandigarh. It is found that generally the noise coming from engines, horns, and breaks of vehicles especially in the congested areas contribute to high level of noise.

As per the report from Registration and Licensing Authority, Chandigarh, a high per capita income and high standard of living contributes more than 50 new vehicles per day in the city.

Image 1. Chandigarh Traffic

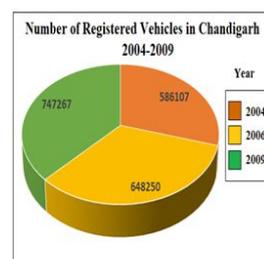


Another data collected by Ministry of Road Transport and Highways (New Delhi) has shown an increased in vehicular population of Chandigarh (transport and non-transport) i.e., Trucks and Lorries, Light Motor Vehicle (Goods), Buses, Taxis, Light Motor Vehicle (Passengers Auto) are falling under Transport Category and Two Wheelers, Cars, Jeeps, Omni Buses, Tractors, Trailers & Others are falling under Non-Transport Category as shown in **Fig 2**.

In the year 2005, there were 162263 vehicles in Chandigarh whereas in year 2014 the number of four wheelers reached up to 335424.

Even the number of two wheelers has increased between 2005 and 2014 i.e. from 431063 to 6333181.

Fig 2.



Data Source: data.gov.in

Thus, increasing vehicular traffic in the study area is another major reason for increasing noise pollution. There are number of factors that may lead to an increase in traffic of the city and ultimately to noise pollution.

- Location of many central and state government offices in the city has resulted in a gradual increase in the number of vehicles.
- The satellite towns of Panchkula and Mohali also contribute in an increase in vehicular traffic.
- The location of Chandigarh itself contribute to heavy traffic flows in the city from the neighbouring areas of Jammu & Kashmir, Punjab, Himachal Pradesh, Haryana and Delhi.
- The fleet of Chandigarh Transport Undertaking and State Transport Buses themselves are very noisy.

3. Industrial Growth:

Though vehicles are the major contributor to noise pollution in Chandigarh, however industries are also responsible for the same. As the Industrial area is separated by a buffer zone (green belt) from the residential areas. Hence, industrial noise is restricted to this zone itself. However, increasing number of flour & grinding mills and engineering industry and construction activity are a major contributor to industrial noise in the city.

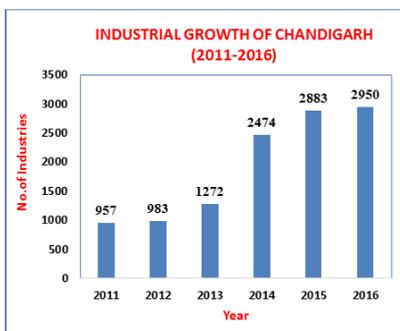
Image 2. Chandigarh Industries



For the last few decades noise pollution has shown a gradual increase in this zone. Growing Engineering industry may be the major contributor to industrial noise in the city. Now shopping malls have come up in industrial area of Chandigarh which is attracting hundreds of vehicles.

This additional sound adds up in noise level of industrial area of Chandigarh. Increase in industries is evident from the latest data available between 2011 and 2016. It is observed that the total number of industries (Small Scale, Medium Scale, Large Scale) has increased from 2011 to 2016 i.e., from 957 to 2950 as shown in Table 2. During this period, there was an average increase of 68 large scale industries, 63 medium scale industries and 1789 small scale industries. Hence, there was an overall increase of 1920 industries.

Table 2.



Data Source: http://chandigarhenvi.gov.in/

Therefore, it is evident that there is an industrial growth in the city and many industries like engineering industries are responsible for increasing noise in and around the Industrial Area.

4. Festivals:

As India is known for its festivals and so is Chandigarh. It has been found that festivals such as Diwali, Rose festival, Rock Festival etc., are also one of the significant cause of noise pollution in the city. Fire crackers are generally exploded during celebrations and festive occasions. Such festivals last for

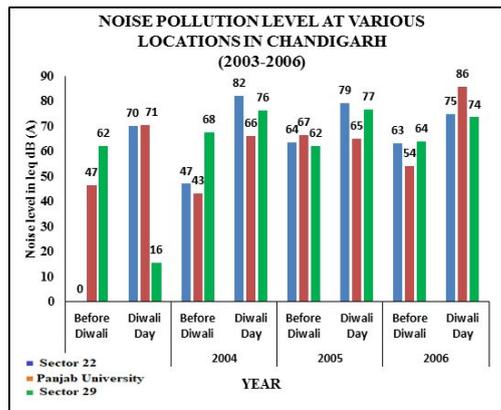
Image 3. Chandigarh Festivals



Number of studies has been done in various locations of Chandigarh in order to assess the noise level before and during Diwali. For example, according to Chandigarh Pollution Control Committee report, there is an increase in noise level during and before Diwali between (2003 and 2006) at Sector 22, Panjab University and Sector 29. The noise level is more than the permissible level in these areas especially during the Diwali days. Even before Diwali the noise level has shown an increase in these locations (Table 3).

Another recent study was conducted by the Central Pollution Control Board (A Govt. of India Organization) Ministry of Environment, Forest & Climate Change) in 2014 at three locations of Chandigarh i.e., Sector 17 (Commercial Area), Sector 22 (Residential Area) and Sector 29 (Silence Zone) for both normal days and festivals days. The study has shown exceeded sound levels during the festivals as compared to the normal days as shown in Table 4.

Table 3.



Data Source: CPCC Report Chandigarh

Table 4.

Location	Zone	Normal Day	Festival Day
Sector 17	Commercial	65	73
Sector 22	Residential	64	78
Sector 29	Silence	64	66

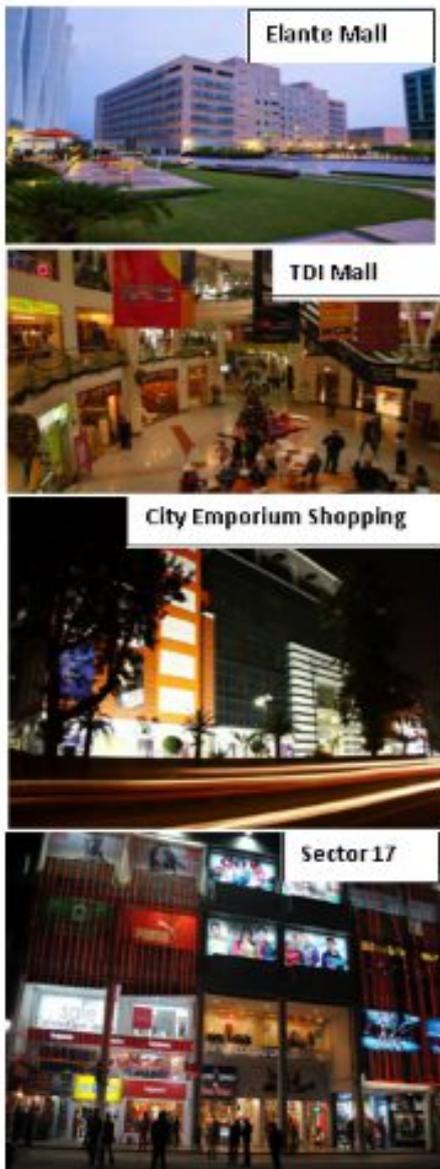
Data Source: Central Pollution Control Board, India

Hence, it is evident that festivals too have played a significant role in an increase in noise pollution in the city.

5. Increase in Commercial Activities:

Today Chandigarh is also known to have various shopping complexes. With an expansion in shopping centers and shopping malls, noise pollution has also increased. Although all the sectors in Chandigarh has its own shopping complex, however with opening of new shopping malls there is more possibility of an increase in noise pollution in future. A very good example is **Elante Mall** of Chandigarh, which is the second largest mall in India. It was opened on April 2013 and is located in **Industrial Area – Phase I**. Similarly, TDI Mall and shopping Center located in sector 17. City Emporium Shopping Mall located in again located in **Industrial Area – Phase I** and has been in operation since 2013. Besides this noise, majority of shopkeepers use high volume musical instruments contributing to high noise.

Image 4. Shopping Malls



other sectors of the city contribute towards noise pollution on specific days.

6. Community Activities:

Like commercial activities, unwanted noise from the community activities also pollutes the environment of the city. Loud speakers at religious or social gathering, high volumes of TV/Radios, functions, musical shows or any such promotional events occasionally add up sounds to environment of the city.

The increasing population density and use of domestic appliances like, ACs, coolers, high volume televisions and stereos, etc. constitute an important source of noise pollution. In addition, the city regularly hosts several fairs (like festivals of gardens, chrysanthemum show, trade fairs, musical nights, etc.) which contribute to the ambient noise level on specific days. For instance, Saturday Carnival at Sector 17 is regular feature that contribute to noise pollution to a greater extent. Even family functions and weddings also contribute towards community noise.

Fig.4. Community Activities



3. CONCLUSION:

The study indicates a definite increase in the noise pollution in the city of Chandigarh. It is an established fact that noise is produced by almost every activity that human being does. Chandigarh, which was planned for a population of half a million. However, there is a continuous increase in population of Chandigarh for the last twenty years and therefore it has now grown beyond its capacity. Beside the growing population there is also indication of an expansion in vehicular traffic on the roads of Chandigarh which is one of the most prominent reason for an increase in noise pollution. With increasing population in the city, the demand for transport and private vehicles have also increased. The use of horns on the roads specifically in the congested areas,

In addition, the weekly vegetable markets (rehri market/apni mandhi) in

residential areas and commercial areas have contributed a lot in an increase in noise pollution. Not only the number of four wheelers are on a rise but the two-wheeler vehicles have also shown an increase. The city is although well planned but it has limited road space and with the increasing vehicles per household, traffic management is becoming next to impossible. On the other hand, various festivals and community programs also play a significant role in noise pollution. Whether it is Diwali, Holy, Baisakhi, Rose festival, Rock festival or any other function, bursting of crackers, loud music, loud speakers are common activities. Similarly, due to an increase in shopping malls in the city, people from in and around Chandigarh come to these places and help in increasing sound level. Although traffic is one of the significant sources of noise pollution in the city, however, increasing number of mills and manufacturing industries have added noise in the city due to continuous noise of machines and construction activities.

In nutshell, we can say that all the above said reasons are collectively responsible for noise pollution in the city. Unfortunately, the attitude of getting use of such noises also leads us to accept excessive and damaging amounts of noise.

4. RECOMMENDATIONS:

There are two fundamental ways in which noise level can be controlled to some extent.

1) Reduction of noise at the source itself:

- There is significant effect of high speed and traffic volume on the overall sound. Therefore, there are more chances of increase in sound level by doubling the speed as well as the number of vehicles per hour. Hence, high speed should be discouraged on roads.
- There must be ban on unnecessary blowing of horns on the road to encourage smooth flow of traffic. Hence proper traffic and road planning are essential to control the noise.
- Noisy vehicular machines should be replaced by quieter machines or silencers can be used to control automobile noise.
- There should be a lower speed limits for roads passing through residential and silence zones.
- Alternative routes or timings should be provided for the truck traffic which may effectively control noise.
- In industrial zone, absorptive material can be used to control the interior noise such as acoustic fiber glass, acoustic foam, acoustic partitions, Eco-absorber acoustic cotton or hanging baffles. In this way noise pollution can be controlled at the source.
- There should be proper installation of various machinery as sometimes improper installation is the reason for bearing noise pollution.
- Noise from vibrating machines can also be reduced by putting a damping material like rubber or plastic beneath the machine.

2) Blockage of noise path:

This technique can be used by constructing temporary or permanent barriers such as:

- Along the hospitals, educational institutions and residential areas more trees must be planted in order to help in noise reduction
- To reduce the indoor noise highly absorptive interior finish material should be used for the walls, ceiling, floors, doors and windows. As sound can easily travel through the cracks that get left between the door, windows and the wall. Therefore, for reducing noise, this space should be packed with sound absorbing material.
- Indoor noise can also be reduced by using head phone to watch TV or to listening Music.
- Honking near the residential areas should be banned by the government.
- There should be restrictions on open air dance parties. It is true that every person has the right to enjoy their life but not the cost of the others peace.
- Loud music while driving in public or private vehicles must be prohibited by the government and there should be penalty for those not following the rules.

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