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The Impact of Noise Pollution on Mental Health: Analyzing the Legal Frameworks for Recognizing Noise Pollution as a Public Health Issue and the Potential Legal Remedies for Addressing it

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ABSTRACT

The problem of noise pollution has emerged as a vital challenge in this modern era. Noise pollutions are unwanted sound waves that are not bearable to the ears. The public health of the modern generation has been affected adversely by noise pollution. India is one among them where noise pollution has reached an alarming stage; unfortunately, the awareness of the negative impact on mental health is neglected. Due to constant exposure to noise pollution, people develop several intricacies, such as hearing loss, anxiety, sleep disorder, depression, etc. It is critical because it not just affect the health of human but also reduces healthy thought and efficiency at work and hampers fundamental right ensured by the constitution of India under Article 21, Right to Life. There are several sources of noise pollution, for example, traffic, construction, commercial/industrial, etc. Further, there is noise pollution from loudspeakers getting more prominent in contemporary society, primarily in residential areas. There is no specific statute or Act that has been enacted to address it and recognize noise pollution as an issue of public health. However, it is regulated as ambient air quality standards in respect of noise pollution, several guidelines issued by the Supreme Court of India, and Noise Pollution (Regulation and Control) Rule.2000.

Keywords: Noise Pollution, Mental Health, Right to Healthy Environment, Right to Live in Peace.

I. INTRODUCTION

(A) Background and context of the problem

Noise pollution has become an increasingly pervasive problem in modern society. Industrialization, globalization, and technological advancement have empowered human life to

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a great extent. However, it also has infused some disadvantageous effects like climate change, environmental damage or adverse effects on biodiversity, which mean an ultimate threat to humans and lives on earth.

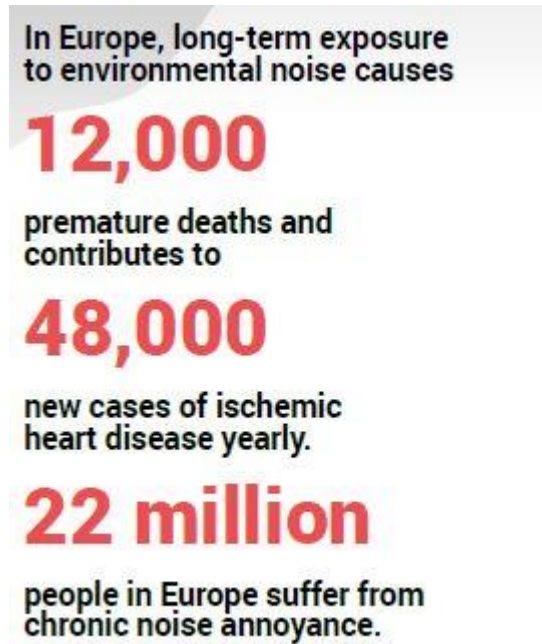


Fig 1 Data Source: UNEP Frontiers Report 2022

Article 21 of the Indian Constitution ensures the Right to life. Supreme Court of India in its interpretation in the case of *Mehta Vs. Union of India*², observed that the right to a pollution-free environment is a fundamental right and comes under the ambit of the Right to Life. Noise Pollution in India (primarily in urban) people affecting adversely with physical and mental health issues; therefore, their quality of life diminishes. Marginalized communities are the most vulnerable to noise pollution because they are in direct exposure to many noise pollution sources. Not just humans but it also affects the biodiversity of this planet³.

World Health Organization (WHO) has raised the concern of noise pollution multiple times. As per WHO environmental noise is one of the most significant public health hazards of the modern world, affecting more than one in five Europeans and leading to a wide range of health problems, including sleep disturbance, cardiovascular disease, cognitive impairment, and mental health issues. Further, a recent Frontier Report 2022 of UNEP states that in Europe 12000 premature deaths and 48000 ischemic heart disease yearly and over 22 million people suffer from chronic noise annoyance. Inger Andersen, who is an Executive Director of, the

² *Mehta Vs. Union of India*, AIR 1987 SC 1086.

³ Noise Pollution, <https://education.nationalgeographic.org/resource/noise-pollution> (last visited Apr 12, 2023).

United Nations Environment Programme said that - “As cities grow, noise pollution is identified as a top environmental risk. High levels of noise impair human health and well-being – by disrupting sleep or drowning out the beneficial and positive acoustic communications of many animal species that live in these areas. But solutions are at hand, from electrified transport to green spaces – which must all be included in city planning with a view to reducing noise pollution.”

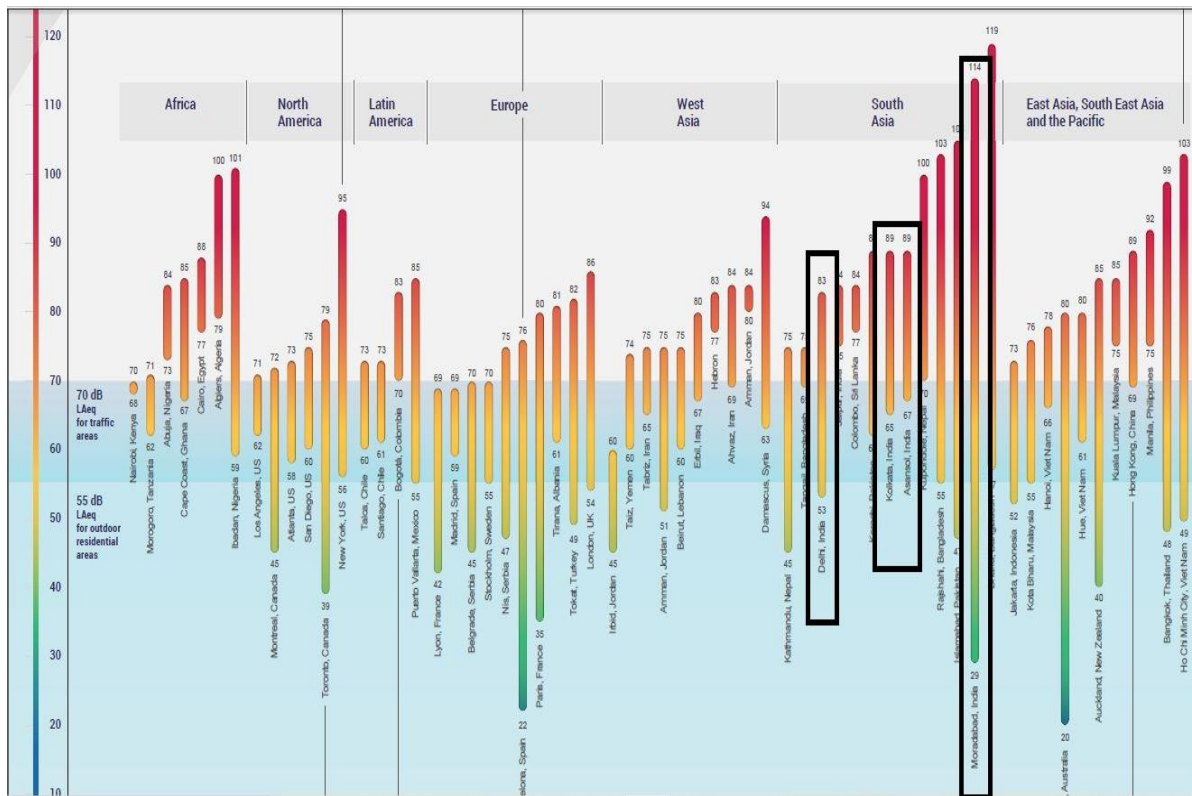


Fig 2 Data chart Source: Noisiest cities in world; UNEP Frontiers Report 2022

In a recent report of UNEP 2022⁴ Indian cities such as **Delhi, Jaipur, Kolkata, Asansol and Moradabad** are identified as the noisiest cities in the world. **Moradabad (Uttar Pradesh)** the loudest city reported as having noise a decibel (dB) ranging from 29 to 114. Which also makes Moradabad the **second-noisiest city on the list.**

In India despite growing evidence on the adverse effects of noise pollution on mental health, it has not received adequate attention from the government or policymakers. The current legal frameworks for noise pollution do not tend to focus on the impact on physical health, such as hearing loss, and overlook its mental health consequences. This gap in legal protection raises important questions about the adequacy of legal remedies for addressing the harmful impact of

⁴ Frontiers_2022CH1.pdf, https://wedocs.unep.org/bitstream/handle/20.500.11822/38060/Frontiers_2022CH1.pdf (last visited Apr 12, 2023).

noise pollution on mental health.

Therefore, it is important to examine the statute or rules and available legal framework for recognizing noise pollution as a public health issue and enumerate the potential legal remedies for addressing noise pollution and its impact on mental health. Hence, this analysis may give an understanding of noise pollution and its impact on mental health and the available legal framework and its challenges and identify the best practices and policy recommendations to address it.

II. THE IMPACT OF NOISE POLLUTION ON MENTAL HEALTH

Noise pollution referred to the terms of unwanted and excessive sound which affects human health adversely. It is a simple physics that when a vibration or air molecules are carried from a sound source to the ear it makes us hear any sound. It can be defined in amplitude and frequency also the loudness and pitch of the wave respectively. The loudness of any sound is called pressure level (SPL) measured in decibels or dB. Sounds between 120 dB to 140dB cause pain and people may have permanent hearing loss when they are in constant exposure to 105 dB or more.⁵

As Per World Health Organization (WHO) guidelines established a health-protective recommendation for road traffic noise levels of 53 dB. Furthermore, the below chart depicts the different values of dB on different occasions in the environment. The hearing threshold is from 0dB when there is complete silence, and for humans, 10 dB is barely audible. 60 dB is when a normal conversation takes place, and at the threshold of 70 dB, it is considered as moderately loud for the ear. Subsequently, at 120 dB it is considered to threshold of discomfort which means humans or species suffer painful experiences at this noise level. And at 140 dB and more, it is beyond the threshold limit of pain. Hence, 60 dB and below is a healthy environment for human health.

There are many sources of noise pollution which are constant such as traffic, and industrial/commercial activities, also new fashion of loudspeaker has emerged in the residential area where unwanted events and announcements aired on loudspeakers, which are causing the prime reason for noise in residential areas, it is the key concern and become critical due to residential area are the place where people intend to come to relax, children, old age, and sometimes people on medications lives in those areas. Hence, noise pollution makes them suffer to a great extent.

⁵ Noise pollution | Definition, Examples, Effects, Control, & Facts | Britannica, (2023), <https://www.britannica.com/science/noise-pollution> (last visited Apr 12, 2023).

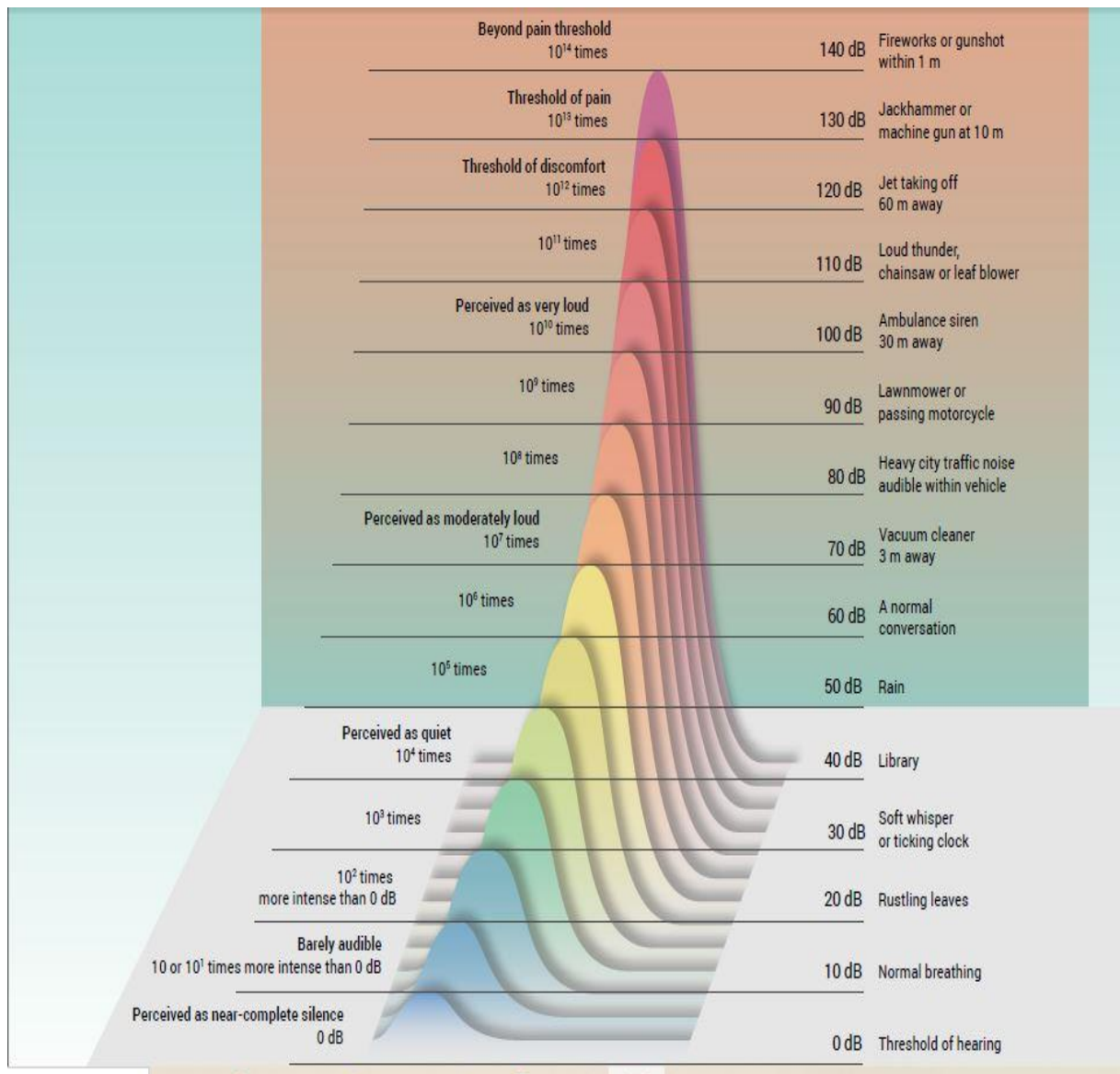


Fig 3 Data chart Source: Threshold level of loudness; UNEP Frontiers Report 2022

A report submitted by Delhi police in the National Green Tribunal (NGT) that the majority of noise guideline violations around 70% of cases occurred due to loudspeakers and public announcement systems not adhering to the prescribed noise standards⁶

Furthermore, Former Central Health Minister Harsh Vardhan, who is himself an ENT surgeon addressed the WHO launch virtually and raised this concern, he said that “leisure, work-related and excessive residential noise are risk factors to hearing loss. India is committed to putting in place preventive strategies to limit an impending mountain of hearing loss”.⁷

⁶ “70% noise pollution in Delhi sparked by loudspeakers, public announcement systems,” THE TIMES OF INDIA, Sep. 5, 2021, <https://timesofindia.indiatimes.com/city/delhi/70-noise-pollution-sparked-by-loudspeakers-public-announcement-systems-submit-police/articleshow/85935908.cms> (last visited Apr 12, 2023).

⁷ International Noise Awareness Day: Not Just Deafness, Noise Pollution Can Cause Stress, Mental Illnesses, And Even Cancer - Forbes India Blogs, FORBES INDIA, <https://www.forbesindia.com/blog/environment-and->

In a survey conducted by Rakuten Insight in India in May 2022, 28 per cent of respondents in the 16 to 24 age group stated that they experienced the same level of stress and anxiety as before. In the same survey, the age group between 24 to 34 which constitute around (50 per cent of respondents) expressed that they were feeling more stressed or anxious during the past 12 months. The following data chart depicts how People feeling more stressed or anxious during the last 12 months in India as of May 2022, by age.⁸

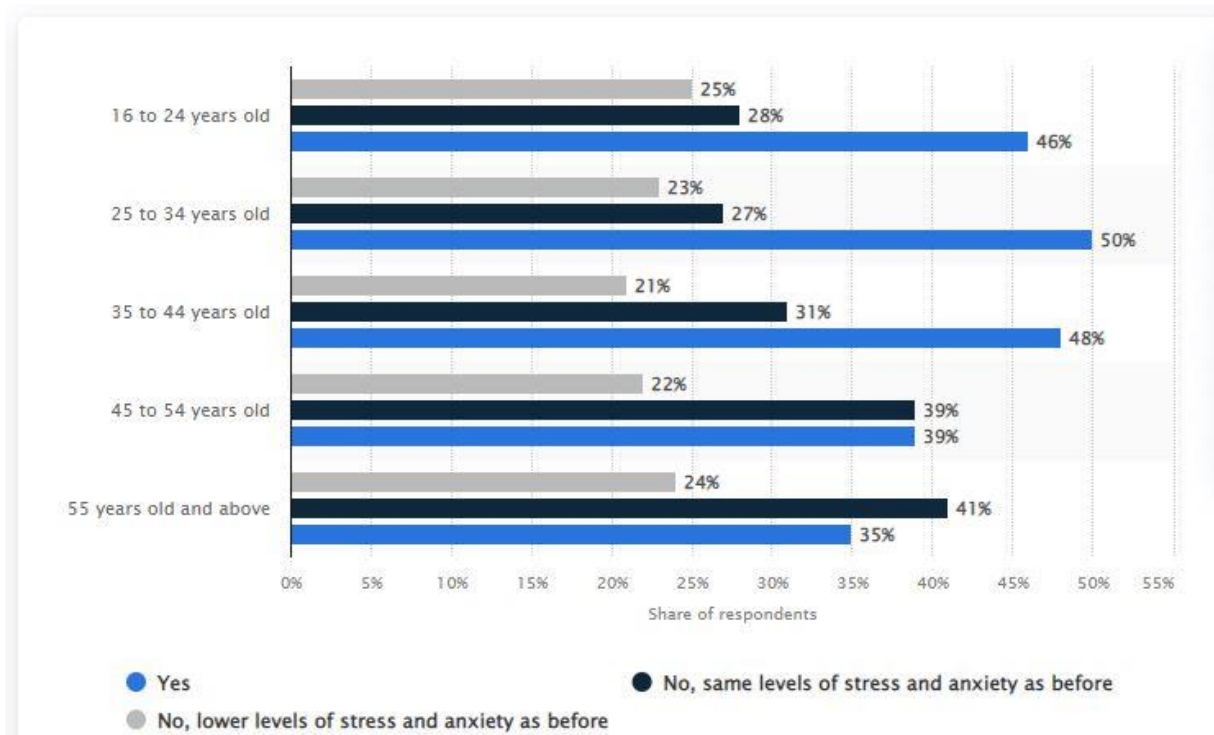


Fig 4 Graph Data Source: Statista

As per the above survey, the age group from 16 to 44 has expressed that their anxiety level was increased as compared to the previous year, these age groups are collectively more stressed and suffering from anxiety.

In another survey conducted by Earth5R in January 2023, in which 45 volunteers from 15 Indian cities investigated noise pollution in silent and residential areas. It was found that the noise levels were nearly 50 per cent higher than the permissible limit of 50 dB, The survey termed the outcome as Noise Pollution in India as “A Silent Killer”.⁹

As per **UN Sustainable Development Solutions Network released World Happiness Index**

[sustainability/international-noise-awareness-day-not-just-deafness-noise-pollution-can-cause-stress-mental-illnesses-and-even-cancer/](#) (last visited Apr 12, 2023).

⁸ India: people feeling more stressed by age 2022, STATISTA, <https://www.statista.com/statistics/1320246/india-people-feeling-more-stressed-by-age/> (last visited Apr 12, 2023).

⁹ Noise Pollution in India- A Silent Killer, <https://earth5r.org/noise-pollution-in-india-a-silent-killer/> (last visited Apr 12, 2023).

2023 India at 126th in the world¹⁰¹¹ upon looking at this report through the lens of noise pollution impact, it can be seen that noise pollution could be one element of such unhappiness.

There has been a study on noise pollution that evidently found that it affects adversely the lives of people and has direct links between noise and health. People with constant exposure to noise develop certain noise-related problems such as stress, loss of productivity, hearing loss, high blood pressure, speech interference, and sleep disruption such as difficulty falling asleep, maintaining sleep, etc. Hearing loss or Noise Induced Hearing Loss (NIHL) is the most common effect that has been observed. Constant exposure to Noise Pollution may lead to more stringent effects on human health.¹²

The human brain monitors sound for any possible sign of danger consistently even during sleep. hence, any loud noise or frequent unwanted sounds can trigger anxiety or stress which may lead to several other adverse psychological effects. As discussed above this can cause stress, annoyance, and irritability which can be the reason for anxiety and depression. Which may further cause sleep disturbances. Constant exposure to noise pollution may cause an increase in chronic mental health disorder, which includes mood disorders, anxiety disorders and psychotic disorders.¹³

Children are at great risk of noise pollution, because, at very early stage of life when they need special care and a healthy environment, it makes it very challenging for them to develop. children may experience and develop several difficulties such as communication and speech development, cognitive performance like child's behavior, their ability to form relationships, confidence, and concentration and they may also develop high blood pressure due to chronic exposure to sound.¹⁴

the repeated or constant noise exposure without adequate time for recovery, develop Noise-Induced Permanent Threshold or (NIPTS). The intensity and magnitude of noise-induced hearing loss depend on the habitual exposure of the ear to noise level, the length of time and the susceptibility of the person. Ear generally recover to a previous pre-exposure threshold with adequate time before the next noise exposure, however in absence of such recovery time between exposure can lead to NIPTS.¹⁵

¹⁰ Home, (2023), <https://worldhappiness.report/> (last visited Apr 26, 2023).

¹¹ WHR+23.pdf, <https://happiness-report.s3.amazonaws.com/2023/WHR+23.pdf> (last visited Apr 26, 2023).

¹² OAR US EPA, *Clean Air Act Title IV - Noise Pollution*, (2015), <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution> (last visited Apr 12, 2023).

¹³ Noise pollution | Definition, Examples, Effects, Control, & Facts | Britannica, *supra* note 4.

¹⁴ Noise pollution health effects: Impact on mental and physical health, (2020), <https://www.medicalnewstoday.com/articles/noise-pollution-health-effects> (last visited Apr 12, 2023).

¹⁵ NPC Library: Noise Effects Handbook, <https://www.nonoise.org/library/handbook/handbook.htm> (last visited

Thus, Noise Pollution causes many adverse impacts on mental health which lead to several negative and psychological effects on individuals. It is important and demand of the situation to recognize noise pollution as a public health issue and develop a concrete legal framework to address its impact on mental health.

III. LEGAL FRAMEWORKS FOR RECOGNIZING NOISE POLLUTION AS A PUBLIC HEALTH ISSUE

(A) International and Other Countries Legal Frameworks

World Health Organization (WHO) and European Union (EU) have enumerated guidelines and standards for noise pollution. There have been international treaties such as the Convention on Biological Diversity and the Convention on Environmental Impact Assessment in a Transboundary Context, recognize noise pollution as an environmental issue and recommend measures to mitigate its negative impacts. Several other countries have recognized noise pollution as a public health issue and enacted policies to mitigate the effect of noise pollution.

In order to recognize noise pollution as a threat to human health many countries have enacted strict policies and legal frameworks to address it for example in the United States Environmental and industrial noise is regulated under the Occupational Safety and Health Act of 1970 and the Noise Control Act 1972 and Quiet Communities Act of 1978.¹⁶

EPA or Environmental Protection Agency has been established which investigates and study noise and its effect and evaluate the effectiveness of existing regulations for protecting public health and welfare.¹⁷

(B) Indian Legal Frameworks

Supreme Court of India has played a vital role in observing this issue as a prime issue for the environment as well as human health through several judgments. In the case of Judgment dated July 18, 2005, **Noise Pollution (V), in Re., (2005)**¹⁸, has held that freedom from noise pollution is a part of the right to life under Article 21 of the Constitution. Noise interferes with the fundamental right of the citizens to live in peace and to protect themselves against the forced audience.

In the case of **Sayed Maqsood Ali Vs State of M.P.**¹⁹ the court has observed that every citizen

Apr 12, 2023).

¹⁶ Noise pollution | Definition, Examples, Effects, Control, & Facts | Britannica, *supra* note 4.

¹⁷ US EPA, *supra* note 11.

¹⁸ Noise Pollution (V), in Re., (2005) 5 SCC 733.

¹⁹ Sayeed Maqsood Ali Vs State of M.P, AIR 2001 M.P. 220.

is entitled under Article 21 of the Constitution to live in a decent Environment and has right to sleep peacefully, subsequently in the landmark judgment of **Ramlila Maidan Incident Vs Home Secretary, Union of India**,²⁰ the Supreme Court has observed if any person deprived of sleep, the effect thereof is treated to be torturous.

Recognizing noise pollution as a threat to human health supreme court of India in the case of **Church of God (full gospel) in India Vs. K.K.R. majestic colony welfare association and others**²¹ has enumerated several guidelines on noise pollution such as *“The problem of noise pollution has become more serious with the increasing trend towards industrialization, urbanization, and modernization and is having many evil effects including danger to health. And this affects animals alike. The Supreme Court further enumerated several guidelines to address this concern such as:*

The table below shows Ambien Air Quality Standards in Respect of Noise

| <i>Area Code</i> | <i>Category of Area</i> | <i>Night Time Limits in dB</i> | <i>Day Time Limits in dB</i> |
|------------------|-------------------------|--------------------------------|------------------------------|
| <i>A</i> | <i>Industrial Area</i> | <i>70</i> | <i>75</i> |
| <i>B</i> | <i>Commercial Area</i> | <i>55</i> | <i>45</i> |
| <i>C</i> | <i>Residential Area</i> | <i>40</i> | <i>55</i> |
| <i>D</i> | <i>Silence Zone</i> | <i>40</i> | <i>50</i> |

- *Daytime shall mean from 6.00 am to 10.00 pm.*
- *Nighttime shall mean from 10.00 pm to 6.00 am.*
- *A silence zone is defined as an area comprising not less than 100 meters around hospitals, educational institutions, and courts. The silence zones are zones that are declared as such by the competent authority.*
- *Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.*

The competent authority. Restrictions on the use of loudspeakers/public address system.

- *A loudspeaker or a public address system shall not be used except after obtaining written permission from the authority.*

²⁰ Ramlila Maidan Incident Vs Home Secretary, Union of India, (2012) 5 SCC 1.

²¹ Church of God (full gospel) in India Vs. K.K.R. majestic colony welfare association and others AIR 2000 SC 2773.

- *A loudspeaker or a public address system shall not be used at night (between 10.00 p.m. to 6.00 a.m. except in closed premises for communication within, e.g. auditoria, conference rooms, community halls, and banquet halls.”*

Noise pollution is recognized by the Environment Protection Act 1986 as ambient air quality standards in respect of noise and therefore, no specific legislation enforced recognizes noise pollution as a threat to public health.

As per section 2 (a) and 2 (b) of the Environment Protection Act 1986 defines “environment” and “Environmental Pollutant”, these definition does not mention noise pollution²². However, section 6 (2) (b) of the Environment Protection Act 1986 mention noise pollution as part of the maximum allowable limits of concentration of various environmental pollutants for different areas.²³

The Central Government has enacted the “Noise Pollution (Regulation and Control) Rules, 2000” by exercising the power conferred under clause (ii) of sub-section (2) of section 3, sub-section (1) and clause (b) of sub-section (2) of section 6 and section 25 of the Environment (Protection) Act, 1986, read with rule 5 of the Environment (Protection) Rules, 1986, the Central Government made the following rules

This Rule laid down provisions on ambient air quality standards in respect of noise threshold for different areas or zones. assume responsibilities for enforcement of noise pollution measures, and consequences of violation of rules.²⁴

- For the purpose of implementation of this Rule and the standard laid under this rule, the State Government shall categorize the area into industrial, commercial residential/silence areas or zones.
- The state government shall make sure that noise levels do not exceed the ambient air quality standards as specified under the rules and shall take all measures for any abatement of noise.
- Has made provision that all agencies, departments or development authorities shall take every aspect of noise pollution as a parameter of quality of life into consideration and

²² Environment Protection Act 1986, Section 2 (a) of Environment Protection Act 1986 - “environment” includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property. Section 2 (b) Environment Protection Act 1986 – “environmental pollutant” means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be, injurious to environment.

²³ Environment Protection Act, 1986 Section 6 (2) (b) Environment Protection Act 1986 - the maximum allowable limits of concentration of various environmental pollutants (including noise) for different areas.

²⁴ CPCB | Central Pollution Control Board, <https://cpcb.nic.in/noise-pollution/> (last visited Apr 22, 2023).

effort to maintain the ambient air quality standards before and while carrying out any planning and development works.

- This rule has declared a silence area /zone up to 100 meters in the radius of hospitals, educational institutions and courts.

Responsibility for the enforcement of noise pollution control measures

- In case of any violation of the level of noise (as specified in the schedule) and exceeding the ambient air quality standards, then the authority as specified for the purpose of this rule shall be responsible for enforcement of noise pollution control measures.

Consequences of any violation in the silence zone /area

The rule laid down the provision for penalty for any offence/ violate the provision of this rule in any silence zone/area:

Whoever, plays any music or uses any sound amplifiers, beats a drum or blows a horn either musical or pressure, trumpet or beats or sounds any instrument, or exhibits any mimetic, musical or any other performances to attract crowds and the noise level exceeds the ambient noise standards by 10dB or more, then the authority can take action on violator on a complaint.

Additionally, Section 133 of the Criminal Procedure Code²⁵ laid down the provision of Conditional order for the removal of nuisance, in which executive magistrates at their discretion may remove any such causing noise pollution which creates a public nuisance.

Thus, in India, the present legal frameworks for recognizing noise pollution are little complex and not much efficient. Despite having rules and guidelines, situations are getting worsen. There is no specific statute enacted by the government to recognize noise pollution as a public health issue. Many countries have recognized this issue as a threat to human health and developed legal frameworks to address its negative impacts. In India, although the government is concerned about the issue, however, more concrete steps are yet to be taken to address this problem efficiently.

IV. POTENTIAL LEGAL REMEDIES FOR ADDRESSING NOISE POLLUTION ON MENTAL HEALTH

taking into consideration all aspects of noise pollution as a parameter of quality of life to avoid noise menace and to achieve the objective of maintaining the ambient air quality standards in respect of noise There are various legal remedies that can be used to address the impact of noise

²⁵ Section 133 of The Code Of Criminal Procedure, 1973 - Conditional order for removal of nuisance.

pollution on mental health, followings are the few recommendations which needed to be taken care:

Specific Legislation for Noise Pollution: Governments can enact specific Acts/statutes recognizing noise pollution concerning for public health and make provision for noise regulations that establish permissible noise levels and regulate the use of noisy equipment in residential, commercial, industrial and public areas. Providing appropriate authority to penalize or to take action for violations and mechanisms for enforcement.

Real-time noise data monitoring system: a mechanism to be set up under the scheme to monitor the noise level on a real-time basis and based on the data received adequate response initiated by the appropriate authority to mitigate the noise pollution level.

Awareness of noise pollution and its impact on mental health/health: awareness campaign ought to be initiated to make aware every individual of the effect of noise pollution and its negative impact on mental and physical health.

Noise Barriers and Insulation: Governments and private entities can install noise barriers and insulation to reduce the impact of noise pollution on nearby residents, especially near highways, airports, railways or noisy industrial establishments.

Noise mitigation through technology advancement: Governments and private entities can implement noise mitigation measures, such as the use of low-noise equipment, the development of quieter transportation systems, and the promotion of quiet zones in public areas.

Environmental Impact Assessments (EIAs): EIAs can be required for new infrastructure projects, such as highways or airports, which may generate significant noise pollution. EIAs can be used to identify potential sources of noise pollution and recommend measures to mitigate negative impacts.

V. CONCLUSION

Noise pollution is a serious public health issue which can affect public health adversely. Noise pollution has a negative impact on mental health, it affects not just humans but also other species and animals. Constant or/and high intensity exposure may cause permanent hearing loss, anxiety, depression, blood pressure and many other psychological problems in humans. In India supreme court has observed this concern and issued guidelines to mitigate noise pollution. It is regulated by the noise pollution (prevention and Control) Rule 2000, which is enacted by the power enumerated in the Environment Protection Act, of 1986. However, There is no specific law or Act has been enacted to recognize noise pollution as a public health issue. Understanding

the gravity of this issue there is a need for a specific Act to be enacted to address this issue of noise pollution and its impact on public health. There is a need for real-time monitoring of noise levels at different zone/areas. And appropriate authority designates to take action based on the complaint received by the individual or data received by the monitoring system. Other Potential legal remedies such as noise barriers and insulation, noise mitigation measures through technology advancement, environmental impact assessments, and public health policies are required to be considered. As the population is increasing so urbanization is also expanding, therefore the issue of noise pollution going to be more pressing in present and future. The government, civil societies and individuals need to work together to develop and implement effective legal frameworks to address noise pollution and its impact on mental health. This may make this environment a healthier and more livable place for all.
