



# Vidyasagar University



**MUGBERIA GANGADHAR  
MAHAVIDYALAYA  
SOUND POLLUTION &  
NOISE POLLUTION**

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**COURSE - B. SC PHYSICS  
HONOURS 2nd SEMESTER  
REGISTRATION NO -**

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**Date :** 29/8/2023

**2nd Sem physics (H)**



# Mugberia Gangadhar Mahavidyalaya

Bhupatinagar :: Purba Medinipur

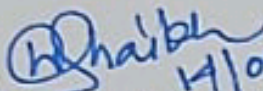
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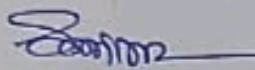
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## Certificate of Completion

This is to certify that Atarinya Maiti Roll No 1121129 No 220190 a UG student of SEM-II, Department of <sup>Physics</sup> ~~Zoology~~ has successfully completed a dissertation/project entitled Impact of Aircraft of Noise Pollution of large cities for the paper AECC 2 in the year 2023.

  
Signature of HOD 14/09/23

  
Signature of Principal 14-09-23

## Introduction :-

Aircraft noise pollution is a significant environmental concern, especially for residents living near airports or under busy flight paths in large cities. With air travel becoming more prevalent, the number of flights and the noise they generate have increased substantially. This has led to various adverse effects on the physical and mental well-being of people living in affected areas.

Understanding the impact of aircraft noise pollution on residents is crucial for developing effective mitigation strategies and safeguarding public health.

□ We know that a sound is a form of energy. Sometimes the sound can be soothing to listen to and, at times, loud to hear. Sound can travel in the air and is produced by the vibration of objects. Regular exposure to a higher sound level that impacts humans and other living organism is known as sound pollution. This article will help us understand what noise pollution is, the types of noise and pollution, and its causes and examples. The intensity of sound is measured in decibels (dB). The faintest sound that the human ear can hear is 1 Db.



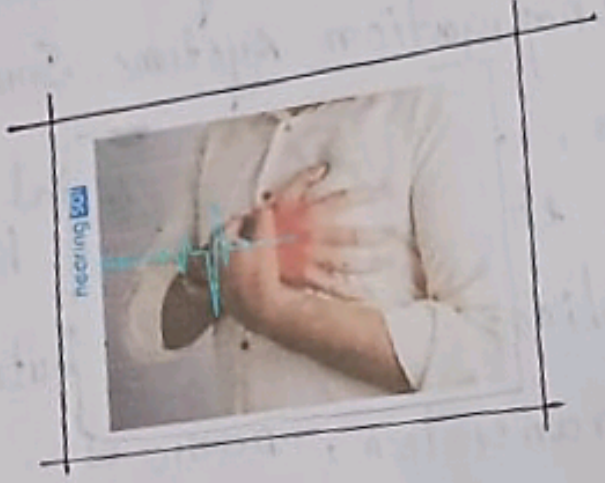
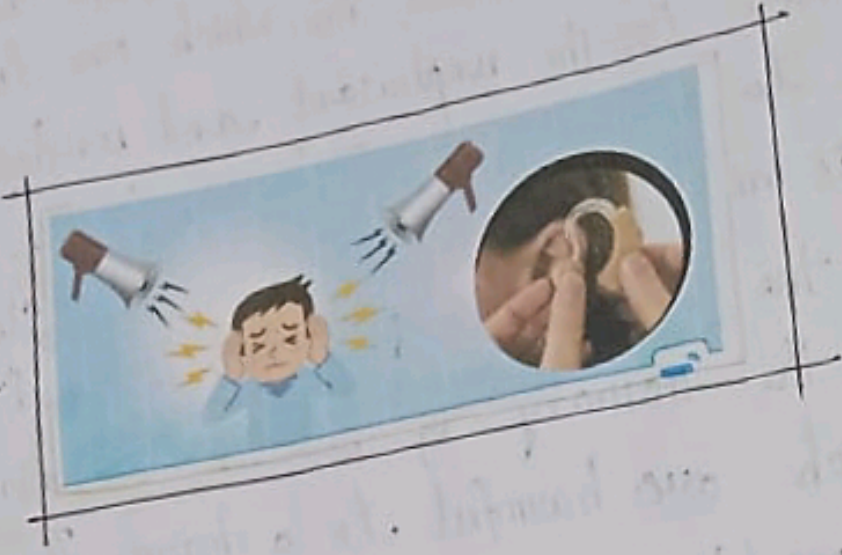
## • Definition of Noise Pollution:

The word noise is derived from the Latin word 'Nausea', which means sickness in which one feels the need to vomit. Noise is the unpleasant and undesirable sound which leads to discomfort in human beings. The intensity of sound is measured in decibels (dB). Noise or sound pollution, is the propagation of noise or sound with ranging impacts on the activity of human or animal life, most of which are harmful to a degree. The source of outdoor noise worldwide is mainly caused by machines, transport, and propagation systems. Some of its major causes are vehicles, aircraft, industrial machines, loud-speakers, crackers etc. When used at high volume, some other appliances also contribute to noise pollution like television, transistor, radio etc.

## • Types of Noise Pollution:

There are three types of pollutions:

- (i) Transport Noise.
- (ii) Neighbourhood Noise.
- (iii) Industrial Noise.





## Impact of Aircraft Noise Pollution on Residents of Large Cities :-

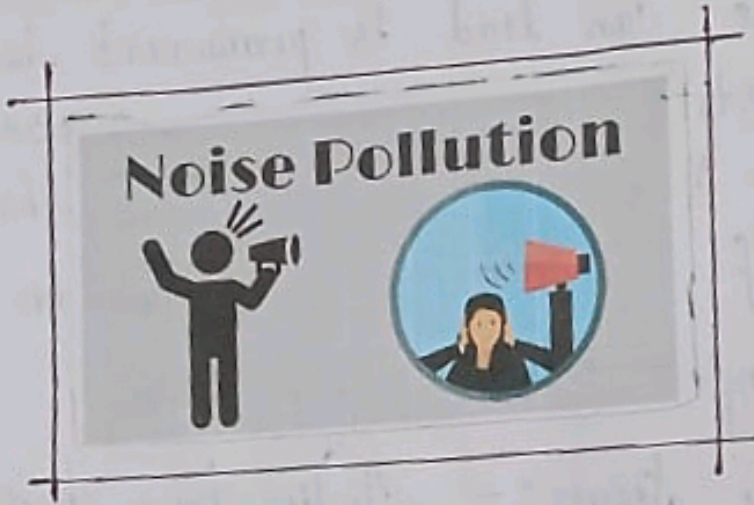
The impact of Aircraft noise pollution on residents is crucial for developing effective mitigation strategies and safeguarding public health.

### 1. Health Effects :-

**Hearing Damage :-** Prolonged exposure to high levels of aircraft noise can lead to permanent hearing damage or loss. Residents living close to airports may experience noise levels exceeding safe thresholds, especially during take off and landing, which can have a cumulative impact on hearing health.

**Cardiovascular Issues :-** Studies have shown that exposure to aircraft noise is associated with an increased risk of cardiovascular problem, such as hypertension, heart disease, and stroke. The stress induced by constant noise can elevate heart rates and blood pressure, leading to chronic health issues.

**Sleep Disturbances :-** Aircraft noises disrupts sleep patterns, leading to reduced sleep duration and quality. Frequent awaking awakenings and difficulty falling asleep can result in fatigue, irritability and





decreased overall well-being.

## 2. Mental Health Impact :-

Stress and Anxiety :- Living in a constant state of noise can cause chronic stress and anxiety among residents. The unpredictability and intrusiveness of aircraft noise can lead to feelings of helplessness and exacerbate existing mental health conditions.

Cognitive Impairment :- Prolonged exposure to aircraft noise has been linked to cognitive impairments, such as reduced concentration, memory issues and decreased ability to perform complex tasks. These effects can impact academic and work performance.

## 3. Social and Behavioral Effects :-

Community Annoyance :- Aircraft noise can lead to annoyance and dissatisfaction among residents. It disrupts conversations, leisure activities, and community events, leading to a decline in social cohesion.

Property Value :- Properties located near airports or under flight paths often experience decreased value due to the perceived decreased value due to the perceived inconvenience and health





risks associated with aircraft noise pollution.

#### 4. Impact on children:

##### Learning and Development:

Aircraft noise can hinder children's learning and development, especially in educational settings close to airports. Noise interference can affect concentration, comprehension, and academic performance.

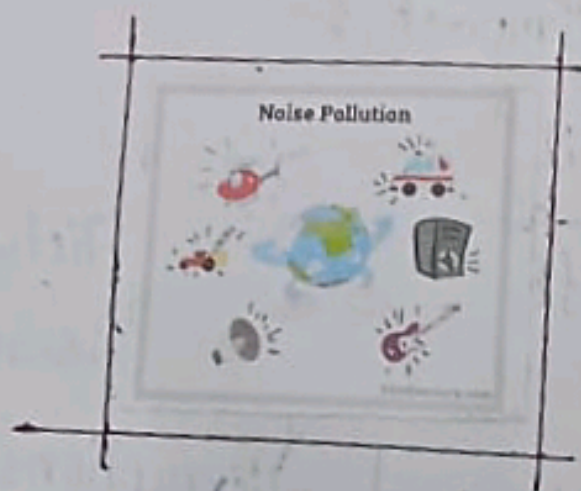
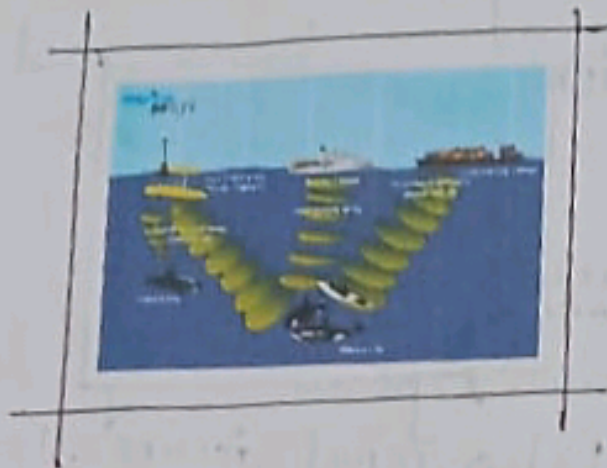
##### Behavioral Issues:

Children exposed to high levels of aircraft noise may exhibit behavioral issues, including irritability, hyperactivity and difficulty managing emotions.

#### 5. Environmental Impact:

##### Impact on wildlife:

Aircraft noise can disturb wildlife, particularly birds, leading to disorientation, changes in nesting behaviours, and disruptions in feeding patterns. This can have a cascading effect on ecosystem and biodiversity.





## Mitigation Measures 2

Efforts to reduce the impact of aircraft noise pollution on residents of large cities include.

### 1. Noise Abatement procedures?

Implementing noise abatement procedures, such as modifying flight paths, using steeper takeoff angles, and minimizing engine thrust during takeoff and landing, can help reduce noise levels in residential areas.

### 2. Curfew and Operational Restrictions?

Imposing curfews on operational restrictions during night hours can provide residents with relief from aircraft noise and facilitate better sleep.

### 3. Land use planning?

Careful urban planning can zone areas around airports for compatible land uses, ensuring that noise-sensitive activities such as hotels, housing, schools, and hospitals are located further away from flight paths.





## 4. Improved Aircraft Technology?—

Continued research and development of quieter aircraft technology can significantly reduce noise emissions from aircraft, benefiting both residents and the aviation industry.

## 5. Community Engagement?—

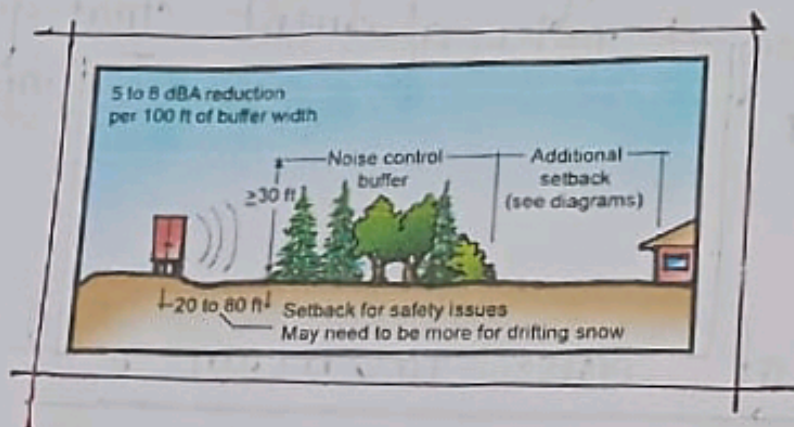
Involving residents in decision-making processes and seeking their feedback can lead to better-designed noise abatement strategies that meet the needs and preferences of the affected communities.

## Causes of Noise Pollution?—

Following are the causes and sources of noise pollution?—

### (i) Industrialisation?—

Industrialisation has led to an increase in noise pollution as the use of heavy machinery such as generators, mills, huge exhaust fans are used, resulting in the production of unwanted noise.





### (ii) Vehicles :-

Increased number of vehicles on the roads are the second reason for noise pollution.

### (iii) Events :-

Weddings, public gatherings involves loud-speakers to play music resulting in the production of unwanted noise in the neighbourhood.

### (iv) Construction sites :-

Mining, construction of buildings etc add to the noise pollution.

### Preventions :-

Some noise pollution preventive measures are provided in the points below:

1) Honking in public places like teaching institutes, hospitals, etc. should be banned.

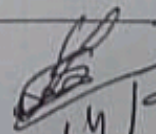
2) In commercial, hospital, and industrial buildings, adequate soundproof systems should be controlled to desirable limits.

3) Musical instruments sound should be controlled to desirable limits.

## Conclusion 2

Aircraft noise pollution is a significant environmental and public health concern for residents of large cities living near airports or under busy flight paths. The adverse effects on physical health, mental well-being, and overall quality of life underscore the need for effective mitigation measures. By employing a combination of noise abatement procedures, urban planning, technological advancements and community engagement, it is possible to strike a balance between air travel convenience and protecting the health and well-being of those impacted by aircraft noise pollution.

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14/9/23



- 2 References -

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