

# Noise Pollution

BOT 346

Dr. Alanoud Alfagham

Alafgham,2023



# WHAT IS NOISE POLLUTION?



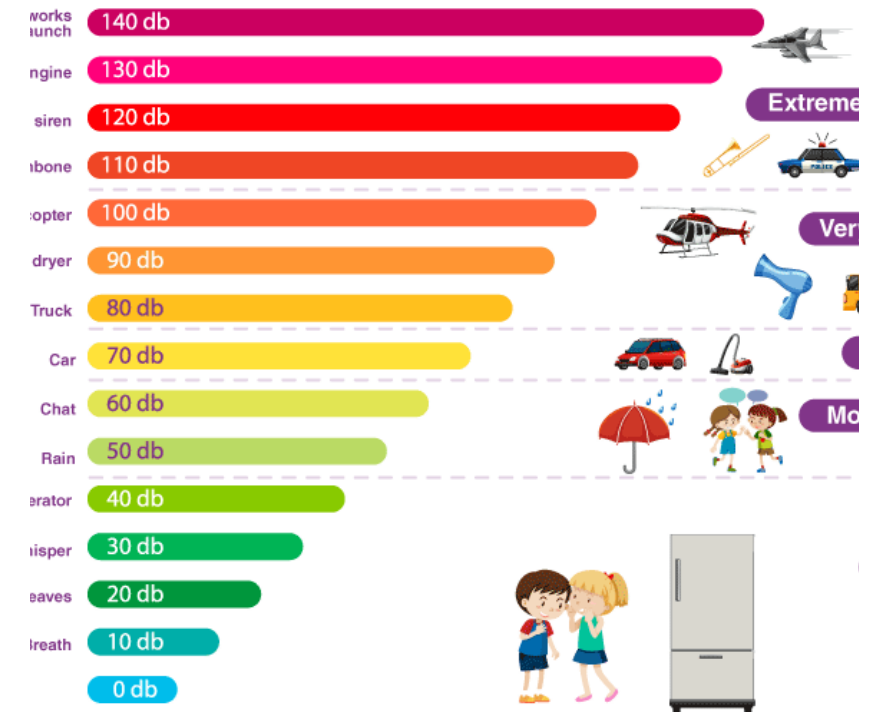
● NOISE POLLUTION is unwanted sound that disrupts one's quality of life. When there is lot of noise in the environment, it is termed as noise pollution.

● Sound becomes undesirable when it disturbs normal activities such as working, sleeping, during conversations.



# Types of Noise Pollution

- **Transport Noise.**
- **Neighbourhood Noise.**
- **Industrial Noise.**
- The normal human ear can detect sounds that range between 0 dB (hearing threshold) and about 140 dB, with sounds between 120dB and 140 dB causing pain (pain threshold).
- The ambient SPL in a **library** is about 35 dB, while that inside a moving bus or subway train is roughly 85 dB; **building construction** activities can generate SPLs as high as 105 dB at the source.
- SPLs decrease with distance from the source.



# Nature of Sound



Sound waves are vibrations of air molecules carried from a noise source to the ear. Sound is typically described in terms of the loudness (amplitude) and the pitch (frequency) of the wave.



Loudness (also called sound pressure level, or SPL) is measured in logarithmic units called decibels (dB).



**The intensity of sound is measured in decibels (dB)**

# Effects of Noise Pollution on Human Health



Hypertension: It is a direct result of noise pollution which is caused due to elevated blood levels for a longer duration.



Hearing loss: Constant exposure of human ears to loud noise that are beyond the range of sound that human ears can withstand damages the eardrums, resulting in loss of hearing.



Sleeping disorders: Lack of sleep might result in fatigue and low energy level throughout the day affecting everyday activities. Noise pollution hampers the sleep cycles leading to irritation and an uncomfortable state of mind.



Cardiovascular issues: Heart-related problems such as blood pressure level, stress and cardiovascular diseases might come up in a normal person and a person suffering from any of these diseases might feel a sudden shoot up in the level.



It can also cause memory loss, severe depression, and panic attacks.

# Prevention of Noise Pollution

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

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

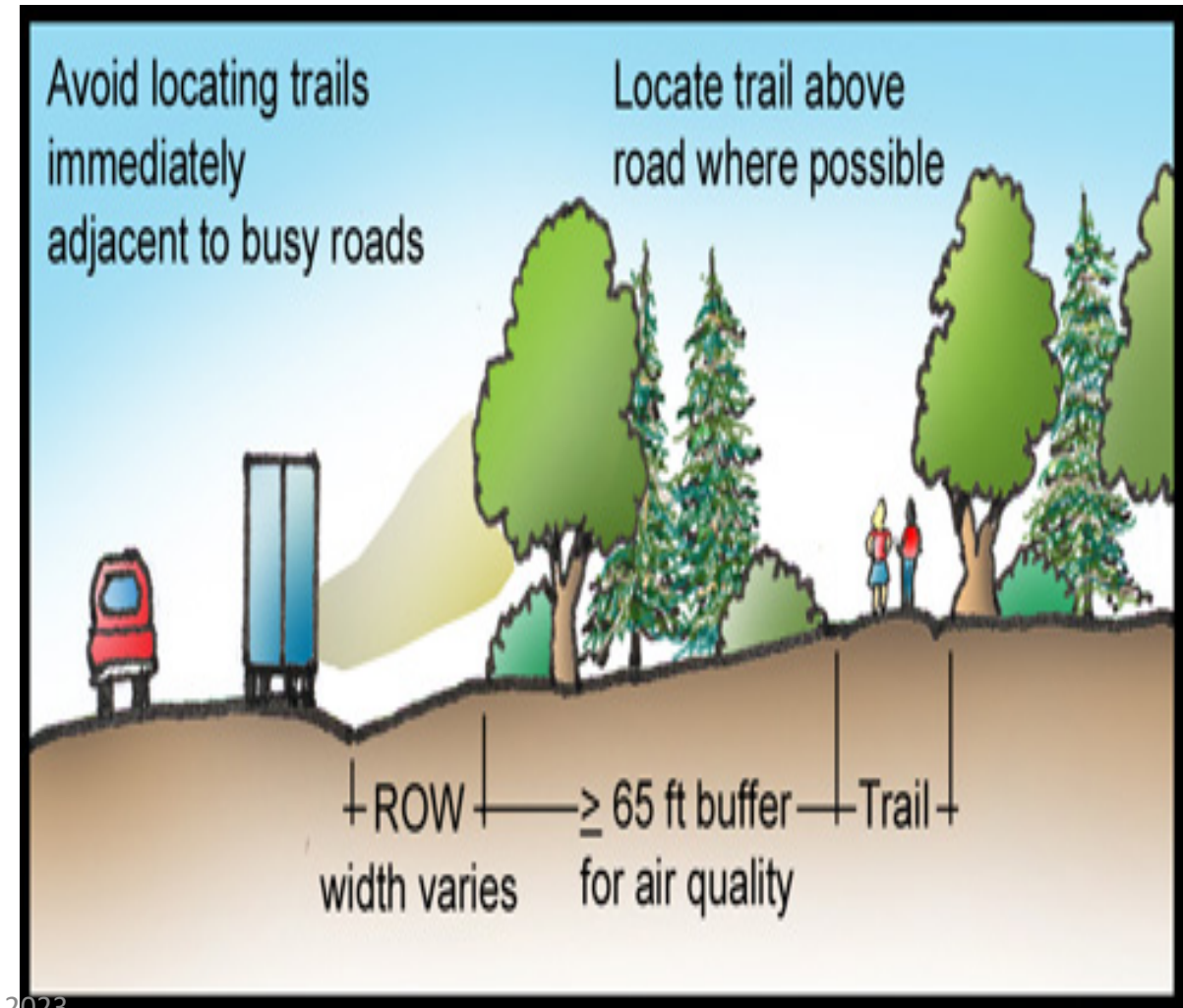
In commercial, hospital, and industrial buildings, adequate soundproof systems should be installed.

Musical instruments' sound should be controlled to desirable limits.

Dense tree cover is useful in noise pollution prevention.

Explosives should not be used in forest, mountainous and mining areas.

Workers in factories should be provided with equipments such as ear plugs and earmuffs for hearing protection.

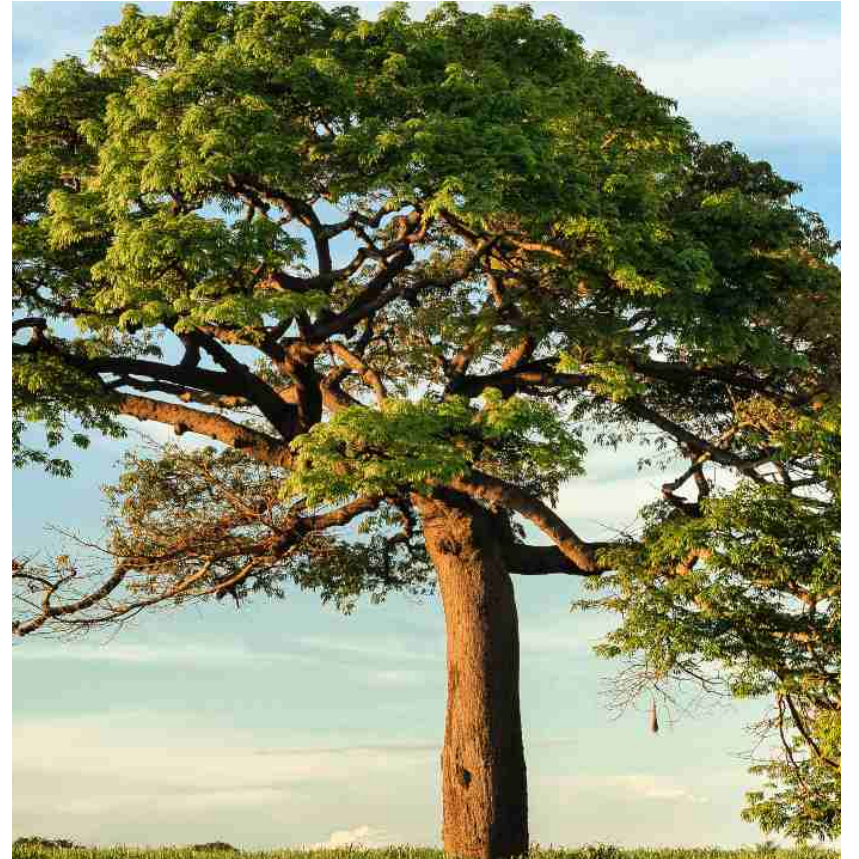




# How does vegetation help reduce noise pollution in urban ecosystems?

---

- Vegetation reduces noise pollution through a phenomenon called *sound **attenuation***, which is the reduction of sound intensity. Normal attenuation of sound occurs as the energy of sound dissipates over long distances until not enough energy is left to vibrate air molecules.
- Vegetation hastens the normal attenuation mechanisms of absorption, deflection, refraction, and masking.





**Sound Waves** - Is the form of transport for sound and it cannot be transmitted in a vacuum due to a lack of medium to carry the vibration.



**Speed of Sound**- 1500 m/s in water and 5000 m/s in steel, 340 m/s in air (1100 ft/s).



**decibel scale (dB)** - a ratio of two pressures



(Note : 10,000 microbars can cause immediate physical damage.)



**Sound Pressure Level** - expresses the magnitude of volume or a sound (dB)