



Noise Pollution: Noise pollution, also known as environmental noise or sound pollution, is the propagation of noise with harmful impact on the activity of human or animal life. The source of outdoor noise worldwide is mainly caused by machines, transport, and propagation systems or **Noise pollution** is generally defined as regular exposure to elevated **sound** levels that may lead to adverse effects in humans or other living organisms. According to the World Health Organization, **sound** levels less than 70 dB are not damaging to living organisms, regardless of how long or consistent the exposure is.

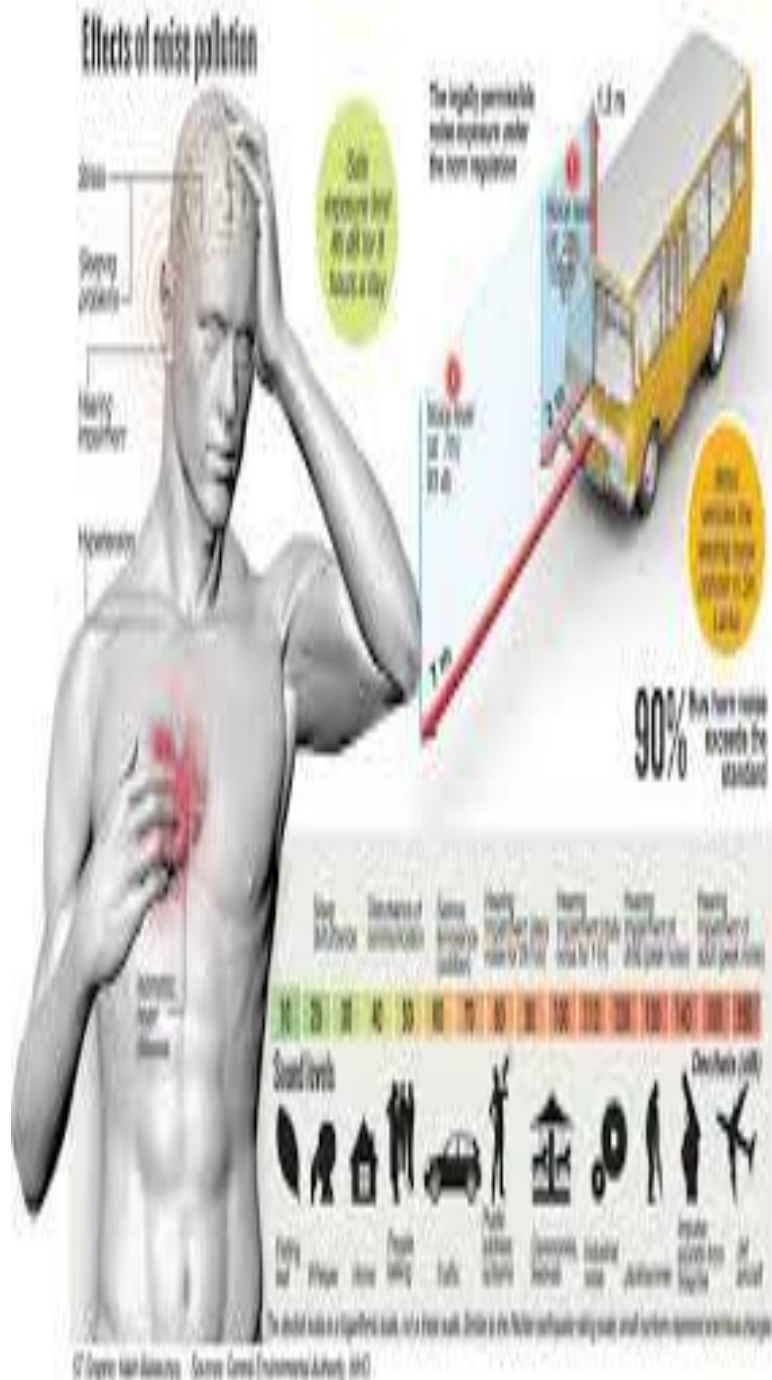
Health effects of environmental noise pollution



Exposure to prolonged or excessive noise has been shown to cause a range of health problems ranging from stress, poor concentration, productivity losses in the workplace, and communication difficulties and fatigue from lack of sleep, to more serious issues such as cardiovascular disease, cognitive impairment, tinnitus and hearing loss.

In 2011 the World Health Organization (WHO) released a report titled '[Burden of disease from environmental noise](#)'.

This study collated data from various large-scale epidemiological studies of environmental noise in Western Europe, collected over a 10-year period



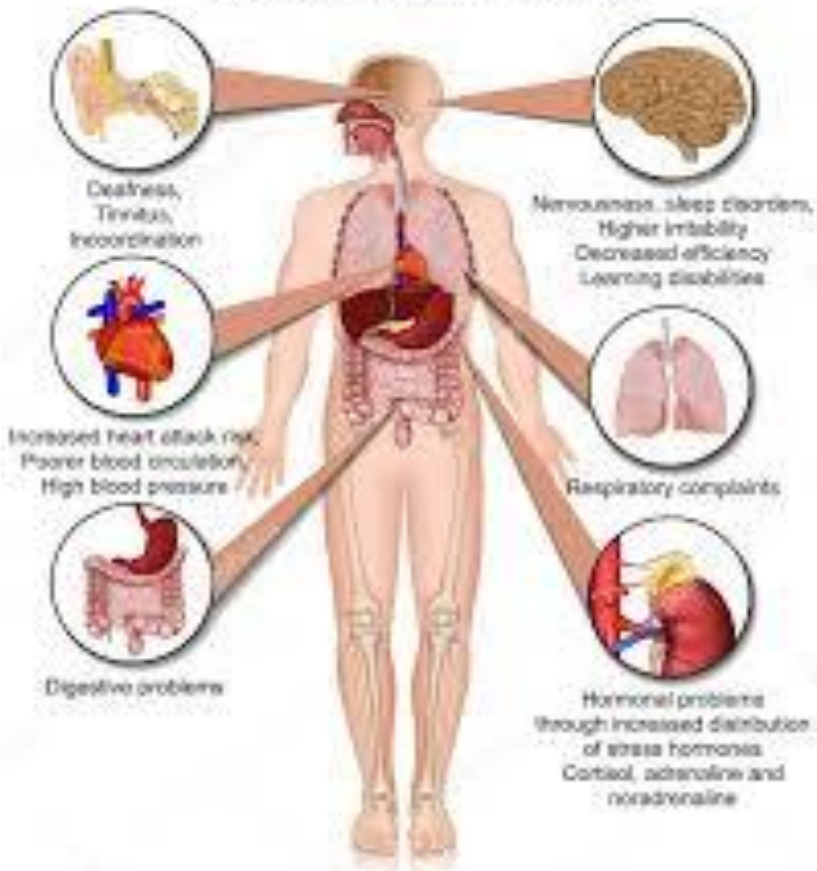
Exposure to prolonged or excessive noise has been shown to cause a range of health problems
 Noise induced hearing loss[[edit](#)]

Main article: [Noise-induced hearing loss](#)

Noise-induced hearing loss is a permanent shift in pure-tone thresholds, resulting in sensor neural hearing loss. The severity of a threshold shift is dependent on duration and severity of noise exposure. Noise-induced threshold shifts are seen as a notch on an audiogram from 3000–6000 Hz, but most often at 4000 Hz.^[13]

Exposure to loud noises, either in a single traumatic experience or over time, can damage the auditory system and result in hearing loss and sometimes [tinnitus](#) as well. Traumatic noise exposure can happen at work (e.g. loud machinery), at play (e.g. loud sporting events, concerts, recreational activities), and/or by accident (e.g. a backfiring engine.) Noise induced hearing loss is sometimes [unilateral](#) and typically causes patients to lose hearing around the frequency of the triggering sound trauma.^[14]

Extraaural noise effects



Know which noises can cause damage. Wear hearing protection when you are involved in a loud activity.

- **85 dB(A)**
Regular and prolonged exposures to noise at or above 85 dB(A) (averaged over 8 hours per day) are considered hazardous.
- **100 dB(A)**
Regular and prolonged unprotected exposure of more than 15 minute per day risks permanent hearing loss.
- **110 dB(A)**
Regular and prolonged unprotected exposure of more than 1.5 minutes per day risks permanent hearing loss.

Examples of noise levels

- **194 dB** Loudest possible tone
- **180 dB** Rocket launch
- **165 dB** 12-gauge shotgun
- **140 dB** Jet engine at takeoff
- **120 dB** Ambulance siren
- **119 dB** Pneumatic percussion drill
- **114 dB** Hammer drill
- **108 dB** Chain saw
- **108 dB** Continuous miner
- **105 dB** Bulldozer, spray painter
- **103 dB** Impact wrench
- **98 dB** Hand drill
- **96 dB** Tractor
- **93 dB** Belt sander
- **90 dB** Hair dryer/power lawn mower
- **80 dB** Ringing telephone
- **60 dB** Normal conversation

Cardiovascular effects[\[edit\]](#)

Noise has been associated with important [cardiovascular](#) health problems, particularly [hypertension](#).^{[17][18][19]} Noise levels of 50 [dB\(A\)](#) or greater at night may increase the risk of [myocardial infarction](#) by chronically elevating [cortisol](#) production.^{[20][21][22]}

Noise from transportation has been shown to increase blood pressure in individuals within the surrounding residential areas, with railways causing the greatest cardiovascular effects.^{[23][24]} Roadway noise levels are sufficient to constrict arterial blood flow and lead to [elevated blood pressure](#).^{[25][23]} Vasoconstriction can result from elevated [adrenaline](#) levels or through [medical stress](#) reactions. Long-term exposure to noise is correlated to increase in cortisol and angiotensin-II levels which are respectively associated with oxidative stress and vascular inflammation^[26]. Individuals subject to great than 80 dB(A) in the workplace are at increased risk of having increased blood pressure.^{[27][28]}

Psychological impacts of noise[\[edit\]](#)

Causal relationships have been discovered between noise and psychological effects such as annoyance, psychiatric disorders, and effects on psychosocial well-being.^[3] Exposure to intense levels of noise can cause personality changes and violent reactions.^[29] Noise has also been shown to be a factor that attributed to violent reactions.^[30] The psychological impacts of noise also include an addiction to loud music. This was researched in a study where non-professional musicians were found to have loudness addictions more often than non-musician control subjects.^[31]

Psychological health effects from noise include depression and anxiety. Individuals who have hearing loss, including noise induced hearing loss, may have their symptoms alleviated with the use of hearing aids. Individuals who do not seek treatment for their loss are 50% more disorder



A hearing protection device (HPD) is an [ear protection](#) device worn in or over the ears while exposed to hazardous [noise](#) to help prevent [noise-induced hearing loss](#). HPDs reduce (not eliminate) the level of the noise entering the ear. HPDs can also protect against other effects of noise exposure such as [tinnitus](#) and [hyperacusis](#). Proper hygiene and care of HPDs may reduce chances of outer ear infections.^[51] There are many different types of HPDs available for use, including [earmuffs](#), [earplugs](#), electronic hearing protection devices, and semi-insert devices.^[52] One can measure the personal attenuation rating through a [hearing protection fit-testing](#) system.

Earmuff style hearing protection devices are designed to fit over the outer ear, or [pinna](#). Earmuff HPDs typically consist of two ear cups and a head band.^[52] Earplug style hearing protection devices are designed to fit in the [ear canal](#). Earplugs come in a variety of different subtypes.^[52] Some HPDs reduce the sound reaching the [eardrum](#) through a combination of electronic and structural components. Electronic HPDs are available in both earmuff and custom earplug styles. Electronic microphones, circuitry, and receivers perform [active noise reduction](#)\