

POLLUTION

IN ENVIRONMENT, THREAT TO MANKIND

**A PROJECT IS SUBMITTED IN PARTIAL
FULFILMENT OF THE DEGREE OF
BACHELOR OF SCIENCE**

**Under the guidance of,
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**DEPT. OF CHEMISTRY
NILAMANI MAHAVIDYALAYA, RUPSA, BLS.
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This is to certify that the project report entitled "POLLUTION IN ENVIRONMENT, THREAT TO MANKIND", submitted by Chandan Samal, Jyotishree Sahoo, Prabhuram Das, Rajesh kumar Rana, Sebati Behera, Subhasankita Dey, Subhashree Roul, Sudhansu Das, for the award of the degree of bachelor of science from Nilamani Mahavidyalaya, Rupsa, Bls is a bonafide record of work carried out by them under my guidance . Neither this project report nor any part of it has been submitted for any degree or academic award elsewhere.

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DECLARATION

We "GROUP:-01" do hereby certify that the report entitled "POLLUTION IN ENVIRONMENT THREAT TO MANKIND" being submitted to the Dept. of Chemistry, Nilamani Mahavidyalaya, Rupsa for the award of Bachelor of Science, is an original piece of work done by us and the same has not been submitted else where for any other academic degree or diploma to this college or any other college/university.

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CONTENTS

- ❖ **INTRODUCTION**
- ❖ **TYPES OF POLLUTION**
- ❖ **CLASSIFICATION OF POLLUTANTS**
- ❖ **AIR POLLUTION**
- ❖ **WATER POLLUTION**
- ❖ **NOISE POLLUTION**
- ❖ **SOIL POLLUTION**
- ❖ **CONCLUSION**
- ❖ **BIBLIOGRAPHY**

INTRODUCTION

Pollution is the effect of undesirable changes in our surroundings that have harmful effects on plants, animals and human beings. This occurs when only short-term economic gains are made at the cost of the long-term ecological benefits for humanity. No natural phenomenon has led to greater ecological changes than have been made by mankind. During the last few decades we have contaminated our air, water and land on which life itself depends with a variety of waste products. Pollutants include solid, liquid or gaseous substances present in greater than natural abundance produced due to human activity, which have a detrimental effect on our environment. The nature and concentration of a pollutant determines the severity of detrimental effects on human health. An average human requires about 12 kg of air each day, which is nearly 12 to 15 times greater than the amount of food we eat. Thus even a small concentration of pollutants in the air becomes more significant in comparison to the similar levels present in food. Pollutants that enter water have the ability to spread to distant places especially in the marine ecosystem. From an ecological perspective pollutants can be classified as follows: Degradable or non-persistent pollutants: These can be rapidly broken down by natural processes. Eg: domestic sewage, discarded vegetables, etc. Slowly degradable or persistent pollutants: Pollutants that remain in the environment for many years in an unchanged condition and take decades or longer to degrade. Eg: DDT and most plastics. Non-degradable pollutants: These cannot be degraded by natural

processes. Once they are released into the environment they are difficult to eradicate and continue to accumulate. Eg: toxic elements like lead or mercury.

- ❖ It means adding impurities to the environment.
- ❖ It is an undesirable change in chemical, physical, and biological characteristics of air, water and soil, which causes the health problem to all the living beings.

TYPES OF POLLUTION

These are categorised as :

- ❖ Air pollution
- ❖ Water pollution
- ❖ Sound / noise pollution
- ❖ SOIL POLLUTION

Further it may be Indoor pollution / outdoor pollution

CLASSIFICATION OF POLLUTANTS

The pollutants may be classified as

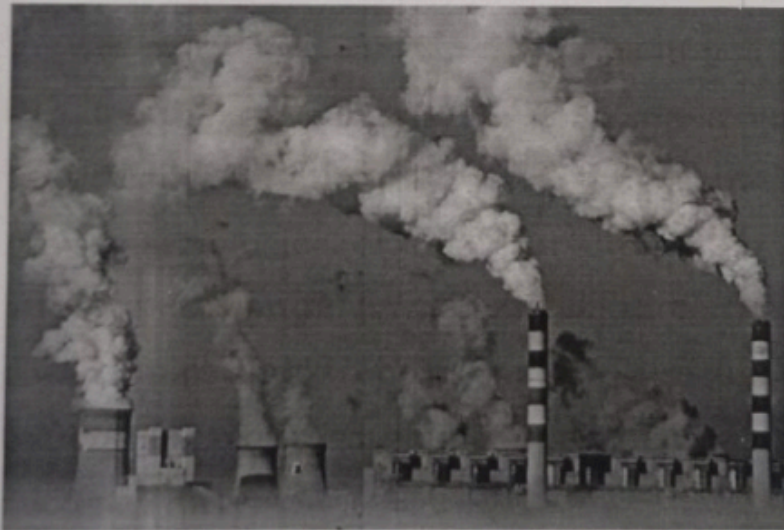
Degradable or non-persistent pollutants:- these can be broken down rapidly by the natural process e.g. Domestic waste, garbage and sewage.

Slowly degradable or persistent pollutants:- these remains in environment for a very long period of time, in unchanged condition, may be for few decades e.g. Pesticides, aerosole

Non-degradable pollutants:- these are pollutants never get degraded by any natural process. E.g. Toxic elements like lead, mercury, nuclear waste.

Air pollution

Pollution is now a common place term, that our ears are attuned to. We hear about the various forms of pollution and read about it through the mass media. Air pollution is one such form that refers to the contamination of the air, irrespective of indoors or outside. A physical, biological or chemical alteration to the air in the atmosphere can be termed as pollution. It occurs when any harmful gases, dust, smoke enters into the atmosphere and makes it difficult for plants, animals and humans to survive as the air becomes dirty.



Air pollution can further be classified into two sections- Visible air pollution and invisible air pollution. Another way of looking at Air pollution could be any substance that holds the potential to hinder the atmosphere or the well being of the living beings surviving in it.

Types of Pollutants

In order to understand the causes of Air pollution, several divisions can be made. **Primarily air pollutants** can be caused by primary sources or secondary sources. The pollutants that are a direct result of the process can be called primary pollutants. A classic example of a primary pollutant would be the sulfur-dioxide emitted from factories

Secondary pollutants are the ones that are caused by the intermingling and reactions of primary pollutants. Smog created by the interactions of several primary pollutants is known to be as secondary pollutant.

Causes of Air pollution

1. Burning of Fossil Fuels: Sulfur dioxide emitted from the combustion of fossil fuels like coal, petroleum and other factory combustibles is one the major cause of air pollution. Pollution emitting from vehicles including trucks, jeeps, cars, trains, airplanes cause immense amount of pollution. We rely on them to fulfill our daily basic needs of transportation. But, there overuse is killing our environment as dangerous gases are polluting the

environment. Carbon Monoxide caused by improper or incomplete combustion and generally emitted from vehicles is another major pollutant along with Nitrogen Oxides, that is produced from both natural and man made processes.

2. Agricultural activities: Ammonia is a very common by product from agriculture related activities and is one of the most hazardous gases in the atmosphere. Use of insecticides, pesticides and fertilizers in agricultural activities has grown quite a lot. They emit harmful chemicals into the air and can also cause water pollution.

3. Exhaust from factories and industries: Manufacturing industries release large amount of carbon monoxide, hydrocarbons, organic compounds, and chemicals into the air thereby depleting the quality of air. Manufacturing industries can be found at every corner of the earth and there is no area that has not been affected by it. Petroleum refineries also release hydrocarbons and various other chemicals that pollute the air and also cause land pollution.



4. Mining operations: Mining is a process wherein minerals below the earth are extracted using large equipments. During the process dust and chemicals are released in the air causing massive air pollution. This is one of the reason which is responsible for the deteriorating health conditions of workers and nearby residents.

5. Indoor air pollution: Household cleaning products, painting supplies emit toxic chemicals in the air and cause air pollution. Have you ever noticed that once you paint walls of your house, it creates some sort of smell which makes it literally impossible for you to breathe.

Effects of Air pollution

1. Respiratory and heart problems: The effects of Air pollution are alarming. They are known to create several respiratory and heart conditions along with Cancer, among other threats to the body. Several millions are known to have died due to direct or indirect effects of Air pollution. Children in areas exposed to air pollutants are said to commonly suffer from pneumonia and asthma.

2. Global warming: Another direct effect is the immediate alterations that the world is witnessing due to Global warming. With increased temperatures world wide, increase in sea levels and melting of ice from colder regions and icebergs, displacement and loss of habitat have already signaled an impending disaster if actions for preservation and normalization aren't undertaken soon.

3. Acid Rain: Harmful gases like nitrogen oxides and sulfur oxides are released into the atmosphere during the burning of fossil fuels. When it rains, the water droplets combines with these air pollutants, becomes acidic and then falls on the ground in the form of acid rain. Acid rain can cause great damage to human, animals and crops.

4. Eutrophication: Eutrophication is a condition where high amount of nitrogen present in some pollutants gets developed on sea's surface and turns itself into algae and and adversely affect fish, plants and animal species. The green colored algae that is present on lakes and ponds is due to presence of this chemical only.

5. Effect on Wildlife: Just like humans, animals also face some devastating affects of air pollution. Toxic chemicals present in the air can force wildlife species to move to new place and change their habitat. The toxic pollutants deposit over the surface of the water and can also affect sea animals.

6. Depletion of Ozone layer: Ozone exists in earth's stratosphere and is responsible for protecting humans from harmful ultraviolet (UV) rays. Earth's ozone layer is depleting due to the presence of chlorofluorocarbons, hydro chlorofluorocarbons in the atmosphere. As ozone layer will go thin, it will emit harmful rays back on earth

and can cause skin and eye related problems. UV rays also have the capability to affect crops.



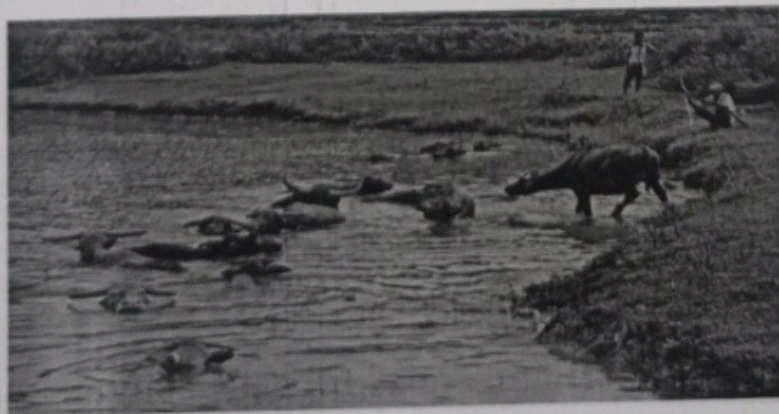
WATER POLLUTION

Water is considered polluted if some substances or condition is present to such a degree that the water cannot be used for a specific purpose. Olaniran (1995) defined water pollution to be the presence of excessive amounts of a hazard (pollutants) in water in such a way that it is no longer suitable for drinking, bathing, cooking or other uses. Pollution is the introduction of a contamination into the environment (Webster.com, 2010). It is created by industrial and commercial waste, agricultural practices, everyday human activities and most notably, modes of transportation. No matter where you go and what you do,

there are remnants earths environmental and its inhabitants in many ways. The three main types of pollution are: Land Pollution, Air Pollution and Water Pollution. Both for the purpose of this research, emphasis are on water pollution and control.

SOURCES OF WATER POLLUTION

The main causes of water pollution are most often man made and caused by increasing industrialization and human activities. Mostly the water bodies get polluted with municipal, industrial and agricultural waste and their unplanned leaking, run off, dumping and disposal. Usually every water body has a certain capacity to clean itself by diluting and breaking down some pollutants if given enough time. This receiving capacity of pollutants by the water bodies without damaging its original water quality is known as the assimilative capacity of the water body.



But if the amount of pollutants exceeds the assimilative capacity of any water body, then the dumped or disposed waste may be carried away by the current but will reappear in the downstream in a diluted or changed form. Other human generated water pollution source include oil spills, radioactive waste, marine dumping, synthetic toxic chemicals like endocrine disrupting substance (EDS) or environmental hormone like substance (Estradiol, estrone, bisphenol etc.) that can causes genetic defect to aquatic population.

There can be numerous causes of water pollution other than human activities such as runoff, toxic sediments or deposition of airborne particles.

The Causes of Water Pollution Based on Origin

The causes of water pollution can be divided into two different groups based on their origin:-

Point Source:-Point source of pollution is generated from a definite identifiable source like the discharge pipe of

domestic or industrial sewage to a water body. This type of pollution can be easily identifiable and can be legally control through legislation.

Nonpoint Source:

Nonpoint source of pollution does not have one specific source that is easily identifiable. Example of nonpoint source pollutants are fertilizer, pesticide, oils spilled from cars etc. Nonpoint source pollution can be generated through many different sources like land runoff, precipitation, atmospheric deposition, drainage, seepage or hydrological modification. Usually the source of those pollutants are not easy to identify and hence difficult to regulate.

Some of the Major Causes of Water Pollution

Domestic Sewage:

Domestic sewage or municipal wastewater are waste stream generated through household activities and in general contains faeces, urine and laundry waste. Untreated or undertreated domestic sewage may contain harmful waterborne disease causing microorganisms

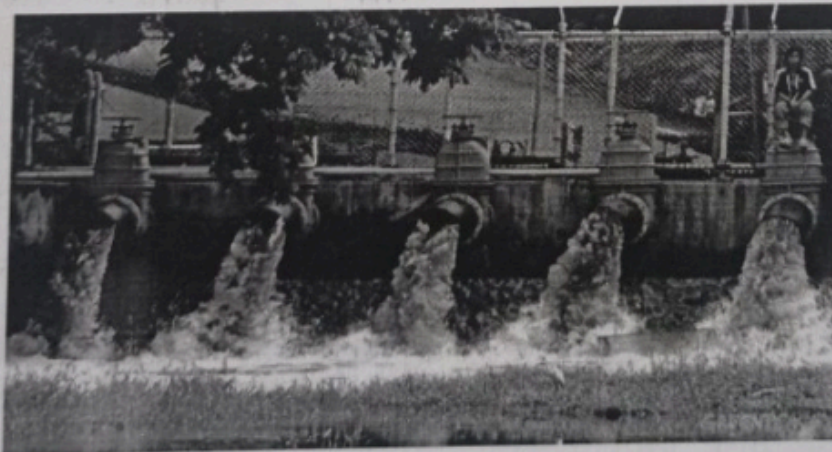
(Diarrhea, dysentery, typhoid, cholera etc.), oxygen depleting organic substances and toxic and hazardous inorganic substances. The higher the organic waste concentration of the sewage the more polluted the water bodies will be. Again domestic sewage contains inorganic substance like phosphorus and nitrates. These increase amounts of nutrients cause unwanted algal bloom and eutrophication in ponds and lakes. They also diminish the water quality for fish, other aquatic communities and make it unsuitable for any other aesthetic uses.



Industrial Wastewater: Wastewater generated through industrial manufacturing and processing known as industrial wastewater. The sources of industrial wastewater

includes iron and steel industry, mines and quarries, food industry, chemicals industry, nuclear and radioactive waste industry, and wastewater from clean up of petroleum and chemically contaminated sites.

Industrial wastewaters are usually high in their organic and or inorganic waste strength. The industrial wastewater stream can contain highly toxic and hazardous waste like heavy metals, carcinogenic chemicals, environmental hormone type substances and radioactive waste. If these waste stream find their ways to natural water bodies untreated or undertreated, it will be hazardous not only to human and other living organism but to the whole ecosystem as well.



Agricultural waste and runoff:

Agricultural waste and run off often include chemical fertilizer, pesticide, manure and other animal waste. Run off from farm land and agricultural field often find their ways to nearby water streams, ponds, lakes and rivers. Those agricultural wastes can seep or leak thorough ground and cause ground water pollution as well. The excessive amount of nutrients in the fertilizer can cause eutrophication in the surface water and nitrate toxicity in the ground water.

EFFECTS OF WATER POLLUTION

Water pollution has a dual effect on nature. It has negative effects on the living and also on the environment. The effects of pollution on human beings and aquatic communities are many and varied. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in developing countries. An estimated 700 million Indians have no access to a proper toilet, and 1,000 Indians children's die of diarrhea every day and so many other countries too. Nearly 500 million Chinese lack access of safe drinking water.

Definitely with all these, we can expect that there is going to be a reduction in productivity. Biomass and diversity of communities are to be expected when large amount of toxic materials are released into the streams, lakes and coastal waters in the ocean. Much of aquatic pollution involves sewage in which organic waste predominate. This waste can increase secondary productivity while altering the character of the aquatic community. Most fishes especially the species desired as food by man are among the sensitive species that disappear with the least intense pollution. Water pollution leads to damage to human health. Disease carrying agents such as bacteria and viruses are carried into the surface and ground water. Drinking water is affected and health hazards result. Direct damage to plants and animals nutrition also affects human health. Plants nutrients including nitrogen, phosphorus and other substances that support the growth of aquatic plant life could be in excess causing algal bloom and excessive weed growth. This makes water to have odour, taste and sometimes colour. Ultimately, the ecological balance of a body of water is altered. Sulphur dioxide and nitrogen oxides cause acid rain which lowers the pH value of soil and emission of carbon dioxide cause ocean acidification,

the ongoing decrease in the PH of the Earth's Oceans as CO₂ becomes dissolved.

Diseases Caused by Water Pollution

Water pollution can affect us directly or indirectly. We can be subjected to waterborne diseases directly through consumption of contaminated water or through bathing in a polluted area. Conversely, we can be affected indirectly by consuming produce that was irrigated with polluted water or by eating fish or other animals that have been contaminated. While the most

common water pollution diseases

involve poisoning episodes affecting the digestive system and human infectious diseases, water pollution may cause a large variety of health diseases including:

Infectious diseases caused by

pathogens (usually microorganisms) from animal fecal origins, of which the most common occur in developing countries involving:

- Typhoid
- Giardiasis
- Amoebiasis

00 high pan

- Ascariasis

- Hookworm

- POLLUTION MANAGEMENT AND CONTROL

- There are many approaches that could be adopted in water pollution control and management. It could be through prevention, practice efforts or join a project/program; Regulation and monitoring or engaging in control measures by reducing or minimizing waste.

- (i) Wash your car far away from any storm water drains.

-

- (ii) Don't throw trash, chemicals or solvents into sewer drains

-

- (iii) inspects your septic system every 3 - 5 years

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- (iv) avoid using pesticides and fertilizers that can run off into water systems

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- (v) sweep your driveway instead of hosing it down

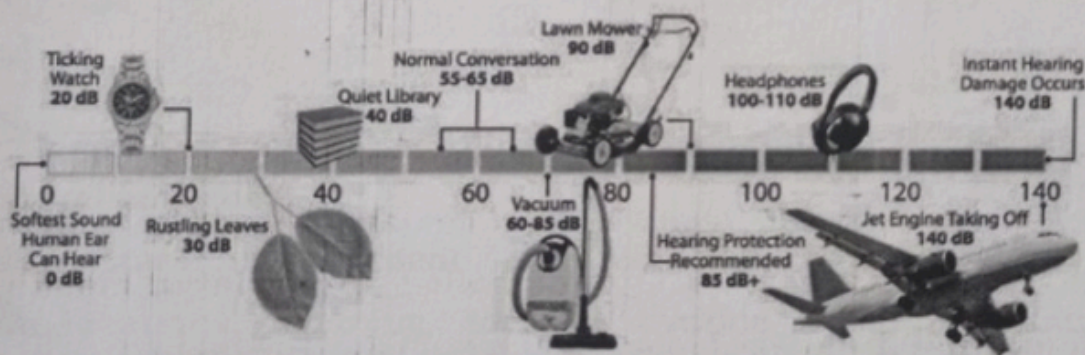
- (vi) always pump your waste-holding tanks on your boat
-
- (vii) use non-toxic cleaning materials
-
- (viii) clean up oil and other liquid spills with kitty litter and sweep them up
-
- (ix) don't wash paints brushes in the sink.

WHAT IS NOISE POLLUTION?

Noise pollution means an unwanted or undesirable sound that leads to physical and mental problems. Noise pollution is dependent on the loudness and frequency of the sound. In fact, when the sound exceeds its limit, it becomes fatal for human and other organisms. The noise intensity is measured in decibels or dB. A person can bear the noise up to 85 decibels, after which his hearing power can be damaged.



Normally, sounds more intense than 30 decibel are called noise. Anyway, all the sounds come under noise pollution which makes the mind turbulent or restless. In fact, any unwanted noise arising in the environment, which has adverse effects on the health of the organism, is noise pollution.



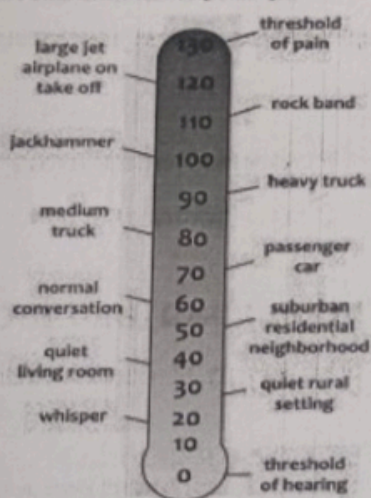
In daily life, we hear different intensity of sounds, whose level ranges from 10 to 100 decibels. Considering the side effects on human health, scientists have set the maximum sound limit, ranging from 75 to 85 dB in different countries. The World Health

Organization considers the sound of 45 decibels ideal for cities. But measurement of sound in most big cities exceeds 90 decibels.

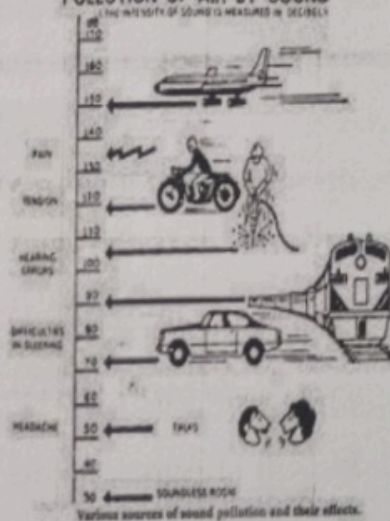
SOURCES/CAUSES OF NOISE POLLUTION

The sources of noise pollution are divided into two categories:

Decibel Scale (dBA)



POLLUTION OF AIR BY SOUND



Natural sources

The natural environment is filled with various sounds - thunderstorms, lightning, tornado, cyclone, volcanic eruptions, earthquakes, landslides, sounds produced by animals, and rapidly falling water.

Human sources

Rapid industrialization, urbanization, use of modern means of transport, population growth, and increasing scale of human activities are some of the human factors responsible for noise

pollution. Both types of noise pollution, affect sleep, listening ability, physical and mental health.

Vehicular Noise: The modern means of traffic including vehicles such as buses, trucks, scooters, cars, motorcycles, trains, aircraft, firecrackers, explosives etc, pollute the atmosphere. Sound of other automated vehicles and horn, excessive use of loudspeakers for religious purposes also generate jarring noise.



Industrial Noise: Industry-businesses, factories and commercial establishments produce a variety of raucous sounds that bump into our ears and disturb our mind. Noise pollution is an integral part of the industrial environment with heavy machines used in the industries; it is on the rise with the increase in industrial urbanization.

Commercialization of residential areas: Even in non-industrial areas, there is noise in the surrounding environment due to printing, dyeing machines, repairing cars, grinding etc.

Domestic Noise: As the houses in the cities are quite adjacent, the amount of domestic noise is increasing. The noise of radio, television, instrumentation and various types of sounds are constantly occurring around us, which cause mental health

problems, stress, deafness etc. Other domestic sources include noise in the kitchen, and domestic discord including scolding, shouting, crying, etc.

Construction activities: Unbridled construction is also a reason for noise pollution outside the home. Sound pollution is also caused due to poor urban planning because industrial and residential buildings are quite close by in many cities.

Political Activities: Noise pollution is also generated by dharna, demonstrations, slogans, election propaganda, processions, and rallies frequently organized in cities.



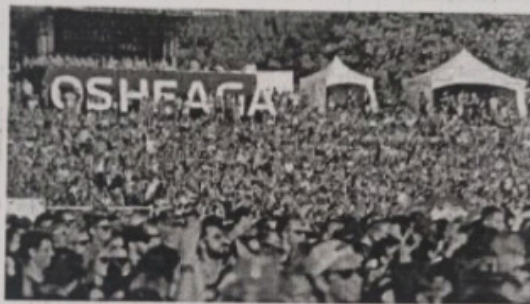
Noisy Hospitals: Noise pollution also occurs in hospitals. Rocking of trolleys, wheelchairs, surgical instruments, oxygen cylinders, sounds from plants, uncontrolled conversations among patients, relatives, emergency noise and screams, mourning followed by death are some of the sources of noise pollution in medical centres.

Fireworks: Fireworks are another source of pollution. Uncontrolled fireworks in festivals, fairs, or crackers after victory in matches and elections produce unbearable noise.

Other Reasons: Noise pollution inside and outside the house includes car



alarms, emergency services siren, machine tools, compressed air horn, equipment, electrical equipment, megaphone etc.



EFFECTS OF NOISE POLLUTION/DISEASES CAUSED BY NOISE POLLUTION

Noise pollution may cause temporary or permanent hearing impairment. The most direct harmful effect of excessive noise falls on the ears. Many times, extreme noise ruptures the ear drums.

You cannot only be deaf but can also come in the grip of deadly illnesses like impotence and cancer, besides problems such as lack of memory, concentration, and interruption in speech, irritation, irritability, stress and depression.

The noise not only creates irritability, anger, but also accelerates the heart rate by increasing blood flow in the arteries. The constant noise increases the amount of cholesterol in the blood, which contracts blood vessels, increasing the likelihood of cardiovascular disease.

Health experts believe that rising noise gives rise to neurological disease, nervous breakdown, hypertension, vision, dizziness, excessive sweating, exhaustion

As rapid noise hinders sleep, insomnia has adverse effects on human functioning. The person becomes irritable, angry, tired and tense, and he even becomes neurotic or crazy.

Exposure to the noise of 180 decibels intensity may result in the death of man.

Due to excessive noise, there is a decrease in the production of digestive juices

Noise pollution has a lot of adverse effect on infants and women, sometimes due to loud velocity of sound, women also undergo miscarriage or the foetus's heart stops and the entire behaviour of the infant can change. Children imbibe forgetful tendencies.

The effect of noise is dangerous for animal life too. Due to continuous noise, their habitat decreases and the threatened creatures reach the brink of extinction. The most notable of the deadly effects of noise pollution is that some species of whale die due to noise.

Noise pollution has extremely harmful effects on other organisms and vegetation. Due to frequent noise, animals and birds leave their habitat and move away. Animals and birds migrate from the forest areas near the mining areas and high traffic roads. Due to acute sound waves, birds may even stop laying eggs.

Because of excessive noise, many violent creatures cannot find their prey, while other creatures cannot survive being hunted.

Many microbes are destroyed by acute sound, which inhibit decomposition of wastes.

There are adverse effects of pollution on pets such as turbulence, and decrease in their milk content.

Similarly, due to noise pollution, the growth of the vegetation is hindered; the fruits and flowers of the trees get withered and decayed.

With excessive sound the walls of windows of the buildings are broken, the roofs rattle and get cracked.

Due to blasts in the mining areas, or sound of jet aeroplanes sometimes high-rise buildings collapse or cracks develop in them, dams, bridges, etc.

The sound effects of noise pollution caused by nuclear explosions spread through hundreds of kilometres so that biodiversity is threatened.

Rocks, snowflakes and landslide incidents rise in snowy and mountainous areas.

Because of the noise, many creatures also speak loudly, which is called Lombard Vocal Response. Their vocal intensity increases in the presence of noise. It occurs as a response to ambient noise.

Due to excessive noise, there is a disruption in the studies of children too, as they do not get peaceful environment for study even in their homes.

Findings of a German Study on Noise Pollution

According to a recent study, traffic noise increases the risk of heart failure. Road, rail traffic noise, noise during air travel, have a profound effect on the person's heart. Staying near the highway can prove to be harmful to your heart.

As part of this study, Andreas Seidler and his friends from Dresden University of Technology of Germany received and studied information from statutory health insurance companies for evaluation throughout Germany for several years.

In this case-control study of secondary data, these researchers found that those who lived in the Rhine-Main area, where the noise was very high, were much more likely to die due to heart attack.

When only such patients were studied in 2014 and 2015, who had died from heart attack, the researchers noticed deeper connection to the noise and heart attack. In this regard, Andreas Seidler and his colleagues believe that the effect of noise pollution is on most people's ears and hearts. Even during air traffic, there should not be noise of more than 65 decibels; otherwise passengers may be in trouble.

There is also an indication from the people that traffic also has a profound effect on the health of the person. However, research has been done so far only about the noise and heart attack.

This study was conducted by NORAH (Noise-Related Annoyance, Cognition, and Health) which is spread through Europe.

MEASURES FOR PREVENTION/CONTROL OF NOISE POLLUTION

- Considering the widespread ill-effects of noise pollution, measures need to be taken to control them.
- Increasing noise pollution is very harmful for the health, efficiency and productivity of animals, organisms, flora etc. as well as the adaptation and balance of the environment.
- It has become necessary to control it and also to make people aware of this.
- Factories, which mainly produce noise pollution, should be established far away from settlements, forests, reservoirs and hilly areas.
- Settlements should not be located at least within 20 kilometres from mining areas, and airports.
- Explosives should be not used in mountainous, forest and mining areas.

- With proper maintenance of vehicles, along with the restriction of high sound horns, the use of advanced technology silencer should be used inevitably.
- Use of horn in public places (hospital, teaching institutes etc.) should be banned.
- The sound of musical instruments should be controlled to desirable limits.
- The use of sound amplifiers of high power, DJ, etc should be banned in religious, social, political events.
- There should be control over noise generated from machine and equipment.
- The use of sound absorber acoustic tiles should be encouraged in the construction of multi-storeyed buildings.
- In industrial, commercial and hospital buildings, adequate soundproof systems should be installed.
- Intensive plantation should be made in the entire building complex.
- Planting green trees along the road side reduces the intensity of noise pollution.
- Dense tree cover is very useful in the prevention of noise pollution. Such trees help in absorbing high sound waves, as well as deflecting them into the atmosphere.
- Therefore, cities, highways, industrial settlements should be fully lined with the green belt of trees.

- Protective tools (ear plugs etc.) should be provided for workers.
- Limits should be set on noise and control over noise pollution by legal provisions.
- Adequate health education on pollution should be provided through government agencies and voluntary institutions.

More on How to Control Noise pollution...

NOISE POLLUTION IN INDIA

According to a recent report of Central Pollution Control Board, the level of noise in Mumbai is highest in the country. Delhi is on the fourth number. However, Lucknow is at the second place with Hyderabad placed at the third slot in terms of noise pollution.

In its report, CPCB has said that Mumbai had the highest level of noise pollution during 2011-14. According to the report, due to greenery and number of roadside trees, noise pollution has been somewhat restrained in Delhi. But in the World Hearings Index, Delhi has become the world's fifth largest noisiest city. In Delhi, ITO and Anand Vihar are the places which have recorded the worst noise. According to the recent statistics of the Delhi Pollution Control Committee, noise was recorded up to 74 decibels between 12 to 2 pm at ITO, whereas in the afternoon, Anand Vihar area recorded the level of noise pollution at 60.4 decibels at noon and 41 decibels in the night.

Apart from the number of vehicles, noise pollution in the country can be attributed to the rising number of vehicles, train, aircraft, generator sets, office machines, and construction activities.

In India, the noise of more than 75 decibels (up to one meter distance from the source of the sound) is illegal from 10 am to 6 am. Those convicted in violation of these rules, under Section 290 and 291 of the Indian Penal Code, can face a fine of one lakh rupees or a prison or up to five years, sentence may run simultaneously, under the Environment Protection Act 1986.

In this connection, the Division bench of the then Chief Justice RC Lahoti and Justice Ashok Bhan on 18th July, 2005 had issued directions under Section 141, 142 of the Constitution, regarding restrictions on vehicles, loud speakers and crackers etc. in residential areas from 10 am to 6 am, but till date there has been no effective implementation of the law.

SOIL POLLUTION

Definition:- soil pollution is defined as contamination caused by chemicals and other substance resulting in the loss of the fertility or the productivity of soil.

The productivity of soil is measured in terms of the yields of grains per unit of land.

The indirect effect of soil contamination is observed through the crop contamination.

When such contaminated grains are consumed by the human beings they affect the human health.

SOURCES OF SOIL POLLUTION

Polluted water discharged from factories

Oil and petroleum leaks from vehicles washed off the road by the rain into the surrounding habitat.

Chemicals fertilizer runoff from farms and crops.

Acid rain (fumes from factories mixing with rain)

Sewage discharged into rivers instead of being treated properly

Over application of pesticides and fertilizers

Purposeful injection into groundwater as disposal method

EFFECTS OF SOIL POLLUTION

Agriculture:-

Reduced soil fertility

Reduced nitrogen fixation

Increased erodiability

Larger loss of soil and nutrients

Deposition of slit in tanks and reservoirs

Reduced crop yield

Imbalance in soil fauna and flora

Industrial:-

Dangerous chemicals entering underground water

Ecological imbalance

Release of pollutant gases

Release of radioactive rays causing health problems

Increased salinity

Reduced vegetation

Urban:-

Clogging of drains

Public health problems

Pollution of drinking water sources

Foul smell and release of gases

Waste management problems

PREVENTION OF SOIL POLLUTION

Reducing fertilizer and pesticide use – using biofertilizers and manures

Reusing of materials – materials such as glass containers, plastic bags, paper, cloths can be reused at domestic level rather than being disposed thus reducing solid waste pollution

Recycling and recovery of materials –papers, plastic and glass can be recycled

Reforestation – control of land loss and soil erosion can be possible through restoring forests

Solid waste treatment – proper method should be adopted for management of solid waste disposal. Industrial waste can be

treated physically, chemically and biologically until they are less hazardous.

Acidic and alkaline waste shall be first neutralised before disposed. Incineration of other waste is expensive and leaves a huge residue and adds to air pollution. Pyrolysis is a process of combustion in absence of oxygen or the material burnt under the controlled atmosphere of oxygen.

Conclusion

Environmental pollution is causing a lot of distress not only to humans but also animals, driving many animal species to endangerment and even extinction.

The transboundary nature of environmental pollution makes it even more difficult to manage – you cannot build stone walls along the borders of your country or put customs cabins at every point of entry to regulate its flows into your country.

Everything on our planet is interconnected, and while the nature supplies us with valuable environmental services without which we cannot exist, we all depend on each other's actions and the way we treat natural resources.

It's widely recognised that we are hugely overspending our current budget of natural resources – at the existing rates of its

exploitation, there is no way for the environment to recover in *good* time and continue "performing" well in the future.

Perhaps we should adopt a holistic view of nature - it is not an entity that exists separately from us; the nature is us, we are an inalienable part of it, and we should care for it in the most appropriate manner. Only then can we possibly solve the problem of environmental pollution.

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Some useful links:

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