



Pollution- A burning issue in world

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Abstract: *Pollution: An overview Pollution is when some harmful substances are added in the environment which alter its natural composition. Polluted water or garbage in the water bodies is a type of pollution. It adds germs and viruses. There are five kinds of pollution: water pollution, air pollution, noise pollution, soil pollution and thermal pollution. But two more also added that are nuclear and visual pollution.*

As pollution grows, ways to combat it have grown. Solar energy and wind energy give people clean ways to power their homes. When people use these alternative forms of energy, they put less carbon dioxide in the environment.

Pollution is the introduction of contaminants into the natural environment that cause adverse change. Pollution can take the form of chemical substance or energy, such as noise, heat or light. Pollutants, the components of pollution, can be either foreign substances/energies or naturally occurring contaminants. Pollution is often classed as point or non-point pollution. In 2015, pollution killed 9 million people in the world.

Major forms of pollution include: Air pollution, light pollution, littering, noise pollution, plastic pollution, soil contamination, radioactive contamination, thermal pollution, visual pollution, water pollution

Key Words : Pollution, introduction, natural, environment, change, Pollution, chemical, energies .

History- Air pollution has always accompanied civilizations. Pollution started from prehistoric times, when man created the first fires. According to a 1983 article in the journal Science, "soot" found on ceilings of prehistoric caves provides ample evidence of the high levels of pollution that was associated with inadequate ventilation of open fires. Metal forging appears to be a key turning point in the creation of significant air pollution levels outside the home. Core samples of glaciers in Greenland indicate increases in pollution associated with Greek, Roman, and Chinese metal production

Although environmental pollution can be caused by natural events such as forest fires and active volcanoes, use of the word pollution generally implies that the contaminants have an anthropogenic source- that is, a source created by human activities. Pollution has accompanied humankind ever since groups of people first congregated and remained for a long time in any one place. Indeed, ancient human settlements are frequently recognized by their waste-shell mounds and rubble

heaps, for instance. Pollution was not a serious problem as long as there was enough space available for each individual or group. However, with the establishment of permanent settlements by great numbers of people, pollution became a problem, and it has remained one ever since.

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By the middle of the 20th century, an awareness of the need to protect air, water, and land environments from pollution had developed among the general public. In particular, the publication in 1962 of Rachel Carson's book *Silent Spring* focused attention on environmental damage caused by improper use of pesticides such as DDT and other persistent chemicals that accumulate in the food chain and disrupt the natural balance of ecosystems on a wide scale. In response, major pieces of environmental legislation, such as the Clean Air Act (1970) and the Clean Water Act (1972; United States), were passed in many countries to control and mitigate environmental pollution.

Pollutants- A pollutant is a waste material that pollutes air, water, or soil. Three factors determine the severity of a pollutant: its chemical nature, the concentration and the persistence. Stock pollutants, towards which the environment has low absorptive capacity, are called stock pollutants. (e.g. persistent or organic pollutants such as PCBs, non-biodegradable plastics and heavy metals). Stock pollutants accumulate in the environment over time. The damage they cause increases as more pollutant is emitted, and persists as the pollutant accumulates. Stock pollutants can create a burden for the future generations, bypassing on the damage that persists well after the benefits received from incurring that damage, have been forgotten. **Notable pollutants**

Notable pollutants include the following groups

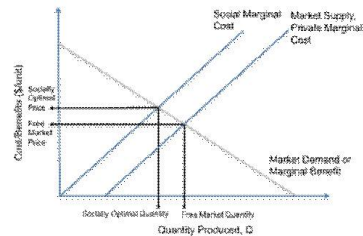
- o Mercury Hg
- o Persistent organic pollutants POPs
- o Ozone Ozone
- o Particulate matter PM
- o Environmental Persistent Pharmaceutical Pollutants EPPP
- o Polycyclic aromatic hydrocarbons PAHs
- o Volatile organic compounds VOCs

Fund pollutants- Fund pollutants are those for which the environment has the moderate absorptive capacity. Fund pollutants do not cause

damage to the environment unless the emission rate exceeds the receiving environment's absorptive capacity (e.g. carbon dioxide, which is absorbed by plants and oceans). Fund pollutants are not destroyed, but rather converted into less harmful substances, or diluted/dispersed to non-harmful concentrations. Light pollutant

Light pollution is the impact that anthropogenic light has on the visibility of the night sky. It also encompasses ecological light pollution which describes the effect of artificial light on individual organisms and on the structure of ecosystems as a whole. Socially Optimal level of pollution

Society derives some indirect utility from pollution, otherwise there would be no incentive to pollute. This utility comes from the consumption of goods and services that create pollution. Therefore, it is important that policy makers attempt to balance these indirect benefits with the costs of pollution in order to achieve an efficient outcome.



A visual comparison of the free market and socially optimal outcomes.

This model can be used as a basis to evaluate different methods of internalizing the externality. Some examples include tariffs, a carbon tax and cap and trade systems.

Sources Of Pollution- Air pollution comes from both natural and human-made (anthropogenic) sources. However, globally human-made pollutants from combustion, construction, mining, agriculture and warfare are increasingly significant in the air pollution equation.

Motor vehicle emissions are one of the leading causes of air pollution. China, United States, Russia, India Mexico, and Japan are the world leaders in air pollution emissions. Principal stationary pollution sources include



chemical plants, coal-fired power plants, oil refineries, petrochemical plants, nuclear waste disposal activity, incinerators, large livestock farms (dairy cows, pigs, poultry, etc.), PVC factories, metals production factories, plastics factories, and other heavy industry. Agricultural air pollution comes from contemporary practices which include clear felling and burning of natural vegetation as well as spraying of pesticides and herbicides. About 400 million metric tons of hazardous wastes are generated each year. The United States alone produces about 250 million metric tons. Americans constitute less than 5% of the world's population, but produce roughly 25% of the world's CO

and generate approximately 30% of world's waste. In 2007, China has overtaken the United States as the world's biggest producer of CO

2, while still far behind based on per capita pollution - ranked 78th among the world's nations.

In February 2007, a report by the Intergovernmental Panel on Climate Change (IPCC), representing the work of 2,500 scientists, economists, and policymakers from more than 120 countries, said that humans have been the primary cause of global warming since 1950. Humans have ways to cut greenhouse gas emissions and avoid the consequences of global warming, a major climate report concluded. But to change the climate, the transition from fossil fuels like coal and oil needs to occur within decades, according to the final report this year from the UN's Intergovernmental Panel on Climate Change (IPCC)

In the case of noise pollution the dominant source class is the motor vehicle, producing about ninety percent of all unwanted noise worldwide.

Forms of pollution

The major forms of pollution are listed below along with the particular contaminant relevant to each of them:

o **Air pollution:** the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide,

sulfur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxide produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight. Particulate matter, or fine dust is characterized by their micrometer size PM10 to PM2.5.

o **Electromagnetic pollution:** the overabundance of electromagnetic radiation in the nonionizing form, like radio waves, etc., that people are constantly exposed to, especially in large cities.

It's still unknown whether or not those types of radiation have any effects on human health, though.

o **Light pollution:** includes light trespass, over-illumination and astronomical interference.

o **Littering:** the criminal throwing of inappropriate man-made objects, unremoved, onto public and private properties.

o **Noise pollution:** which encompasses roadway noise, aircraft noise, industrial noise as well as high intensity sonar.

o **Plastic pollution:** involves the accumulation of plastic products and microplastics in the environment that adversely affects wildlife, wildlife habitat, or humans.

o **Soil contamination** occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE herbicides, pesticides and chlorinated hydrocarbons.

o **Radioactive contamination,** resulting from 20th century activities in atomic physics, such as nuclear power generation and nuclear weapons research, manufacture and deployment. (See alpha emitters and actinides in the environment.)

o **Thermal pollution,** is a temperature change in natural water bodies caused by human influence, such as use of water as coolant in a power plant.

o **Visual pollution,** which can refer to the presence of overhead power lines, motorway bill



boards, scarred land forms (as from strip mining), open storage of trash, municipal solid waste open spaces etc.

o Water pollution, by the discharge of waste water from commercial and industrial waste (intentionally or through spills) into surface waters; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and contaminants into surface runoff flowing to surface waters (including urban runoff and agricultural runoff, which may contain chemical fertilizers and pesticides; also including human feces from open defecation - still a major problem in many developing countries); ground water pollution from waste disposal and leaching into the ground, including from pit latrines and septic tanks; eutrophication and littering.

Effects of Pollution

Human health- Adverse air quality can kill many organisms including humans. Ozone pollution can cause respiratory disease, cardiovascular disease, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in developing countries. An estimated 500 million Indians have no access to a proper toilet. Over ten million people in India fell ill with waterborne illnesses in 2013, and 1,535 people died, most of them children. Nearly 500 million Chinese lack access to safe drinking water. A 2010 analysis estimated that 1.2 million people died prematurely each year in China because of air pollution. The high smog levels China has been facing for a long time can do damage to civilians' bodies and generate different diseases. The WHO estimated in 2007 that air pollution causes half a million deaths per year in India. Studies have estimated that the number of people killed annually in the United States could be over 50,000.

Oil spills can cause skin irritations and rashes. Noise pollution induces hearing loss, high blood pressure, stress, and sleep disturbance.

Mercury has been linked to developmental deficits in children and neurologic symptoms. Older people are majorly exposed to diseases induced by air pollution. Those with heart or lung disorders are at additional risk. Children and infants are also at serious risk. Lead and other heavy metals have been shown to cause neurological problems. Chemical and radioactive substances can cause cancer and as well as birth defects.

Environment- Environmental pollution is currently the biggest challenge facing the world today.

In the United States 40% of rivers and 46% of lakes are too polluted for fishing, swimming, and aquatic life. Not surprising though when 1.2 trillion gallons of untreated storm water, industrial waste, and untreated sewage are being discharged annually into American waters.

One-third of the topsoil in the world is already degraded, and with the current rate of soil degradation caused by improper agricultural and industrial practices, and deforestation, most of the world's topsoil could be gone within the next 60 years.

The Great Smog in 1952 killed 8000 people in London. This event was caused by a period of cold weather combined with windless conditions that formed a dense layer of airborne pollutants, mostly from coal plants, over the city.

There are many sources of pollution and each one has its own effect on the environment and living organisms. This article will discuss the causes and effects of the different kinds of pollution.

"Earth provides enough to satisfy every man's needs, but not every man's greed."

? Mahatma Gandhi

"This entire planet is our home. We are the only species that systematically destroy our own habitat." - Marianne Williamson

Strategies to control pollution- The environmental consequences of rapid industrialization have resulted in countless incidents of land, air and water resources sites being



contaminated with toxic materials and other pollutants, threatening humans and ecosystems with serious health risks. More extensive and intensive use of materials and energy has created cumulative pressures on the quality of local, regional and global ecosystems.

Two specific concepts served as the basis for the control approach: the assimilative capacity concept, which asserts the existence of a specified level of emissions into the environment which does not lead to unacceptable environmental or human health effects

the principle of control concept, which assumes that environmental damage can be avoided by controlling the manner, time and rate at which pollutants enter the environment

Under the pollution control approach, attempts to protect the environment have especially relied on isolating contaminants from the environment and using end-of-pipe filters and scrubbers. These solutions have tended to focus on media-specific environmental quality objectives or emission limits, and have been primarily directed at point source discharges into specific environmental media (air, water, soil).

Applying Pollution Control Technologies- Application of pollution control methods has demonstrated considerable effectiveness in controlling pollution problems - particularly those of a local character. Application of appropriate technologies is based on a systematic analysis of the source and nature of the emission or discharge in question, of its interaction with the ecosystem and the ambient pollution problem to be addressed, and the development of appropriate technologies to mitigate and monitor pollution impacts.

Central Pollution Control Board- The Central Pollution Control Board (CPCB) of India is a statutory organisation under the Ministry of Environment, Forest and Climate Change (Mo.E.F.C). It was established in 1974 under the

Water (Prevention and Control of pollution) Act, 1974. The CPCB is also entrusted with the powers and functions under the Air (Prevention and Control of Pollution) Act, 1981. It serves as a field formation and also provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act, 1986. It Coordinates the activities of the State Pollution Control Boards by providing technical assistance and guidance and also resolves disputes among them. It is the apex organisation in country in the field of pollution control as a technical wing of MoEFC. The board is led by its Chairperson, who is generally a career civil servant from the Indian Administrative Service appointed by the Appointments Committee of the Cabinet of the Government of India. The current acting chairman is S. P. Singh Parihar and the Member Secretary is Prashant Gargava. Functions of CPCB

Functions of CPCB comes under both national level and as State Boards for the Union Territories. CPCB, under the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981, aims to promote cleanliness of streams and wells in different areas of the States by prevention, control and abatement of water pollution, and to improve the quality of air and to prevent, control or abate air pollution in the country.

o Air quality/ pollution : CPCB runs nationwide programs of ambient air quality monitoring known as National Air Quality Monitoring Programme (NAMP). The network consists of 621 operating stations covering 262 cities/towns in 29 states and 5 Union Territories of the country. Under N.A.M.P., four air pollutants viz., Sulphur Dioxide (SO₂), Oxides of Nitrogen NO₂, Suspended Particulate Matter (SPM) and Respirable Suspended Particulate Matter (RSPM/PM₁₀) have been identified for regular monitoring at all the locations. The monitoring of meteorological parameters such as wind speed and wind direction, relative humidity (RH)



and temperature were also integrated with the monitoring of air quality. This information on Air Quality at ITO is updated every week.

o Water quality/ pollution : Fresh water is a finite resource essential for use in agriculture, industry, propagation of wild life & fisheries and for human existence. India is a riverine country. It has 14 major rivers, 44 medium rivers and 55 minor rivers besides numerous lakes, ponds and wells which are used as primary source of drinking water even without treatment. Most of the rivers being fed by monsoon rains, which is limited to only three months of the year, run dry throughout the rest of the year often carrying wastewater discharges from industries or cities or towns endangering the quality of our scarce water resources. CPCB in collaboration with concerned SPCBs/PCCs established a nationwide network of water quality monitoring, which has running 1019 stations in 27 States and 6 Union Territories. The monitoring process is done on quarterly basis in surface waters and on half yearly basis in case of ground water. It covers 200 Rivers, 60 Lakes, 5 Tanks, 3 Ponds, 3 Creeks, 13 Canals, 17 Drains and 321 Wells. Among the 1019 stations, 592 are on rivers, 65 on lakes, 17 on drains, 13 on canals, 5 on tanks, 3 on creeks, 3 on ponds and 321 are groundwater stations. The inland water quality monitoring network is operating under a three-tier program i.e. Global Environment Monitoring System (GEMS), Monitoring of Indian National Aquatic Resources System (MINARS) and Yamuna Action Plan (YAP).

o Urban area programs (EcoCity Program) : CPCB programs for urban areas, also known as EcoCity Program comes under X Plan to improve environment through implementation of identified environmental improvement projects in the selected towns and cities. Pilot studies conducted for urban areas by the Centre for Spatial Environmental Planning created at the CPCB under the World Bank funded Environmental Management Capacity Building Project and supported by the GTZ-CPCB Project under the Indo-German Bilateral Program

According to these studies CPCB develop a comprehensive urban improvement system employing practical, innovative and non-conventional solutions. Under the X Plan, a budget provision of Rs. 15 crore has been made for the period 2002-03 to 2006-07 for the EcoCity projects.

o Municipal Solid Waste rules : Every municipal authority comes under the Municipal Solid Wastes (Management & Handling) Rules, 2000 (MSW rules, 2000) and responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid. CPCB collects necessary information from municipal authorities and provide them technical assistance.

o Noise Pollution/ Rules : According to S.O. 123(E) by MoEF, various sources like industrial activity, construction activity, generator sets, loud speakers, public address systems, music systems, vehicular horns and other mechanical devices have deleterious effects on human health. CPCB has the responsibility to regulate and control noise producing and generating sources with the objective of maintaining the ambient air quality standards.

o Environmental Data Statistics : CPCB manages environmental data statistic in which air quality data and water quality data comes through. In the case of air quality data, it measures the level of SO₂, NO₂, RSPM and SPM. CPCB measure and maintains water quality data as well. Quality level of river and ponds are the major fields which comes under the water quality data criteria. Future of polluted India

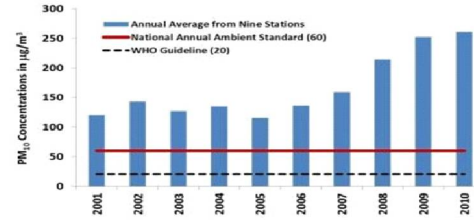
In the future, India is going to have to make a decision. Pollution is evidently going to become worse as the years pass. The people and their government need to take action before the environment that they're torturing is beyond repair. Some people are making efforts to repair the issues. There are many groups such as Water Aid America who are attempting to gather support and prevent further destruction of the environment. These groups have a problem though. Local governments and service providers need to take their fair share of the



pollution. They need to make sure that the local factories, services, and producers are aware of the environmental issue. The people need to be just as educated as well. By cutting back on the use of cars and individual vehicles and using mass transportation, the pollution rate will show an obvious decline. This is necessary for a bright future, considering that India's rising population will be the majority of the world in the next decade.

Most of the world's population will be subject to degraded air quality by 2050 if human-made emissions continue as usual. Overall, international change has to be made in order to protect the ozone layers and the environment, yet one of the top producers of the pollution needs to step up, India. Unlike India, North America and Europe have been gradually improving; however, that is due to often moving industry to other countries such as China or India where air pollution is a bit more of a problem. By as soon as 2025, the Indian subcontinent will suffer a marked increase in ozone levels due to the damaged ozone layer. Ultimately, if India does not step, their complete environment could be irreversibly damaged by pollution. Over the next fifty years, if India does not clean up their act, the Subcontinent could become unlivable due to the extreme amount of toxins and pollution.

Pollution has lead to become the fifth most common death in India, and at this rate, it is only going to increase unless there is change.



Evidence that shows that as the years have passed, pollution in India, specifically Delhi, has only got worse. This only proves that India needs to create laws and help stop the extreme amounts of pollution.

"The only solution to pollution is a people's humane revolution!"

"Pollution- If You Don't Kill It, It Will Kill You"

Conclusion- Pollution is the result of contamination in air, water and soil due to which very harmful to health. These contaminants are called pollutants. Pollution are mainly of four tapes air, water, land and soil. Various health diseases like asthma, bronchitis and lung cancer can be the result of it. Various measures should be taken by government and public to prevent this problem.

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