

Effects of Environmental Pollution

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ABSTRACT

Pollution is the process of making land, water, air or other parts of the environment dirty and not safe or suitable to use. This can be done through the introduction of a contaminant into a natural environment, but the contaminant doesn't need to be tangible. Things as simple as light, sound and temperature can be considered pollutants when introduced artificially into an environment. Environmental pollution has adverse effects on both the humans & the other environmental living and non-living things. If the air that we breathe, the water that we drink and the soil which produces crops, vegetables and fruits for
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us, all becomes polluted, then our chances of good healthy living become very small. Environmental pollution occurs in pollution of different forms such as land, water, air, noise, thermal, radioactive or light pollution etc. It has various adverse health effects like cardiovascular disorders, mental disorders, hearing loss, and various other harmful effects. Some preventive measure can be done through preventive control method and proper implementation of appropriate government laws and the strict compliance with these regulations, especially by potential industrial pollutants.

INTRODUCTION

Environmental pollution is currently the biggest challenge facing the world today and it is reaching worrying proportions worldwide. Urbanization and industrialization along with economic development have led to increase in energy consumption and waste discharges. The global environmental pollution, including greenhouse gas emissions and acid deposition, as well as water pollution and waste management is considered as international public health problems, which should be investigated from multiple perspectives including social, economic, legislation, and environmental engineering systems, as well as lifestyle habits, helping health promotion and strengthening environmental systems to resist contamination [1]. Environmental pollutants have various adverse health effects from early life, some of the most important harmful effects are perinatal disorders, infant mortality, respiratory disorders, allergy, malignancies,

cardiovascular disorders, and increase in stress oxidative, endothelial dysfunction, mental disorders, and various other harmful effects. Based on the strength of the scientific knowledge regarding the adverse health effects of environmental pollution and the magnitude of their public health impact, different kinds of interventions should be taken into account. In addition to industrial aspects, the public awareness should be increased in this regard. Likewise, health professionals have an exclusive competency to help for prevention and reduction of the harmful effects of environmental factors, this capacity should be underscored in their usual practice [2].

Types of Pollution and its Effect

Land pollution

Land can become polluted by household garbage and by industrial waste. It equally occurs when waste is not disposed of properly, or can occur when humans throw chemicals onto the soil in the form

of pesticides, insecticides and fertilizers during agricultural practices. Exploitation of minerals (mining activities) has also contributed to the destruction of the earth's surface. Commercial or industrial waste is a significant portion of solid waste. Hazardous waste is any liquid, solid or sludge waste that contain properties that are dangerous or potentially harmful to human health or the environment [3]. Industries generate hazardous waste from mining, petroleum refining, pesticide manufacturing and other chemical production. Households generate hazardous waste as well, including paints and solvents, motor oil, fluorescent lights, aerosol cans and ammunition.

Water pollution

Water pollution happens when chemicals or dangerous foreign substances are introduced to water, including chemicals, sewage, pesticides and fertilizers from agricultural runoff, or metals like lead or mercury. Water pollution can also severely affect marine life [4]. For example, sewage causes pathogens to grow, while organic and inorganic compounds in water can change the composition of the precious resource, low levels of dissolved oxygen in the water are also considered a pollutant [5]. Dissolved is caused by the decomposition of organic materials, such as sewage introduced into the water. Warming water can also be harmful. The artificial warming of water is called thermal pollution. It can happen when a factory or power plant that is using water to cool its operations ends up discharging hot water. This makes the water hold less oxygen, which can kill fish and wildlife. Nutrient pollution, also called eutrophication, is another type of water pollution. It is when nutrients, such as nitrogen, are added into bodies of water. The nutrient works like fertilizer and makes algae grow at excessive rates. The algae blocks light from other plants. The plants die and their decomposition leads to less oxygen in the water. Less oxygen in the water kills aquatic animals [6].

Air pollution

The air we breathe has a very exact chemical composition; 99% of it is made

up of nitrogen, oxygen, water vapor and inert gases. Air pollution occurs when things that aren't normally there are added to the air. A common type of air pollution happens when people release particles into the air from burning fuels. This pollution looks like soot, containing millions of tiny particles, floating in the air. Another common type of air pollution is dangerous gases, such as sulfur dioxide, carbon monoxide, nitrogen oxides and chemical vapors. These can take part in further chemical reactions once they are in the atmosphere, creating acid rain and smog. Other sources of air pollution can come from within buildings, such as secondhand smoke [7].

Noise pollution

Even though humans can't see or smell noise pollution, it still affects the environment. Noise pollution happens when the sound coming from planes, industry or other sources reaches harmful levels. Research has shown that there are direct links between noise and health, including stress-related illnesses, high blood pressure, speech interference, hearing loss, etc. Underwater noise pollution coming from ships has been shown to upset whales' navigation systems and kill other species that depend on the natural underwater world. Noise also makes wild species communicate louder, which can shorten their lifespan [8].

Light pollution

Most people can't imagine living without the modern convenience of electric lights. For the natural world, though, lights have changed the way that days and nights work. Some consequences of light pollution are:

- Some birds sing at unnatural hours in the presence of artificial light.
- Scientists have determined that long artificial days can affect migration schedules, as they allow for longer feeding times.
- Streetlights can confuse newly hatched sea turtles that rely on starlight reflecting off the waves to guide them from the beach to the ocean. They often head in the wrong direction.

- Light pollution, called sky glow, also makes it difficult for astronomers, both professional and amateur, to properly see the stars.
- Plant's flowering and developmental patterns can be entirely disrupted by artificial light [9].

Main Causes Of Environmental Pollution

Population growth

Modern thinkers consider that growth of population is the root cause for many human problems. This observation also applies to environmental degradation. Increase in the population will have a multiplier effect requiring proportionate increase in all requirements necessary for the existence of human beings [10]. Population growth requires abnormal exploitation of natural resources to provide day-to-day essential requirements of life. It results in migration of people and growth of urban areas, thereby inviting new problems of health, ecology and human sustenance.

Nature of Modern Technology

The nature of productive technology in recent years is closely related to the environmental crisis. Commoner maintains that sweeping transformations of productive technology since World War II productive technologies with intense impacts on environment have displaced less destructive ones. This factor has been largely responsible for the generation of synthetic and non-biodegradable substances such as plastics, chemical nitrogen fertilizers, synthetic detergents, synthetic fibers, big cars, petrochemical and other environmentally injurious industries and 'disposable culture. Thus, environmental crisis is the inevitable result of a counter ecological pattern of productive growth. Ecologically benign technologies did and do exist but they are not utilized, for they are considered inconsistent with the short-term interests of private profit maximization [11].

Deforestation

Deforestation gives birth to several problems encompassing environmental

degradation through accelerated rate of soil erosion, increase in the sediment load of the rivers, siltation of reservoirs and river beds, increase in the frequency and dimension of floods and droughts, changes in the pattern of distribution of precipitation, intensification of greenhouse effects increase in the destructive force of the atmospheric storms etc. economic loss through damages of agricultural crops due to increased incidence of floods and droughts, decrease in agricultural production of loss of fertile top soils, decrease in the supply of raw materials to the industries and building matters etc. Thus deforestation cause a chain effects which adversely affect the natural environment [12].

Agricultural Development

Agricultural development means expansion of agricultural land increase in agricultural productivity and net agricultural production. It is due to development of modern scientific techniques, advanced technologies, increased production and use of chemical fertilizers, expansion in irrigational facilities, development of high-yielding varieties of seeds, etc. This has solved the problem of growing demand of food due to ever increasing world population on the one hand; it has also created or is creating hazardous environmental problems of serious concern on the other hand. Thus modern economic and technological man is at the cross road of dangers in all directions [13]. The agricultural development degrades the environment in a variety of ways, e.g. (i) through the application of chemical fertilizers and pesticides and insecticides, (ii) through the increase in irrigational facilities and amount of irrigation, (iii) by making changes in biological communities etc.

Coal burnt Thermal Power Plants

Power Plants either in public or private sector mainly use coal for generation of electricity. About 62% of the coal produced in our country is utilized for generation of electricity which accounts of 65% of power generation. This process results in the accumulation of various by-products such as bottom

ash, boiler slag and fly ash. Fly ash alone amounts to more than 70% of the total quantity. Disposal of this huge amount of fly ash is a difficult and sensitive task. Though this material can be used in manufacture of cement, brick and also used as soil conditioner but these activities have not gained much popularity due to economical and social consideration. Even if the fly ash is utilized for the above mentioned activities, it will not be possible to utilize even 30% to 40% of the ash produced [14]. Thus there is a need to store the ash produced in such a way as to have minimum damage to air, water and soil bodies. A super thermal power plant built on about 800 acres of land normally requires 1200 acres for ash disposal. On the basis of the ash production trends the area requirement for dumping of the ash is around 40000 hectares. Power plants are preferably placed away from the human settlements and moreover on waste lands, but with course of time some of the cultivable area is also covered for ash mount site. Presence of ash particularly in the atmosphere is of major concern to the people living close to the plant site. This is particularly severe in summers due to prevailing high wind speeds. The finer fractions of fly ash are potentially harmful as they get deposited in lungs/pulmonary tissues of respiratory track when inhaled [5].

Urbanization

Exodus of population from rural areas to urban centre and origin and expansion of new urban centers due to industrial expansion and development are responsible for rapid rate of exploitation of natural resources and several types of environment degradation and pollution in the developed and developing countries. The level of urbanization in the developed countries of the world has already reached its peak. The accumulation of wealth and availability of more economic and job opportunity in the urban centers have resulted into the concentration of population in the congested metropolitan areas and thus the formation and growth of big slum areas [3].

Preventive Measures

Prevention and Controlling Air

Pollution: Pollution in the air is the major source of contamination in our environment. There is a very urgent need to control this. Burning of leaves and crop in farmlands has already been banned by the government. There are several regulations set by the government for industries also, but the need is there to follow them also. Development of renewable sources should be promoted to reduce the burning of fuels [7]. In industries, proper chimneys should be installed and waste gases before leaving the chimney should be made to pass through filters to prevent the toxins to enter our air. Also, there is a need to promote CNG using vehicles and to reduce the burning of petrol and diesel. Vehicles should be regularly checked for pollution emission and more use of public transport should be promoted.

Prevention and Control of Water

Pollution: Water is the core of a healthy ecosystem. The prevention and control of water pollution should consider reasonable development and utilization of regional water resources and the water cycle. The protection of drinking water source to safeguard the quantity and quality of water is very important for healthy living. To prevent water pollution sewerage treatment plants should be set up and bathing and washing on the banks of the river should be discouraged. Besides this industrial waste should not be dumped in rivers and those doing so should be penalized. Sewerage treatment plants must be established in the towns to ensure a minimum treatment of 90% of sewage (secondary treatment) and primary or secondary class sewerage treatment plants should be built in 80% of the central towns. Sludge disposal facilities should be installed for the need of sewerage treatment [9]. In places where there is a need, small wastewater treatment facilities should be used to extract and treat sewerage directly to provide water for cleaning, irrigation, and municipal purpose. The pipes and network should be designed and built for the treatment of rainfall. Industries should be checked regularly to ensure

proper disposal of chemical waste by them.

Solid Waste Management: Waste management, reduction, recycles and safe treatment is few measures for an effective ecosystem. Effective measures as substitution of coal, control of one-shot products, simplifying commodity package, provision of pretreated vegetable to the urban area and advocating healthy consumption, must be taken to cut the production of industrial solid wastes, commercial garbage, and domestic refuse at the source and promote recycling. 90% of industrial solid waste should be reused by the process of industrial restructuring, improved the existing reuse system for coal ash and metallurgical residues and the provision of the treatment facilities. Further improvement for reuse shall be pursuit [11]. A strict management system for hazardous waste should be developed to realize 100% safe treatment and disposal. The hazardous waste that cannot be treated on-site should be collected and treated in central treatment and disposal facilities. If needed new landfill site for solid hazardous waste management should be built. A centralized treatment facility for the treatment of medical waste should be provided. Supervision shall be tightened to prevent hazardous waste from being mixed with urban domestic refuse and serious punishment should be imposed in case of violation.

Prevention and Control of Industrial Pollution: One of the major sources of pollution in the environment is the industries. Industries pollute the environment in every possible way. High noise level from industry leads to noise pollution, smoke arising is the cause of air pollution and waste contributes to solid and water pollution. The aim of the prevention and control of industrial pollution should be to substantially cut the harmful discharge from the industries. The primary approach may include implementation of total discharge quantity control program, application of life-cycle control and recycle economy, readjusting the industrial structure and layout, improvement of environmental management within the enterprise, the

popularization of advanced technology, elimination of the outmoded technique and closing the enterprises with heavy pollution [10]. It should be continued to control over pollution especially, the fugitive emission of air pollutants. More and more usage of green fuel and non-conventional sources should be promoted and subsidies should be given to those opting for it. Regular checks should be maintained and those found guilty should be immediately stopped from such practices.

Noise Pollution: Noise in our atmosphere is also a source of pollution and may cause many health problems and temporary or permanent hearing impairments. In order to prevent noise pollution control over the noise caused by transportation, construction, machinery and social activity must be tightened. The motorway planning should give full consideration of traffic noise, at the proper sections, noise-deafening wall, noise-deafening structure and low-noise road surface and all motor rules should be effectively brought to follow by one and all. The large vehicles that enter the city limits during the night should be under strict control in the driving routes, pollution level, and speed. No blow from any kind of automobiles should be permitted within the school and hospital vicinity and no whistle from the train should be allowed in the sensitive areas of the cities. Residence along sections of the railway should not be planned and passed by the urban development authorities. Proper noise prevention guidelines should be issued and followed strictly by all.

Reduce, Reuse, and Recycle: This three teered system is the best way to reduce waste. First Reduce. Reduce the amount of items you consume especially things that can be replaced with something reusable, such as a washcloth instead of paper towel. Second, always reuse items rather than use disposable. Anything you do can help, you don't have to make every change at once. Lastly, recycle. If it is something you have to dispose of, recycle what you can. All of this will reduce the amount you pollute and should also leave a few more dollars in your pocket as well.

CONCLUSION

Pollution needs to be dramatically reduced because it is destroying the environment we live in, contaminating our food and water, causing diseases and cancers in humans and wildlife, and destroying the air we breathe and the atmosphere that protects us from harmful ultra-violet radiation. It is the responsibility of every living person to protect the environment, and with the

population ever increasing, pollution problems are only going to get worse unless we do something about it. Protecting the environment is a long and daunting task, requiring continuous planning, governmental policies, and public and industrial participation. However the result of ignoring the problem will be catastrophic and life as we know it will begin to end.

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