

A BRIEF STUDY OF ENVIRONMENTAL POLLUTION AND ITS MAJOR EFFECTS ON HUMAN HEALTH

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Abstract

Effects of environmental pollution on the human health, polluted air adversely introduces the harmful effects on the health of human beings. Nitrogen oxides, Sulphur dioxide, Carbon Monoxide, Ammonia and Ozone are the major air pollutants. When the concentration of the pollutants in the air becomes high from a certain level, the resultant effects may cause a degree of difficulties regarding human health specially the severe breathing problems leading to maximum as even the deaths may occur. Water pollution occurs when a body of water is adversely affected due to the addition of large amounts of materials to the water. Sewerage water, industrial wastes and disposals are the sources of water pollution. Waterborne diseases caused by polluted drinking water are Typhoid, Amoebiasis, Giardiasis, Ascariasis, and Hookworm. Land pollution is the degradation of the Earth's land surface through misuse of the soil by poor agricultural practices, mineral exploitation, industrial waste dumping, and indiscriminate disposal of urban wastes. The term noise is commonly used to describe sounds that are disagreeable or unpleasant produced by acoustic waves of random intensities and frequencies. Noise from industry, traffic, homes and recreation can cause annoyance, disturb sleep and effects health. Thus, sound is a potential serious pollutant and threat to the environmental health.

Key words : *Environmental, Pollution, Health, Air, Water and Degradation*

Introduction

Environment in its wider sense includes everything which is external to human being. Environment may be defined as “an aggregate of all external conditions and influences affecting life development of an organism, human behaviour and society”. The “creature of Universe” has created our earth with the most marvelous biodiversity. They have been blessed with a vast variety of resources for sustenance of the life. The bounties of the nature are enough for meeting the requirement of all living organisms occupying earth. Thus a delicate relationship exists among the three occupants of the mother earth i.e. humans, other living organisms and the natural resources.

Environment related threats to human health that do not result from direct exposure to chemicals or air pollutants are less common in India but may still have significant impacts. A well-known example is the effect on the ozone layer of ozone-depleting substances used in cooling systems and spray cans. The depletion of the ozone layer has led to increased exposure to UV-radiation and a greater risk of skin cancer. In addition to physical diseases, environmental contamination can also cause psychological problems. Noise, one of the determinants of the quality of urban life, can have an impact on human health, decreasing the quality of life and potentially contributing to depression. The environment-related health issues that are likely to be prominent in India in the future include both the expansion of existing threats and the possibility of new ones. The threat of continuing widespread release of chemicals to the environment gives the greatest cause for concern. This is not only a question of the amount of chemicals that end up in the environment, but more a question of their characteristics and effects. Unfortunately, the latter are often unknown, as the recent discovery of the endocrine disrupting effects of certain pesticide ingredients has shown. The possible effects of climate change are a widely recognised future threat to human health, although their exact impact is not yet well understood. Climate change might result in new infectious diseases, as well as changing patterns of

known diseases, and loss of life due to extreme weather conditions.

Review of Literature

Review of related literature provides an opportunity of gaining insight into the method, measures, subject and approaches employed by the other researchers. A careful review of research, journals, books, dissertations, thesis and other sources of information about the problem to be investigated is one of the important steps in the planning of any research studied.

The rapid growth of population has led to an increase in demand and production of goods and services across the world (Blanchard, 2009). By discharging more waste to the environment, these anthropogenic activities have always imposed threats to it (Ezebilo and Animasaun, 2011; Mary and Adelayo, 2014). The UNEP reports, (2009) state that daily global generation of waste in 2006 was reported as 2.02 billion tonnes. At the global level, 18% – 64% health care facilities have unsatisfactory BMWM facilities, which include lack of awareness, inadequate resources and poor disposal mechanisms. In South-East Asian countries, 56% of medical facilities lack proper waste disposal and treatment (WHO, 2011). Similar situation existed in several other developing countries such as Senegal, Iran, Nigeria and Pakistan and the authors reported lack of infrastructure, state of collection, transportation, disposal, training, capacity building, PPEs and resource constraints in BMWM (Abah and Ohimain, 2011; Ali et al., 2015; Askarian et al., 2004). Pollution has also increased, because the rapid increase of waste generation has exceeded the earth's carrying capacity by 30 percent (Odum and Odum, 2006). A major concern for many fast growing cities in developing countries is the lack of proper planning, inadequate governance, resource constraint and ineffective management, solid waste, especially inadequate collection and improper disposal of the same (Pek and Othman, 2010; Medina, 2010).

The important steps identified are as follows: the institution of a sharp management system, avoidance of hazardous substances wherever possible, waste reduction, ensuring worker safety, providing appropriate methods of waste collection and transportation and installing safe treatment and disposal mechanisms (Abor and Bouer, 2008). It is estimated that some 5.2 million people (including 4 million children) die each year from waste-related diseases. Globally, the amount of hospital waste generated will be doubled by the year 2000 and quadruple in the year 2025 (Haque, 1994; Akter et al., 1999). A study in Bangladesh about BMW in different health care centres reported the absence of appropriate policy and laws, awareness and willingness responsible for the improper management of BMW (Hassan, 2008). A study of BMW in low level health facilities of Tanzania reported that the medical waste management is still very poor and awareness and training should be provided to the staffs of the health care settings (Manyele, 2010). A study in Nigeria reported that more than 90% of the hospital waste generated is directly disposed on land in an unhygienic and unsatisfactory manner (Vivan et al., 2011). The hospital needed proper program for solid waste management require having a good arrangement of waste bins with different colours and an appropriate site selection in the hospital for different types of wastes (Yousefi and Rostami, 2017).

Hussain, (1998): Environmental pollution means pollution of the environment due to release of any substance from any process which are capable of causing harm to man and other living organisms supported by environment.

Kemp, (1998): Environmental pollution is “the contamination of the physical and biological components of the earth/atmosphere system to such an extent that normal environmental processes are adversely affected”.

Colls, (2002): Among children air pollution has been shown to be associated with the incidence of asthma, acute respiratory infections, allergies and other ailments.

Mukhopadhyay, K. (2009) A joint study by Chittaranjan National Cancer Institute (CNCI), West Bengal Department of Environment and the Central Pollution Control Board (CPCB) has found that around 70% of people in the city of Kolkata suffer from respiratory disorders caused by air pollution.

Methodology

The method used in this paper is descriptive-evaluative method. The study is mainly review based. It is purely

supported by secondary source of data, i.e. books, journals, papers and articles and internet.

Result and discussions

Air pollution

Air pollution is the introduction of chemicals, particulate matter, or biological materials that cause harm or is comfort to humans or other living organisms, or cause damage to the natural environment or built environment, into the atmosphere. The atmosphere is a complex dynamic natural gaseous system that is essential to support life on planet Earth. Strato spherical ozone depletion due to air pollution has long been recognized as a threat to human health as well as to the Earth's eco systems. Indoor air pollution and urban air quality are listed as two of the world's worst pollution problems in the 2008 Blacksmith Institute World's Worst Polluted Places report.

Rapid industrialization, urbanization and mechanized transport are introducing new and disturbing elements into the environment. A variety of factories, chemical mills, machines are adding to environmental problem and vehicles as well as Industrial smoke are causing wide spread respiratory diseases and discomfort. The devastation caused by atomic radiation and fallout is too well known in this connection. Polluted air adversely affects the health of human beings, animals, plants, soils, damage buildings and other property. There are five main classes of pollutants: carbon monoxide, hydrocarbons, nitrogen oxides, sulphur oxides and particulates. When the concentration of the pollutants in the air becomes very high, many people had difficulty of breathing and as a result few deaths may occur. Air pollution contributes the incidence of Bronchitis, emphysema and other respiratory diseases.

In metropolitan cities, widespread use of low quality fuel, combined with a dramatic expansion in the number of vehicles. On Pakistani roads, had led significant air pollution problems. In large cities, the emission from vehicles is another source of pollution. It is estimated that vehicles emit 25 times more the amount of Carbon Monoxide, 20 times the amount of hydrocarbons and 3.6 times the amount of nitrous oxide of an average vehicle in Pakistan as compared to United States (Jahangeer, 2000). The other sources of pollution are sewerage water, industrial wastes and disposal and controlling emissions from factories, particularly those located in residential areas, pollution of subsoil drinking water because of seepage of industrial effluents and sullage and inadequate solid waste disposal.

Sources of air pollution:

Natural Sources

Dust from natural sources, usually large areas of land with little or no vegetation. Methane, emitted by the digestion of food by animals, for example cattle. Radon gas from radioactive decay within the Earth's crust. Radon is a colorless, odorless, naturally occurring, radioactive noble gas that is formed from the decay of radium. It is considered to be a health hazard. Radon gas from natural sources can accumulate in buildings, especially in confined areas such as the basement and it is the second most frequent cause of lung cancer, after cigarette smoking. Smoke and carbon monoxide from wildfires. Volcanic activity, which produce sulfur, chlorine, and ash particulates (EPA, 2010).

Human sources:

Chemicals, dust and controlled burn practices in agriculture and forestry management. Controlled or prescribed burning is a technique sometimes used in forest management, farming, prairie restoration or greenhouse gas abatement. Fumes from paint, hair spray, varnish, aerosol sprays and other solvents (EPA, 2010). Fossil fuels (oil, gas & coal) are the largest anthropogenic sources of air pollution – they are widely used in industry and everyday life.

Population growth causes the demand for food and other goods to go up, which is met by expanded production and use of natural resources. This then leads to higher levels of atmospheric pollution. *Globalization* has in a way become a facilitator of air pollution. Big industry takes advantage of lax environmental controls in developing nations and moves its manufacturing facilities to such “pollution havens” from where air pollution travels around the world without any obstacles (Ehrlich *et al.*, 1977).

Effects of air pollution:

Air pollution has both acute and chronic effects on human health. Health effects range anywhere from minor irritation of eyes and the upper respiratory system to chronic respiratory disease, heart disease, lung cancer,

and death. Air pollution has been shown to cause acute respiratory infections in children and chronic bronchitis in adults. It has also been shown to worsen the condition of people with preexisting heart or lung disease. Among asthmatics, air pollution has been shown to aggravate the frequency and severity of attacks (Mishra, 2003).

Water pollution:

The effects of water pollution are varied. They include poisonous drinking water, poisonous food animals (due to these organisms having bio accumulated toxins from the environment over their life spans), unbalanced river and lake ecosystems that can no longer support full biological diversity, deforestation from acid rain, and many other effects. These effects are, of course, specific to the various contaminants (Mission, 2009). Waterborne diseases caused by polluted drinking water:

- Typhoid
- Amoebiasis
- Giardiasis
- Ascariasis
- Hookworm

Waterborne diseases caused by polluted beach water:

- Rashes, ear ache, pink eye
- Respiratory infections
- Hepatitis, encephalitis, gastroenteritis, diarrhea, vomiting, and stomach aches

Conditions related to water polluted by chemicals (such as pesticides, hydrocarbons, persistent organic pollutants, heavy metals etc):

- Hormonal problems that can disrupt reproductive and developmental processes
- Damage to the nervous system
- Liver and kidney damage
- Damage to the DNA
- Exposure to mercury (heavy metal) (Akthar, 2006)

Land pollution:

Certain materials, such as lead, are toxic to humans, thus if this compound is introduced into the air, land or water, it can lead to serious health complications for surrounding human populations. Most land pollution affects animals that live off of the land, such as cows, goats and other herbivores. If these animals dine on plants that have been introduced to toxic chemicals, they can pass on deadly diseases to animals higher on the food chain, including humans (McLelland, 2010). Following are further negative effects of soil pollution.

- Causes cancers including leukemia
- Lead in soil is especially hazardous for young children causing developmental damage to the brain
- Mercury can increase the risk of kidney damage; cyclodienes can lead to liver toxicity
- Causes neuromuscular blockage as well as depression of the central nervous system
- Also causes headaches, nausea, fatigue, eye irritation and skin rash (The Encyclopedia, 2010).

Noise pollution:

Noise intensity is measured in decibel units. The decibel scale is logarithmic; each 10-decibel increase represents a tenfold increase in noise intensity. Human perception of loudness also conforms to a logarithmic scale; a 10-decibel increase is perceived as roughly a doubling of loudness. Thus, 30 decibels is 10 times more intense than 20 decibels and sounds twice as loud; 40 decibels is 100 times more intense than 20 and sounds 4 times as loud; 80 decibels is 1 million times more intense than 20 and sounds 64 times as loud. Distance diminishes the effective (The Columbia Encyclopedia, 2008).

Effects:

Noise is a prominent feature of the environment including noise from transport, industry. Exposure to transport noise disturbs sleep in the laboratory, but not generally in field studies where adaptation occurs. Noise interferes in complex task performance, modifies social behavior and causes annoyance. Studies of occupational and environmental noise exposure suggest an association with hypertension, whereas

community studies show only weak relationships between noise and cardiovascular disease. Aircraft and road traffic noise exposure are associated with psychological symptoms but not with clinically defined psychiatric disorder. In both industrial studies and community studies, noise exposure is related to raised catecholamine secretion. In children, chronic aircraft noise exposure impairs reading comprehension and long-term memory and may be associated with raised blood pressure. Further research is needed examining coping strategies and the possible health consequences of adaptation to noise (Matheson, 2003).

There is no doubt that the noise affects human health adversely. The noise may result in loss of hearing, stress, high-blood pressure, loss of sleep, distraction affecting productivity, and a general reduction in the quality of life. The effects of noise are difficult to quantify because tolerance levels among different populace and types of noise vary considerably. There is a large amount of scientific literature assessing the effects of noise on human beings. Indiscriminate use of horn by the vehicles and wide spread use of loudspeakers in social and religious ceremonies caused several health hazards to the urban inhabitants. It may cause deafness, nervous breakdown, mental disorder, heart troubles, high blood pressure, dizziness and insomnia (Bhargawa, 2001). Exposure to noise pollution exceeding 75 decibels for more than eight hours daily for a long period of time can cause loss of hearing. The hazards increase with the intensity of the noise and the period of exposure. The sound produced by a bursting cracker, exceeding 150dB, can cause a ringing sensation called 'tinnitus' and can impair hearing permanently. In general about 1 percent of the population suffers from noise-induced pollution. The noise level produced by household equipment and appliances sometimes reaches up to 97 dB which is more than double the acceptable (45dB) noise level. This excessive noise could carry several ill-effects viz. annoyance, speech interference, sleep disturbance, mental stress, headache, and lack of concentration (Nagi *et al.*, 1993). The workers exposed to high noise levels have a higher incidence of circulatory problems, cardiac diseases, hypertension, peptic ulcers, and neurosensory and motor impairment. The adverse effects of noise have not even spare the birds (Robins, sparrows, wrens and blackbirds). Those living near busy roads could not hear each other and thus unable to contact for propagation (Deutche, 2003).

Conclusion

The most urgent issues to be addressed in India in relation to limiting health loss from environmental degradation are air pollution and exposure to chemicals. The issue of air quality, and especially urban air quality, emphasizes the need for policies resulting in less volume, and cleaner means, of transport. The problems related to exposure to chemicals call for policy interventions to limit industry, energy and transport emissions, agricultural chemical use, and to promote food safety. As policies are formulated to address these environmental issues, the health benefits associated with policy interventions should be considered together with the environmental benefits

In the light of the results of the present study the following conclusions are drawn:

- Industries and unbalanced infrastructure of traffic have created a lot of problems for the dwellers. Industries have been discharging waste material in gasses, liquid and solid form which has been destroys the crops and human health.
- People are facing many diseases due to pollution like Hepatitis, Lung diseases, Throat diseases, Gastro, Diarrhea, Skin diseases and many other types of health infections.
- Polluted water is also a major problem of the people in studied areas. Residents of that areas said that the sanitation and drainage system is improper due to which they are suffering from many problems.
- Abating pollution is an exceptionally important concern because of pollutions' harmful effects on the person's health, on climate and on the environment. Clean and healthy atmosphere is essential for good health of the people. People cannot inhale in polluted air

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