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Review

Hazards of environmental pollution: a global environmental challenges and way forward

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The level pollution in our environment in the last twenty years has been a source of concern which needs a serious and tactical approach, if not our environmental health status will be in jeopardy. These media were; Air, land, water and noise. The pollutant when injected into the biosphere in greater quantities affected the functioning of ecosystem and exercised adverse effects on plants, animals and humans. Here, information where sourced from internet journals and available text. Then conclusion, recommendation and control were made. Thus, it is recommended that international standard be established for contents of potentially toxic elements in industrial effluent. Also hazards associated with environmental pollution can be controlled by having information about the concentration of pollutant and measurement of biological oxygen demand. (B.O.D). In short, management practice must be taken into consideration with sound ecological principle and man must have greater understanding and appreciation of these principles.

Keywords: Hazards, Environmental Pollution

INTRODUCTION

Pollution causes many deaths and illness among urban residents- particularly in developing countries, urban water supplies are often fouled with waste, and clean water is scarce. A pail of atmospheric pollution hangs over many big cities, both in developed and developing countries. Indoor air pollution is also widespread, not only in rural areas of many developing countries but in urban areas. (Population report 2002).

According to Funke and Wagnal (1987) standard dictionary of English language defines pollutions."As any of various noxious chemicals and refuse materials which impairs the purity of water, soil and or the atmosphere".

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Also, the advance in science and technology daily increases the array of pollution ranging from organic and inorganic liquid and volatile substances, gas salts, solutions and metals. Some are carsinonic and others affect men in different ways.

Background of the study

Pollution: this is the contamination of air, land and water that may harmfully affect life. The four main classified substances are; air, land, water and noise pollution. The pollutants when injected into the biosphere in greater quantities affect the functioning of the ecosystem and exercise adverse effects on plants, animals and man.

Much of what we know of our society comes from the

waste they left behind (W.H.O. 1985). Refuse such as animal skeletons and implements reveals hunting technique, diet, clothing, tool usage and the use of fire for cooking. Prehistoric refuse heaps or middens discovered by the archeologist in coastal areas of North America reveal information about the shell fish diet and eating habits of Native Americans who lived more than 10,000 years ago.

Also, the magnitude and severity of pollution increased as humans developed new technologies in the society (Taura, Fagalawa, and kakafi, 2005). Pollution had evolved from many localized problem to one of global consequences in the environment, but changed atmospheric and climatic conditions interfere with human health, the quality of life or the natural causes, such as volcanic eruption, mostly caused by human activities (Dauda and Obi 2000).

Pollutants can be classified into two categories such as biodegradable pollutants such as sewage which can rapidly be decomposed by natural processes. These pollutants become problem when added to the environment faster than they decomposed while non-degradable pollutants are materials that either do not decompose or decompose slowly in the natural environment –once contamination occurs, it is difficult or impossible to remove the pollutants from the environment.

This paper for the purpose of convenience the types of and the source of pollutants are grouped into two. They are:

A. **Natural sources;** global rock decay and weathering products of regional core deposit, Local Ocean; ground water and surface water.

B. **Anthropogenic sources;** this includes industrial emission, burning of fossil fuels and other liquids effluents and gases as discharge.

Types of pollution

Pollution exists in many forms and affects many different aspects of earth environment. Point source pollution comes from specific, localized, and identifiable sources, such as sewage; pipeline or industrial smoke stacks. While non point source pollution comes from dispersed or uncontained sources, such as contaminated water, run off from urban areas or automobile emissions.

The effects of these pollutants may be immediate or delayed. Here, primary effects of pollution occur immediately after contamination occurs, such as the death of marine plants and wild life after an oil spills at the sea while secondary effects may be delayed or may persist in the environment into the future perhaps going unnoticed for many years.

Also Dichlorodipheny (trichloro ethene (D.D.T.) a non-degradable compound seldom poisons birds immediately, but gradually accumulates in their bodies. Birds with high concentrations of this toxic chemical lay thin shelled eggs and fail to hatch or produce deformed offspring. These secondary effects threatened the survival of species such as the bald eagle and peregrine falcon, and arouse public concern over the hidden effect of Non degradable chemical compounds. While types of pollution that affects man in the society includes, Air pollution, water pollution, Land pollution and noise pollution to mention but a few.

Air pollution: Air pollution is particularly a health problems in rural areas. Millions of poor people in urban areas - also suffer from its effects, however, some estimates suggest that worldwide urban indoor air pollution kills about 600,000 people annually (W.H.O. Guideline, Aug, 2000).

Air pollution is a major health problems because worldwide almost 3 billion people rely on biomass fuels which are mostly wood, charcoal, and animal dung for household cooking and heating (W.H.O. 2002).

In China, India, and sub Saharan 'Africa, more than 80% of households use biomass fuels for cooking (Smith K.R. 2002). These fuels do not burn clearly. They emit large amounts of smoke, often directly inside' dwelling houses without adequate ventilation.

While rural areas may lack access to modern stoves, or clean fuels, the urban poor often cannot afford cleaner fuels such as kerosene, natural gas or electricity. They have no choice but to use biomass fuels (Earthscan publication 2001, 4484). Women and children suffer most from indoor air pollution because they spend many hours each day in their homes, where often the air is polluted. For example, a study in Accra, Ghana, found that women faced particularly, high level of exposure to chemical pollutants, especially if they} burned wood and charcoal for cooking. The urban environment (March, 1999) Infants and Young children are often exposed because they are usually carried on their mothers' back or kept close to their mothers throughout the day (Bulleintain of the W.H.O. 2000).

Contamination of Earth's atmosphere can take many forms and has existed since the beginning of use of fire for Land clearing (for agriculture), heating and cooking. Air pollution became a major problem during the industrial revolution of 18^{th} and 19^{th} centuries which has resulted in the various environmental challenges facing the society. Urbari air pollution is commonly known as smog. The dark smog is generally a smoking mixture of carbon (II) oxide and organic compounds from incomplete combustion of fossil fuels such, as coal, and sulphur (IV) oxides from impurities in the fuels. As the smog ages reacts with oxygen, organic and tetraoxosulphate (VI) acid-Condense as droplets, increasing the haze. This smog developed the haze. This smog developed into a major health hazard by the 20^{lh} century killing thousands of people and affecting other organisms in the society.

A second type of smog is caused by combustion in-ear, truck and air plane engines which produces oxide of

Nitrogen and release hydrocarbons from unburned fuels. Sunlight causes the oxide of Nitrogen and hydrocarbons to combine and turn oxygen into ozone, a chemical agents that attacks rubber injures plants, and irritates lungs. The hydrocarbons are oxide in material that can condense and form a visible pungent haze. Eventually most pollutants are washed out of the air by rain as pollutants build up in the atmosphere, oxides of sulphur and nitrogen are converted into acid that mix with rain. This acid rainfall in Lakes and on forest where it leads to the death of fish and plants and eventually damage the entire ecosystems. Eventually the contaminated Lakes and forest, may become lifeless. Heavily industrialized regions, such as Europe and the eastern United States and Canada are the hardest hit by acid rain. Acid rain can also affect human health and man-made objects.

Also, one of the greatest or environmental challenges caused by air pollution is global warning, which is an increase in earth's atmosphere temperature due to building up of certain atmospheric gases such carbon (IV) oxide with the heavy use of fossil fuels in the 20th century, atmospheric concentration of carbon (IV) oxide and other gases, known as green house effects which reduce the escape from planets without blocking the radiation coming-from sun. Because of this green house effect, average global temperature are expected to rise to 1-4°C to 5.8°C (2.5f to 10.4F) by the year 2100. Although this trend appears to be a small change, the increase would make the earth warmer than it has been in the last 125,000 years. This possibly change the climatic patterns and affecting crops production disrupting wild life distributions and raising the sea level.

In addition, air pollution can also damage, the upper atmospheric region known as the stratosphere. Excessive production of chlorine containing compounds. Such as chlorofluoro carbons (CFS) (which is compound formerly used in refrigerators, air conditioner, and also in the manufacturer of polystyrene products). This has depleted the stratospheric ozone layer creating a hole above the Antarctica which lasted for several weeks each year (Philips and Pickering 1991). As a result of exposure to the suns, harmful rays has damaged the aquatic and terrestrial wild life, and threatens human health in high Latitude regions of the northern and southern hemisphere.

Water pollution

Pollution of water refers to an impairment of water quality that interferes with the use of water, sewage, industrial wastes and agricultural. Chemical such as fertilizers and pesticides are the main causes of water pollution in developing nation; more than 95% of urban sewage is discharged untreated into rivers and bays, creating array or human health hazard. Industrial pollutants that run into streams, rivers or lakes can have serious effect on wild life, plants and humans (Odukoya2000).

If the source of the water supply is a well or a bore hole, it has been observed that during the raining season - (here is usually a massive increase in coliform counts. This occurs as a result of the flushing-in of fecal materials of mixed human and animal origin (Ademoroti, 1996). Also the well stands the risk of pollution if the sides are not properly lined. During the rainy season, there is adequate seepage of water into the ground, the indicative organisms or other pathogenic microorganisms thereby find their way into the well. This case occurs when or where the well is so close to a septic tank and so on.

Also, erosion, the wearing away of top soil by wind and rain can contribute to water pollution. Soil and silts washed from logged hill side, ploughed fields, or construction sites, can dig water ways and kill aquatic vegetation. Even a small amounts of silt can eliminated desirable fish species, for example, when logging removes the protection plants cover from hill (sides, rain may wash soil and silt into streams, covering the gravel beds that trout or salmon use for spawning.

Moreover, urban water supplies often are contaminated from a variety of sources, including discharge of untreated industrial wastes, leaching from waste dumps, into surface and ground water, inadequate treatment of sewage and poor solid waste management (Brennan K.M. 1999). Few cities in developing countries have adequate sewage systems; and they often are limited to more advantage areas. Purification and recycling of water waste in sewage treatment plant is rare. Even fewer people have access to improved sanitation facilities than improved water supplies.

According to (W.H.O. 1997) two thirds of urban population in developing countries does not have adequate sanitation in that they lack flush toilet sanitary latrine, or a pit that can be covered over.

In addition, worldwide, about 2.3 billion people suffer from disease that arc linked to water problems (New York Times Nov. 29, 1997). Water related diseases kills millions of people each year preventing millions more from leading healthy lives and undermined developmental efforts (New York Oxford University Press 1993 p. 25-39).

Water related diseases include diarrhea, schistosomiasis, trachoma, ascariasis, trichuriasis and hookworm disease. (Environmental health perspective 1 10 (5) May 2002). Diarrhea diseases are the major water borne malady, responsible for 90% of the health problems related to water supply and sanitation. An estimated 4 billion cases of diarrhea disease occur every year causing 3 million to 4 million deaths, mostly among children (Warner D. 1998) other diseases such as cholera can be endemic when there is poor food - hygiene, lack of sanitation or unsafe drinking water (W.H.O. 1997).

Noise pollution

Noise pollution is at its worst in densely populated areas. Unwanted sound, or noise, such as that produced by air planes, traffic or industrial machinery, or radio repairing shops is considered a form of pollution. It can cause hearing loss, stress, high blood pressure, sleep loss, distraction and low productivity.

Sounds are produced by objects that vibrate at a rate that the ear can detect. Most humans can hear sound between 20 and 20,000 hertz, while dogs can hear high pitched-sounds up to 50,000 hertz. Noise pollution is related to the intensity of the sound or the amount of energy it has measured in decibels, noise intensity can range from zero, the quietest sound the human ear can detect, to over 160 decibel.

Solution to noise pollution include adding insulation and sound proofing to doors, wall and ceiling using ear protection; particularly in industrial working areas, planting vegetation to absorb and screen out noise pollution and zoning urban areas to maintain a separation between residential areas and zones of excessive noise.

Regulations to Pollution in the Society

Many nations institute comprehensive regulations designed to repair the past damage of uncontrolled pollution and prevent future environmental contamination. In the United States, the clean Air Act (1970) and its amendment significantly reduced certain types of air pollutions, such as sulphur (IV) oxide emission. The clean water Act (1977) and Safe Drinking Water Act (1974) regulated pollution discharge and set water quality, standards. Also the Toxic substances control act (1976) and the resource - conservation and recovery Act (1976) provided for the testing and control of toxic and hazardous wastes.

International agreements have also played a role in reducing global pollution. The Montreal protocol on substances that deplete the ozone layer (1987) set international target dates for reducing the manufacture and emissions of chemicals, such as CFCS, - known to deplete the ozone layer. Here the Basal convention on the control of Trans-boundary movements of hazardous waste and their Disposal (1989) serves as frame work for the international regulation of hazardous waste and disposal.

Since 1992, representatives from more than 160 nations have met regularly to discuss methods to reduce green house emissions. In 1997 the Kyoto protocol was devised, calling for industrialized countries to reduce their gas emissions by 2012 to an average 5 percent below 1990 level. The Kyoto - protocol went into force in February 2005 with more 130 countries having rectified it. In 2006, the Global carbon project reported that carbon (IV) oxide emissions were increasing at an annual rate of 2.5 percent in the first five years of the 21st century; compared with an annual increase of 1 percent in the 1990s.

CONCLUSION

The hazard associated with environmental pollution could be caused out of ignorance, so laymen should be educated in handling waste and disposal of toxic substances also against such action like hoarding which could have detrimental effect.

Although, regulations and Legislations have led to considerable progress in cleaning of air and water pollution in developed countries. While vehicles in the 21st century - emit fewer oxides of

Nitrogen than those in 1970s did, also power plants now burn low sulphur fuels, industrial stacks have scrubbers to reduce emissions, and Lead has been removed from gasoline. Despite, developing countries still continues to struggle with pollution -control because they lack clean technologies and the need to improve economic strength at the cost of environmental quality. The problem is compounded by developing countries attracting foreign investment and industry by offering cheaper labour, cheaper raw materials with fewer environmental restrictions. So to avoid ecological disaster and increase poverty, developing countries will require aid and technology from outside nations, corporations and community - participation in developing initiatives and strong environmental regulations.

Hazards associated with environmental pollution can be controlled by having information about the concentration of pollutants and measurement of biological oxygen demand (B. O .D.) Detectors are employed to determine the concentration of sulphur (IV) oxide and carbon-monoxide. It should be noted that, ecological research is of immense value in the field of pollution. Even otherwise it is an alternative for the-survival of man's economic and cultural society. Also ecological priorities are to combat pollution. In short, management practice must be taken into consideration with sound ecological principle and man must have greater understanding and appreciation of these principles.

RECOMMENDATION

1. International standards should be established for:
a. Content of potentially toxic elements in industrial effluent.
b. Metal content of sewage should particularly with respect to (Cl, Cr, Pb, Atg NI and Zn) because of subsequent use in Land for Agriculture.
2. Farm animal's diets should be controlled for un-hygienically levels of trace elements.

3. Recuperation and recovery techniques should be adopted by industries for localized concentration of metals.
4. Methods of disposing domestic wastes should be modified such that it does not come in contact with grazing fields and animal feeds while the recovery of the metals from burnt waste residue will be easy.
5. In solid waste where metal contaminants could not be recovered, it should be specially disposed off.

In Nigeria, the Federal Environmental Protection Agency (FEPA) was established by section 16 and 177 decree 58 of December 1988 to protect, restore and preserve the ecosystem of the Federal republic of Nigeria. *V*

The roles of FEPA in combating the daily increasing problems of pollution are as follows.

a. Approval of industrial pollution monitoring consultants,
b. Enforcement of pollution laws
c. Collision of discharges treatment and disposal data from industries.
d. Control and monitoring of accidental discharge, and unusual disposal in the country,
e. Coordination of response activity through the pollution response centre (FEPA's office).

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