

## **An Overview of the Impact of Man-Environment Relationship on Human Health in Nigeria.**

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### **Abstract**

*Man has been relating with the environment since the beginning of time. However, this man/environment relationship has been more beneficial to man with detrimental effect on the environment. Over the last four centuries, human activities have transformed the Earth's chemistry, water, soil and air, alter the face of the earth and changed the earth's physical and biological characteristics. These changes have led to massive environmental pollution which has tremendous health implications on the lives of the people. This study examines the impact of man/environment relationship on the health of the Nigerian population. Analysis of data collected mainly from secondary sources show that so many diseases which affects the health of man is a result of environmental pollution triggered by anthropogenic activities. In the light of these observations, ways and means of environmental resources utilization with preservative tendencies have been advocated.*

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**Keywords:** *Environment, Human Health, Deforestation, Pollution.*

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### **Introduction**

The relationship between man and the environment has been established since the early periods. Human beings live in the kingdom of nature and interact with it constantly. The influence of nature in the form of the air man breathes, the water man drinks, the food man eats and the flows of energy and information. Any change in the environment cannot only result in devastating effects, but can also pose a threat to the human race (United Nation Environment Program, 2014)

Most times man sets out to improve himself by manipulating his environment, but unfortunately, ends up destroying some vital aspects of that environment. For example, we may construct a dam with the aim of providing portable water or improving crop yields through irrigation, there is a potential risk of an epidemic of schistosomiasis (bilharziasis) or guinea worm infection in the immediate community. (makanjuola, 2000). In the same vein, man may decide to cut the trees, clear and burnt the bush in preparation for forming which ultimately will provide food for the masses without taking cognizance of the facts that he is adding to the global mean temperature thereby inducing global warming which negatively affects the environment.

The relationship between man and his immediate environment is practically to man's benefit, ignoring the effect such activities may cause to the environment. Over the last four centuries, human activities have transformed the Earth chemistry, water; soil and air, alter the face of the Earth itself, and change the earth's climate (Hert, 2006). These changes have led to massive

environmental degradation whose impact is being felt on the health of the people living within the immediate environment.

However, because of the permanent interaction between man and his environment, our health is to considerable extent determined by the environmental quality. As a consequence, environment and health are closely related. The environment in which we live, work and relax is determining for our health and well-being. Physical, as well as chemical and micro (biological) factors in the environment can have repercussions on our health, both physically and mentally.

The World Health Organization (WHO) definition of health emphasizes the physical, mental and social well-being. Health is the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity (WHO, 2014) Health is considered as an overall concept of reaching beyond the absence of illness and ailments. However, the relationship between environment and health is extremely complex. Although many health problems are thought to be associated with environmental pollution, it is difficult to assess the seriousness, extent and causes of environmental related diseases.

This paper investigate the impact of man's activities on the environment and try to elucidate on the dangers of environmental pollution on health of the people of Nigeria with the aim of advocating environmental resources utilization strategies by which our fragile environment would be preserved for the future generation.

### **Conceptual and Theoretical Issues.**

The natural environment covers the atmosphere, hydrosphere, lithosphere and biosphere. Within these spheres are a number of interactions that propelled the different types of human-related activities. While the atmosphere consists of a mixture of various gases that are of paramount importance to both animate and inanimate things (strahler and strahler, 1973). The hydrosphere is the home of large natural hydrological sphere (Onyebande, 1995). The lithosphere encompasses all the solid materials between the earth's surface and its core (Faniran and Ojo, 1980). The materials within the lithosphere, that is the accessed ones are of tremendous importance to man. According to Oyebande (1995) the Biosphere which includes man and his society is the real life layer where a number of human activities thrive. It is indeed the socio-economic sphere. Generally speaking, the mode of man environment interactions had been in terms of what can be abstracted from the environment, thus man often fails to consider accompanying consequences of many of his actions. As a result, interactions easily translate into a number of environmental related problems (Olorunfemi and Jimoh, 2006) including outbreak of diseases which affect human health negatively.

According to Oxford dictionary of language matters (2014) Environment is the natural world as a whole or in a particular geographical area especially as affected by human activities. In order word, environment is the surroundings conditions in which a person, animal or plants lives or operates.

### **The Human Environment**

Asuzu (1994) divided the human environment into four main components. These are; Physical, biological, chemical and social environment of man. The physical environment includes temperature (excessive heat or cold), light (glare or darkness), pressure, humidity, radiation,

noise and vibration. Despite the fact that these parameters are components of the human environment, excess of them could cause various disorders in man.

Anthony (2009) sees environment to mean all those non-human, natural surroundings within which human being exist – sometimes called the natural environment and in its widest sense, this is simply planet Earth as a whole.

Table 1.

**Health implications associated with physical environmental change induced by man's activities**

<b>Environmenta l change</b>	<b>Man's activities</b>	<b>Pathogens induced by environmental change</b>	<b>Health implications</b>
<b>High air Temperature</b>	<ul style="list-style-type: none"> <li>▪ Bush Burning</li> <li>▪ Deforestation</li> <li>▪ Overgrazing</li> <li>▪ Burning of fossil fuel</li> </ul>	<ul style="list-style-type: none"> <li>▪ Salmonella</li> <li>▪ Ticks</li> </ul>	<ul style="list-style-type: none"> <li>▪ Food poisoning</li> <li>▪ Lyme disease</li> </ul>
<b>Heavy rainfall or flooding</b>	<ul style="list-style-type: none"> <li>▪ Burning fossil fuel</li> <li>▪ Deforestation</li> <li>▪ Water pollution through industrial &amp; domestic wastes</li> </ul>	<ul style="list-style-type: none"> <li>▪ Cryptosporidium</li> <li>▪ Giardia</li> </ul>	<ul style="list-style-type: none"> <li>▪ Gastrointestinal distress</li> </ul>
<b>Warm wet climate</b>	<ul style="list-style-type: none"> <li>▪ Bush burning</li> <li>▪ Overgrazing</li> <li>▪ Air pollution</li> </ul>	<ul style="list-style-type: none"> <li>▪ mosquitoes</li> </ul>	<ul style="list-style-type: none"> <li>▪ West Nile Virus</li> <li>▪ Malaria parasite</li> </ul>

Source: Jimoh H. and Ifabiyi I.P.(2000)

**The impact of man's activities on the environment: the health implications**

Every man is basically an economic man deriving his needs from his environment. That is, the survival of man depends on the exploitation of the numerous environmental resources for his use.

The activities of man in his environment therefore include agricultural practices, mining, quarrying, water resource exploitation, deforestation, forestation, road and rail network constructions, and construction of bridges, laying of pipe lines as a means of water supply to an area or as means of transporting crude oil over a long distance to refinery station. These activities have a sole aim of meeting man's needs. However, this heavy dependence on environmental resources has translated into a number of environmental problems which affects the health of man. There includes:

## Ozone Layer Depletion

The Ozone layer is that part of the atmosphere which protects the planet earth and its occupants from the direct effects of ultraviolet rays. This layer is being rapidly depleted by many substances especially chlorofluorocarbons (CFCs).

The CFCs are highly stable compounds that have been or are being used in spray cans as aerosols propellants and refrigeration units – the gas that is compressed and expanded in the cooling unit (Akpan, 2012). The rate of growth of CFCs in the atmosphere in recent years has been about 5% per year (Uchegbu, 1998). The consequences included increased global warming, longer period of drought, increase incidence of heart-related diseases, example, cancer of the skin like Squamous cell carcinoma, and Cataract (Opacity of the lens of the eyes).

Table 2.

### Health implications associated with chemical environmental change induced by man's activities

Environmental change	Man's activities	Pathogens induced by environmental change	Health implications
Lead	<ul style="list-style-type: none"> <li>▪ Ore and metal processing</li> <li>▪ Burning aviation gasoline</li> </ul>	-	<ul style="list-style-type: none"> <li>▪ Anemia</li> <li>▪ Dementia</li> </ul>
Mercury	<ul style="list-style-type: none"> <li>▪ Industrial activities like cement plants and chemical industries</li> </ul>	-	<ul style="list-style-type: none"> <li>▪ Nephrosis</li> <li>▪ Mercurialentis</li> <li>▪ dementia</li> </ul>
Nikel	<ul style="list-style-type: none"> <li>▪ Mining</li> <li>▪ Nickel smelting</li> <li>▪ Refiners</li> </ul>	-	<ul style="list-style-type: none"> <li>▪ Asthma</li> <li>▪ Nasal cancer</li> <li>▪ Dermatitis</li> </ul>
Benzene	<ul style="list-style-type: none"> <li>▪ Auto exhaust</li> <li>▪ Industrial emissions</li> <li>▪ Petroleum refining operations</li> </ul>	-	<ul style="list-style-type: none"> <li>▪ Leukemia</li> </ul>
Asbestors	<ul style="list-style-type: none"> <li>▪ Air pollution</li> </ul>	-	<ul style="list-style-type: none"> <li>▪ Asbestosis</li> <li>▪ Mesothelium</li> <li>▪ Pleural Plaques</li> <li>▪ Lung cancer</li> </ul>

Source: Makanjuola(2000).

## Deforestation and Overgrazing

One of the consequences of deforestation is that the carbon originally held in forests is released to the atmosphere, either immediately if the trees are burned, or more slowly as unburned organic matter decays. Only a small fraction of the biomass initially held in a forest ends up

stored in houses or other long-lasting structures. Most of the carbon is released to the atmosphere as carbon dioxide, but small amounts of methane and carbon monoxide may also be released with decomposition or burning. Cultivation also oxidizes 25-30% of the organic matter in the upper meter of soil and releases that to the atmosphere (Paulo and Sephan, 2005).

Deforestation releases carbon, principally as CO<sub>2</sub>, to the atmosphere as the organic carbon stored in trees and soil is oxidized through burning and decay. Other greenhouse gases, such as CH<sub>4</sub> and N<sub>2</sub>O, are also emitted as a result of the conversion of forests to agricultural lands. Current emissions of greenhouse gases from deforestation amount to about 25% of the enhanced greenhouse effect estimated to result from all anthropogenic emissions of greenhouse gases. If current trends continue, deforestation will release about 50% as much carbon to the atmosphere as has been emitted from worldwide combustion of fossil fuels since the start of the industrial revolution. Greenhouse gasses reduce the amount of oxygen in the atmosphere.

According to Makanjuola (2000), Oxygen is essential for human survival. It is a by-product of photosynthesis, an important biological process that takes place in most plants. Deforestation and overgrazing may lead to reduced level of oxygen in the atmosphere, causing chronic hypoxxygenation of the red blood cells. The body tries to compensate for this by increasing the affinity of the red blood cells to oxygen, and also through an increase in the ratio of red cells compared to the plasma (Ganong, 1983). An example of clinical situations that may result is called Polycythaemia. In this condition there is an increase in viscosity of the blood, leading to an increase chance of developing thrombo-embolism, a situation which can lead to stroke.

The environmental costs of deforestation also include soil erosion and floods. When they are intact, mountainous forest perform the important function of absorbing and recycling much of the water from rainfall. When the forests are removed, rain cascades off the slopes, causing floods and then droughts (Anthony, 2009).

### **Civil constructions and urbanization**

There is no doubt that some constructions, example houses, roads, bridges etc are of benefits to man. However, to achieve this, the ecosystem must be upset. Trees may be felled, soil is harvested, and the topsoil is removed, leaving behind an infertile soil. This may lead to reduced available total farmland, decrease crop production in the affected community and consequently malnutrition (Makanjuola, 2000). Do we then stop civil constructions? No. the important thing is to ensure minimal damage if possible.

Trees should be planted to replace felled ones, and a borrow pit should be converted to useful purposes example fish pond or refuse dumps. Where borrow pits could not be converted to useful purposes, there should not be allowed to harbor diseases vectors example mosquitoes (transmits malaria), rats, Cyclops (vector for guinea worms), Cercaria (vector for bilharziasis).

With the economy in decline, more people from rural areas are moving to the urban areas in search of job opportunities. These have lead to overpopulation of the urban areas. Since accommodation in the urban areas is limited, increasing number of people now resides in urban slums. For example, about 75% of the metropolitan population of Lagos state lives in 42 poor communities (UNICEF, 1998). Living in a slum could predispose people to diarrhea (due to scarcity of portable water), tuberculosis (due to Over-crowding), and malnutrition (due to poverty).

## **Environmental pollution**

This is defined as the contamination of the natural environment, generally by industrialized society. The pollution is usually as a result of accumulation of industrial wastes, although an excess of noise and heat, which has adverse effects on the surrounding ecology is also included in the term (Azusu, 1994). Excess of noise could lead to progressive deafness, especially to high tones, while excess of heat could lead to cancer of the skin.

The process of Global Warming may contribute to increased desertification and poor harvests which result to food shortage and ultimately leads to malnutrition. The cause of kwashiorkor (condition where a child becomes malnourished with protruding stomach), in infant is malnutrition.

## **Agricultural activities**

The environmental impact of agriculture varies based on the wide variety of agricultural practices employed around the world. Ultimately, the environmental impact depends on the production practices of the system used by farmers. The connection between emissions into the environment and the farming system is indirect, as it also depends on other climate variables such as rainfall and temperature. There are two types of indicators of environmental impact: "means-based", which is based on the farmer's production methods, and "effect-based", which is the impact that farming methods have on the farming system or on emissions to the environment. An example of a means-based indicator would be the quality of groundwater, which is effected by the amount of nitrogen applied to the soil. An indicator reflecting the loss of nitrate to groundwater would be effect-based (Warf and Jean, 2002). The environmental impact of agriculture involves a variety of factors from the soil, to water, the air, animal and soil diversity, people, plants, and the food itself. Some of the environmental issues that are related to agriculture are climate change, deforestation, genetic engineering, irrigation problems, pollutants, soil degradation, and waste. These factors contribute immensely to human health problems.

In the early part of civilization, irrigation farming was highly practiced along the river Nile in Egypt. Today irrigation farming is practiced in many parts of the world in order to enhance all-round crop cultivation. These practices have led to construction of dams, weirs and ponds with certain health implications associated with it. These health problems include schistosomiasis (bilharziasis), dracunculosis medinensis (guinea worms) etc. (Makanjuola, 2000).

Another related development which is difficult to explain is the observation that there is an increase in mercury level of fishes in newly constructed dams as opposed to their pre-dam mercury level. For example, in one of the James Bay reservoirs in Canada, mercury concentration in fish was found to be as high as 3ppm, enough to close the fisheries (Macdonald and Chisilin, 1994).

Excessive concentration of mercury in man could lead to kidney damage which could in turn lead to hypertension, nephritic syndrome (poor functioning of the kidneys leading to generalized body swelling). These are disease that could progress rapidly to death if untreated.

## Conclusion and recommendations

There is no doubt that human activities on the environment have inflicted serious damage that invariably affects the health of man. Many health problems are link to environmental pollution. It is also worthy of note that environmental pollution is mostly the result of environmental misuse with less attention paid to preservation.

A lot of control measures are needed to solve the environmental problems that have devastating health implications on the lives of the teaming population. Public environmental awareness is a synthesis of people's conception, interpretation and perceptions of environmental health issues which affect their behavior and the quality of responses and reactions to environmental problems like climate change which is mostly cause by anthropogenic activities. Therefore, the need for man to relate with the fragile environment with the intention of greater preservation is highly imperative.

Many of the negative actions of man on the environment are borne out of ignorance. On this note, awareness should be created especially in the rural communities of the country by relevant ministries and government departments on the dangers of negative human activities on the environment as it affects the health and well being of man.

Environmental protection commission should be established. This commission should be under the ministry of environment and their major functions should include creating awareness in the rural community and providing environmental monitoring services.

In a global scale, it is worthy to note that most of the CO<sub>2</sub> emission comes from fossil fuel combustion, therefore, energy conservation and a switch to renewable fuel should be considered. This will reduce climate change problem. For example, 1.5 wedges (1.5GT(Gigaton)reduction in carbon emission) could be accomplish by doubling the average fuel economy from the expected 30 miles per gallon in 2054 to 60 mpg, and by halving the number of miles driven each year by switching to walking, cycling or using mass transit. Also by simple installing the most efficient lighting and appliances available along with improved insulation in buildings could save another 2 GT of carbon emissions (Cunningham and Ann, 2008). Halting tropical forest destruction and replanting 250 million ha of forest (or 400 million ha in temperate regions) would avoid 1 GT of carbon emissions while practices such as conservation tillage and planting cover crops should be encouraged by government of individual countries of the world.

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