



Research Paper

## Plastic Waste as an agent of Environmental Degradation; and its effects on the people of Bonwire in the Ashanti Region of Ghana

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### ABSTRACT

The Study focused on the plastic waste as an agent of environmental degradation and how this phenomenon affects people of Bonwire in the Ashanti Region of Ghana. The study adopted qualitative research approach and made use of interviews and questionnaire as some of the tools for collecting data. The study targeted students, food vendors, municipal assembly members and Landlords; who were sampled using Random, Purposive and Snowball sampling techniques. The study revealed that, plastic waste actually pollute the environment. They also render the soil infertile for plant growth. In addition, plastics could chock drains which could result in flooding and loss of lives. The study however recommended that Environmental Protection Agency (EPA) and other stakeholders in the sanitation establishments in the area should check on how those plastics are used in the study area.

**KEY WORDS:** Environment, Degradation, Plastic waste, Pollution

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### I. INTRODUCTION

Plastic waste has become a social canker that many countries are battling with; and Ghana is no exception. Environmental degradation could mean the process through which the surroundings can get depleted through the activities of man. The environment consists of the land, air and the sea. Therefore any negative action towards these things around amount to environmental degradation. Observation has shown that, the environment is under threat due to activities such as bush burning and grazing by animals of the herds men and cutting of tress by the chainsaw operators without replacing them. The choking of drains by plastic waste blocking the water ways leading to flooding and erosion cannot be forgotten. These plastic wastes being non-biodegradable take very long time to decay; a situation which serves as a breeding grounds for diseases such as Typhoid, Malaria and the like. Globally, there is an outcry of how the climate has changed; a situation attributed to activities of man which endangers the atmosphere. The responsibility now lies on all to keep the environment clean, the government should as well device means by which the use of the plastic would be stopped.

Other alternative could be resorted to. There is an adage that, *healthy minds live in a healthy body*. So it is good to dispose of the plastic materials so well so as to free the surroundings of filth. This study was conducted in Bonwire in Ejisu Juabeng municipality of the Ashanti Region of Ghana. It was limited only to plastic waste as an agent of environmental degradation and its effects on people.

### **Statement of the problem**

Proper disposal of waste is a big challenge to government, companies as well as individuals. Many people litter around irrespective of the consequences it has on the surroundings. It is in the light of this that this study is done to bring to bear that, plastics are agents of environmental degradation and the effect of these plastics on the people of the research area could be hazardous.

## **II. REVIEW OF RELATED LITERATURE**

The following sub topics have been reviewed in relation to the study

- Meaning of the environment
- The concept of degradation
- Effects of environmental degradation
- Plastic waste and its effect on the environment

### **Meaning of the environment**

Environment as heard in everyday parlance is a geographical setting where people dwell. Aketewa (2004) explains that, it is the surroundings within which man, animals and plants live. He adds that, this environment includes land / soil, mountains, vegetation, buildings, water bodies and the climate. He however cries that, instead of man controlling the environment since he has the technical know-how, it is sad that the environment rather controls man. He cites an instance where farmers have to depend on the weather for rains which sometimes delay or do not come at all; whereby irrigation and other methods could be simply adopted to encourage flow of water for farming all year round. Wilson et al (2002) also state that the environment is the surroundings within which man, animals and plants live. They went further that one could describe the environment as the relationship that exists between all living things including people and their natural surroundings. They were specific that the physical environment covers the sea, land, soil, plants, climate and buildings. With the physical environment, they explain that it is made up of natural and manmade resources. They identify some natural resources as vegetation, minerals, water bodies, sand and stones. Wilson et al again advise that, the environment that man lives in should be kept clean always but failure which could lead to serious health problems and climatic changes.

### **Degradation**

The earlier scholars explain degradation as related to the environment as the process of adopting practices which can reduce the quality of a substance and thus rendering it inadequate and less useful. They add that, environmental degradation is the gradual deterioration of the environment leading to the inability of the resources to support plant and animal life. In other words the process by which the natural state and quality of the environment deteriorates through the activities of man and animals. They opine that, the degradation of the environment comes about as a result of human activities.

Aketewah (2004) shares similar opinion that degradation is the process of adopting practices which can reduce the quality and quantity of substance and thus rendering it inadequate and less useful. He relates it to the environment and discuss that is the destruction or reduction of quality and quantity of resources in the environment and rendering them inadequate and less useful. He gives example as air, soil, grassland, forest and water bodies.

Aryetey (2002) sides with other scholars that environmental degradation is the process by which the natural state and the quality of the environment is destroyed. He adds that this depletion is caused through actions of men and animals to the extent that natural resources would not be adequate to support human life and other living organism.

So it could be inferred from all the scholars that, the environment is the immediate things that surround us. And the action of man to reduce the quality and quantity of these resources around constitute the environmental degradation.

### **Effects of environmental degradation**

As the environment either reduces in terms of quality and quantity, certainly the people living within these surroundings would have some effects; some of which are discussed below:

Aryetey (2002) states that when waste is not properly disposed of, e.g. throwing of plastics, paper, rags and other non-degradable into drains, the effects could lead to illness and many diseases such as cholera and typhoid as well as schistosomiasis which is a major health problem of rural communities that occurs from the contamination of waters with human waste. He discusses further that, the emission of smoke and gasses into the atmosphere produce certain harmful pollutants such as carbon monoxide (CO), nitrogen oxide, CFCs which deplete the ozone layer in the atmosphere and even cause acid rain and other health issues like asthma and bronchitis.

In addition, he adds that, deforestation as environmental degradation agent exposes and erodes agricultural lands. Unprotected lands are often prone to both wind and rain erosion. The direct exposure of soil to the sun results in the loss of water and other organic matter. This may destroy the nutrient of the soil; thereby posing danger to food production. Again, he argues that soil organism and nutrients are destroyed which lead to infertility of the soil. The illegal methods of mining (*galamsey*) as well exposes the land to the agents of erosion thereby leading to the removal of the vegetative cover as well as contamination of surrounding waters with harmful chemicals.

Aketewah (2002) as well shares that, floods would occur which would result to destruction of lives and properties when the environment is not kept clean. Again he notes health issues that could result from air pollution, water pollution and land pollution. He discusses that food shortages would also occur due to removal of the top soil and killing of soil organism which support plant growth. He goes further to identify other effects the environmental degradation can bring as global warming, flooding, and low standard of living.

Pollution in the air could lead to interference with haemoglobin in the blood tissues to form ox haemoglobin which makes it difficult for oxygen to flow into the blood vessels thus making the body weak as a result of respiratory problems (Wilson et al 2002). They add that global warming may occur as a result of the presence of carbon monoxide in the atmosphere.

It could therefore be drawn from the arguments that the effects of environmental degradation could manifest in the form of diseases among the populace, flooding, famine as a result of loss of the topsoil and its nutrients due to erosion, over grazing and bush burning.

### **Plastic waste and its effects on the environment**

Rafat (2008) explains that plastic waste has become an inseparable and integral part of human lives. He states that plastics have been used in packaging, automobile and industrial applications, medical delivery systems such as artificial implants. They add that some beneficial properties of plastics include

- Extreme versatility and ability to be tailored to meet specific technical needs
- Lighter weight than competing materials
- Good safety and hygiene properties for food packaging

He outlines some disadvantages as the production of plastic involves the use of potentially harmful chemicals which are added as stabilizers or colorants. They opine that, many of them have not undergone an environmental risk assessment and their impact on human health. They cite an example of PVC which is used in the manufacture of children toys. The disposal of plastic adds to the environmental impacts. This is because most plastics are non- degradable which take long periods to break down.

Richard et al (2009) explain that plastics are inexpensive, light weight, strong and durable. So many people turn to use them. They add that, in areas of telecommunication, transport, they make use of plastics. They as well share their opinion that the plastics litter the environment and pose health challenges to the land as well as marine lives. Plastics, they agree can transfer toxic into the food chain as well as humans most of which can result in reproductive abnormality. They side with the earlier contributors that PVC contain phthalates which can be dangerous.

It can therefore be concluded from the reviews that, the use of plastics could have some benefits as well as negatives. But deducing from the opinion of the scholars and in the context of the Ghanaian setting, it could be said that the disadvantages outweigh the advantages as plastics could cause toxins in the food chain for living organism as well as plants; improper disposal could also lead to sources of diseases as well as floods which could lead to loss of lives and properties.

### **Presentation and discussion of findings**

Questionnaire and interviews were some of the research instruments used to collect data for this study. The target population were students, food vendors, Assembly members as well as Land Lords who are all considered stakeholders in the topic under study. The sampling methods used to select the population for the study were Random method for the students and Food vendors, Purposive for the Assembly members and Snowball for the Landlords. The distribution of the population can be seen graphically in Table 1 below:

**Table 1:** Population distribution for the study

<b>Target population</b>	<b>Accessible population</b>
Students	4
Food vendors	6
Assembly members	4
Landlords	6

**Total number of population for the study = 20**

Out of the 4 students who responded to the questionnaire, 3 out of them representing 75 % agreed that plastics litter the environment. The rest 15 % disagree by explaining that they don't see any reason why plastics should be branded as bad. On their view on the use of plastics in Ghana, the students opined that plastics have come to stay with the people of Ghana because its use reduces cost and also is portable in terms of carriage. But they cautioned that users should be advised to handle them wisely so as not to litter the surroundings which would lead to health challenges.

Six food vendors were equally interviewed on the topic for the study. 4 out of them thus 66.6 % explained that the use of plastics is portable as food can be served in it and carry along. They gave example of school children and other workers who for the sake of time would prefer their *Koko* (porridge) in polythene to their offices rather than taken it in bowls and cups which could delay them.

As to whether the plastics litter the environment, they agree that polythene litter the surroundings. But they believe that individuals can advise themselves and dispose their plastic waste properly. The remaining 33.3 % also opined that the use of plastic cannot be eradicated in Ghana. They argue that, the metal bowls, cups, spoons cost so much that they would always prefer the plastics to the metal wares. In view of this, they explained that, nothing can change their minds as to their use. They as well agree that the users should dispose them off properly as leaving them on the streets can render the streets unattractive.

The 6 landlords interviewed also agreed that all the tenants in their houses use plastics ranging from polythene bags to water containers. They shared the views that plastics do litter the streets which make the environment looks filthy. They unanimously suggest that, paper bags and containers should be introduced as alternatives as they would easily decompose compared with the plastics. They suggested that the waste collectors should be prompt in emptying refuse containers at the dumping sites so that refuse would not be flying around. They further advised that since the cost of the plastics makes it cost effective for Ghanaians, the chemical components of these plastics should be looked at to alleviate any health challenge that may be hidden in them. They cautioned the general public to avoid disposing plastic waste into drains to avoid flood and diseases.

All the 4 assemblymen also shared their thoughts that plastics are used in every household and work place in Ghana. They however lament that day in day out, villages, towns, cities are always choked with plastic waste in the surroundings. They shared that, as district assembly members, they always spend their common funds to solve these sanitation issues. They as well added their voice that proper disposal of waste should not be put on the assemblies and government alone but all individuals should put it upon themselves to keep their area clean by properly disposing plastic waste. They made reference to recent sanitation day that the president of Ghana has instituted for communities to undertake clean –up in the surrounding as something good which would inculcate into the people how to properly dispose their waste. They suggest that, they would prefer recycling so that most of the waste could be recycled into other by products to feed other sectors. They cited example as the animal feed and fertilizer.

In their general view on plastic waste, they agree that these materials actually pollute the environment. They therefore called on individuals to be guided by their conscience to do what is right by properly disposing these materials. They cited the June 3<sup>rd</sup> 2015 disaster in Accra as an example that most of the drains which overflowed their banks were as a result of plastics that were thrown into them blocking the waterways. They concluded that, they being members of the Assembly, they would continue to advocate for government to play his role; so individuals should as well play their role so together, plastic waste would not pose danger to the environment.

Looking at the views of all the groups in the study, conclusions could be drawn that, plastics have become part and parcel of Ghanaian and for that matter, they are used everywhere to the extent that, they litter the surroundings; as they can be seen around in cities, towns and villages; and that, the problem of plastic waste in Ghana is linked to both government and individuals. Therefore, majority of the population agree that alternatives could be resorted to, in checking this plastic menace.

### **III. CONCLUSION**

Plastic materials are cost effective hence very affordable for Ghanaian households and offices. However, the excessive use of it poses danger as it is revealed in the study that some chemical toxins are found in them which could endanger human life. Moreover, the improper disposing of the plastic waste could lead to choked drains which would result in floods; hence destruction of lives and properties as could be seen on figure 1 below:



Figure 1: A choked drain with plastics  
Source: Researchers' field note

Furthermore, because most of these plastics are non- degradable, they end up rendering the soil infertile and for that matter cannot support plant life. The improper disposal of these plastic wastes could as well serve as fertile grounds for spreading of diseases.

#### **IV. RECOMMENDATIONS**

By carefully studying the research, the following recommendations are put forth for consideration.

1. The environmental protection agency (EPA), Ghana standard Authority and all such institutions should regularly monitor these plastic materials to check the components in them to make sure they are human friendly.
2. Government should think of alternatives in form of recycling as this would help in keeping the surrounding free from plastic waste.
3. The municipal and district assemblies should tighten their bye laws on sanitation; so offenders could be sanctioned to serve as a deterrent for others.
4. The hygiene officers in the municipality should be empowered to check the waste disposal in homes to keep all on toes in disposing refuse properly.
5. The Assembly in the area should provide refuse bins at vantage points to see to proper disposal of waste.

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