



A CASE STUDY OF NON-BIODEGRADABLE WASTES IN SAMARU, ZARIA

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ABSTRACT

Adequate wastes characterization or classification into biodegradable and non-biodegradable forms is a requirement for effective waste management. Improperly classified waste leads to a lack of proper management, consequential health hazards and unappealing eyesores in the environment. The objectives of this study were to identify locations of different dump sites in Samaru, Zaria, to identify the different types of non-biodegradable wastes produced within the area, study how the non-biodegradable waste are managed and to evaluate the effects of these wastes on the environment. The results show that several dumpsites exist within Samaru, Zaria, most of them located within residential areas, along streets and railway lines and in school premises. The non-biodegradable wastes produced in Samaru include; polythene bags, plastic bottles, plastic containers, light bulbs, metals (milk tins, beverage cans, scraps etc). These wastes are managed mainly by incineration and recycling. Effects of these wastes include; release of CO₂ into the environment through incineration, blockage of drainages and pipes which obstruct the free flow of water and cause flooding of compounds. They also serve as breeding grounds for mosquitoes, bacteria, fungi and other disease-causing organisms; create an unhygienic and foul-smelling environment. Animals can ingest these wastes which can cause GIT obstruction and rumen impaction. Some of these wastes contain toxic substances (e.g. fluorescent bulbs contain mercury, a chemical that is harmful to humans, animals and ecological health). In conclusion, the study found that several dumpsites are not properly located in Samaru, Zaria and that the residents of Samaru dump wastes indiscriminately. It was also observed that waste management is poor in this area and that dumpsites create an unhygienic and foul-smelling environment which can lead to spread of several diseases. Appropriate measures from regulatory agencies and individuals concerned were suggested.

Keywords: Waste, pollution, biodegradable, non-biodegradable, environment

INTRODUCTION

Wastes, also known as rubbish, trash, refuse, garbage, junk and litter, are a pejorative term for unwanted materials. The term can be described as subjective and inaccurate because waste to one person is not waste to another. Wastes fall into one of two categories; biodegradable or non-biodegradable. Biodegradable wastes will eventually break down and become part of the earth and soil, like food scraps and paper, while Non-biodegradable wastes will NOT break down or at least NOT break down for many years. Examples are plastics, metal and glass. Some dangerous chemicals

and toxins are also non-biodegradable, as are plastic grocery bags, plastic water bottles, Styrofoam (polystyrene) and other similar materials. Classification of wastes as biodegradable and non-biodegradable is a system of waste management where wastes are labeled for proper disposal. Improperly classified wastes leads to a lack of proper management, consequential health hazards and unappealing eyesores.

The main determining factors for the classification of both types of wastes are whether they can decompose and their rate of decomposition. Non-biodegradable wastes make up roughly one-third of the

municipal solid wastes produced in the U.S. in 2009 and about 45.9% of waste generated in covenant University, Ota (Okeniyi and Anwan 2012).

The time required to break down biodegradable products varies immensely. According to the Coral Reef Alliance, banana peels usually degrade in about two months. Other light materials, such as notebook papers, typically take three months. Cardboard milk cartons break down after five years. Harder substances, including steel and aluminum, typically take much longer. An aluminum soda can takes up to 350 years to break down. On the other hand, non-biodegradable waste products never decompose, under normal circumstances. Polystyrene (Styrofoam) cups, glass bottles and car tires are resistant to sunlight, air, soil and microorganisms. Because of this, they do not biodegrade. Non-biodegradable wastes have been a growing concern to environmentalists, but now is becoming a concern to anyone wanting to embrace a more eco-friendly lifestyle; as world population grows so does our wastes. It's becoming increasingly important to understand what non-biodegradable waste is, as well as the effects that it has on our environment. Non-biodegradable waste that is discarded to be land filled will only accumulate. The most wide-reaching effect of non-biodegradable trash is the Pacific Garbage Patch; an area of the Pacific Ocean, which is heavily polluted with plastics and other waste. "The patch extends over a very wide area, with estimates ranging from an area the size of the state of Texas to one larger than the continental United States; however, the exact size is unknown." It is estimated that unless consumers reduce current levels of non-biodegradable wastes, the Pacific Garbage Patch will double in size in the next 10-20 years endangering the life of an infinite amount of marine animals. This study aimed at studying the effects of non-biodegradable waste on the environment so as to identify location of different dumpsites in Samaru; identify the different types of

non-biodegradable wastes produced in Samaru; investigate how the non-biodegradable wastes are managed; and evaluate the effects of these wastes on the environment.

MATERIALS AND METHOD

Study Area: The study was carried out in Samaru, sabon-gari Local Government Area, Kaduna State, Nigeria. Samaru is situated on latitude 112° 12" N and longitude 07° 37" E, at an altitude of 550-700 meters. It is about 13km from Zaria-city on the Sokoto road, 8km to Shika and 7km from Bassawa. The Samaru town is the fourth and the most recent addition to the Zaria suburban area made up of Zaria-City, Tudun-Wada, the Government Reservation Area (GRA), and Sabon-Gari. Samaru evolved from a small colonial farming settlement to become a large community, a melting-pot, often referred to as "the University village". It is cosmopolitan in nature, drawing and fusing people of divergent national and international backgrounds. Various dump sites and residential areas were visited within Samaru and observed for non-biodegradable waste, their effects on the environment and how they are managed. Photographs of dump sites were also taken.

RESULTS AND DISCUSSION

This study revealed that several dumpsites that exist within Samaru were poorly located in residential areas, along streets, railway tracts and in school football fields. Some of the non-biodegradable wastes produced in Samaru include polythene bags, disposable table water sachets, plastic bottles and containers, light bulbs, glass and metals tins and cans, scraps etc).

It was also observed that these wastes released of obnoxious gasses into the atmosphere, even during incineration of the wastes. Blockage of drainages and pipes with these wastes obstructed free flow of water and sometimes resulted in flooding. Indiscriminately dumped wastes also served as breeding grounds for disease vectors (like mosquitoes), bacteria, fungi and other

disease causing organisms; and usually created an unpleasant, unhygienic and foul-smelling environment. Some non-biodegradable wastes contained toxic substances. E.g., fluorescent bulbs contain mercury, a chemical that is harmful to human, animal and ecological health. Animals observed scavenging on some wastes can be a source of zoonotic infections.



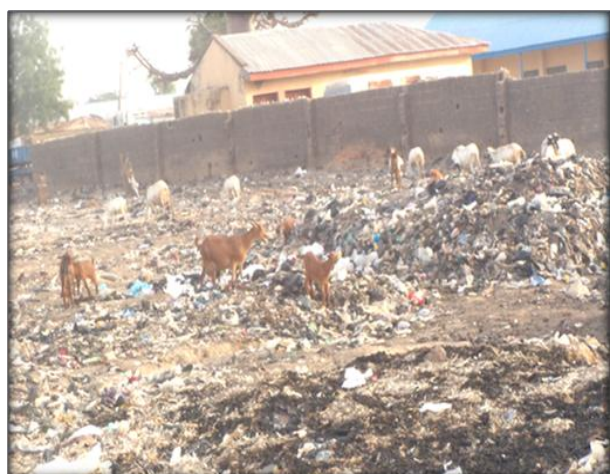
Non-biodegradable waste in drainages in the study area



Non-biodegradable waste being burnt



Decayed waste bagged and used as manure



Animals scavenging in dumpsite

CONCLUSION

This paper concluded that:

- i. Several dumpsites are not proper located within Samaru.
- ii. Residents of Samaru dump waste indiscriminately on the streets, in drainages, along railway tracts etc.
- iii. Waste management is poor in this area. Non biodegradable wastes are usually burnt openly, releasing dangerous gases into the atmosphere. Metal scraps from beverage tins, oil can etc are recycled into pots, baking pans and trays, local stoves, ovens etc.
- iv. Dumpsites usually create an unpleasant, unhygienic and foul-smelling environment which can lead to spread of several diseases.
- v. The best way to manage non-biodegradable wastes is REDUCE, REUSE AND RECYCLE!!
- vi. Proper relocation of dumpsites and provision of incinerators.
- vii. Replacement of non-biodegradable materials with ones specifically designed to biodegrade.
- viii. Manufacturing companies can develop product retrieval polices in other to prevent accumulation of non-biodegradable wastes in the environment
- ix. Education of public on the effects of indiscriminate waste disposal and how to best manage non-biodegradable waste.

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