FOUL WASTE MANAGEMENT IN TERTIARY INSTITUTION: A CASE STUDY OF BELLS UNIVERSITY MALE BRONZE HOSTEL

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ABSTRACT

The high frequency of tertiary foul waste disposal is concerning since it has an impact on people's environments all around the world. This holds for the majority of tertiary schools that lack adequate and effective environmental protection laws and agencies. Science and technology are major drivers of rapid industrial modernization, urban expansion, and population growth, which hurts waste management in most academic institutions. The risks of environmental waste are more likely to be present in tertiary institutions, where the environment is more likely to deteriorate and harm residents. This study critically examined management of foul waste in the Male Bronze Hostel of the Bells University of Technology, Ota. The study adopted a descriptive methodology intended to look into the issues with handling and disposing of foul waste at Bells University Male Bronze Hostel. This study has recognized the current obstacles to the efficient management of foul waste in the Male Bronze Hostel and has also observed that the soakaway provided is either inadequate to the demands of the hostel or is not maintained regularly as foul waste can be seen overflowing. The study provides a measure to address these challenges with the following recommendations. It is vitally necessary to increase the number of employees supporting the

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university sanitation unit. As an alternative to the soakaway method of foul waste disposal, a biodigester can be installed as a sustainable replacement, which is far more efficient than the former and will require little periodic maintenance. Students can also be sensitized on how to properly dispose of their solid waste so as not to clog the drainage systems and thereby reducing water stagnation. It is necessary to regularly inspect and maintain the services put in place for foul waste management.

Keywords: Foul waste, Waste Management, Waste Disposal, Sustainable Environment, Sanitation.

1.0 Introduction

One of the biggest issues tertiary institutions face globally is the management of foul waste since people are becoming more and more conscious of the dangers that foul waste poses to the environment and our natural ecosystem. (Augustine, Blessing, Victor, & Ian 2021) Environmental sustainability is in danger as a result of risks like air pollution, water pollution, and habitat destruction. Waste is typically referred to as unwanted since it is waste. However, it is a normal and inevitable part of social, economic, and cultural life. Foul waste dumped carelessly harms the immediate human environment by escalating natural occurrences and posing health concerns to those exposed. The potential carriers of health risks include rodents, flies, and other animals that scavenge in the trash.

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Foul Waste Management

Management of procedures that guarantee the appropriate handling, handling, and disposal of waste or sewage is known as "foul waste management." (Swachch , 2017)

Importance of Managing Foul Waste for Public Health

Poor solid and liquid waste management practices contribute to the contaminating of soil, groundwater, and surface water, which poses health risks (Akeh, 2018).

Nearly everyone is impacted by these phenomena, which still exist in tertiary institutions. Wastes are discharged into the drainage system of the Bells University of Technology Ota, Male Bronze Hostel, where they eventually join smaller streams or rivers and move downstream, polluting the water. Environmental and public health problems brought on by pollution will persist if proper waste disposal methods are not used(Ozioma U 2016). (Abdullahi M 2019) asserted that typhoid, dysentery, and other illnesses frequently contracted through contact with water are caused by garbage. If foul waste had been safely stored, cleansed, and disposed of, the majority of water-borne illnesses would not have been a problem.

Classifications of Foul Waste

The term "foul wastes" refers to wastes generated by a home or community, including surface runoff, which is broken down into four categories, as well as wastes from the toilet, bath, laundry, restroom, and kitchen sink. (Soubam, Deachen & Dutta 2020)

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Things to Take Into Account Before Choosing a Certain Method of Disposing of Foul Waste

There isn't a single way to get rid of the foul waste that works in every situation. However, the following elements will largely determine the technique chosen;

i. The region's stability and the way soil forms

ii. The availability of sufficient land for the disposal of sewage.

iii. The volume of sewage that needs to be dumped.

iv. The extent of the intended sewage treatment.

v. Whether or not well water is present and used as a source of water supply.

vi. The height of the groundwater's water table.

vii. The closeness of surface water sources to the disposal site

viii. The technology's comparative cost of disposal.

Sewage/Wastewater Treatment

Why do we Treat?

To safeguard public health and environmental quality, foul waste must go through some type of treatment before being returned to the environment and the hydrologic cycle. The main objectives of treating foul waste are as follows:

i. To get rid of harmful microbes

ii.To get rid of biodegradable dissolved organic substances.

Treatment Methods

Treatment methods are grouped into three general categories:

Primary Treatment: Screening, grit removal, and sedimentation (settling)

Secondary or Biological Treatment: Biological processes and additional settling.

Tertiary or Advanced Treatment: Not all foul treatment plant requires tertiary (advanced) treatment.

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2.0 Foul Waste Disposal Methods

There are many ways to dispose of foul waste. Some require complex equipment, while others are highly pricey. Based on the kind, quantity, and sources of liquid waste discovered in a building, the following disposal techniques are recommended.

The cheapest and easiest ways to get rid of the foul waste are through these methods:

A. Disposal by Dilution

In some places, it is normal practice to dump raw sewage into nearby water bodies, such as rivers, streams, etc., for the water to dilute or weaken.

- Nuisance (creating offensive condition)
- Water and soil pollution (an aquatic life starts to die off)
- The spread of infectious organisms greatly increases

B. Cesspool

A cesspool is a hole dug in the ground for the collection of unsanitary toilet waste. Cesspools can be divided into two categories based on how they are removed. Which are:

1. The leaching type of cesspool

2. The watertight cesspool

Leaching Type of Cesspool or Seepage/Soakage or Absorption Pit

The term "leaching type cesspool" refers to a pit dug into the earth to receive sewage from the toilet and allow the waste to seep, leach, or percolate into the ground. It is also referred to as a "seepage pit," "soakage pit," or "absorption pit."The solid component (sludge) is kept in the pit while the liquid portion seeps or leaches into the surrounding soil.

- Plastering is used to build the top 60 to 90 cm of the pit's side, which has open joints that allow liquid to soak through.
- As long as the soil is sufficiently porous and can hold the liquids, a capacity of 2 to 3 meters deep and 90 to 120 cm will be adequate.
- An exit line transfers the effluent into another pit or series of pits, and a concrete slab cover with a manhole is installed to provide access to the pit.
- The groundwater table should be at least 1.2 meters below the bottom of the cesspool, and drinking water wells or other sources should be at least 30 meters away and on a lower level than the cesspool.

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However, it might not be advised unless there are highly exceptional conditions (e.g. If the soil formation is sufficiently permeable and when water sources are adequately secured). A cesspool used improperly can lead to:

Fly breeding, Disturbing odor, Obstacles.

Watertight Cesspool

- Similar to the leaching type, but waterproof so it can hold and accept sewage.

- Sewage is subjected to anaerobic breakdown inside a waterproof tank, although sewage treatment should not be considered.
- Problem: routine contents emptying and disposal.

C. Septic Tank

Low-density residential areas, buildings like schools and hospitals, and modest housing developments typically use septic tanks to treat household wastewater. The wastewater may contain toilet waste on its own or in combination with sullage. The septic tank and associated effluent disposal system together provide many of the advantages of traditional sewerage. Because they are more expensive than other on-site sanitation options, septic tank systems are unlikely to be affordable for the least privileged segments of society. To flush all of the waste via the drains and into the tanks, also require enough piped water.

3.0 METHODOLOGY

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The study was a descriptive survey intended to look into the issues with handling and disposing of foul waste at Bells University Male Bronze Hostel. The study included both primary and secondary sources of information. Direct observation was done also a structured interview was conducted with a few hostel guests as well as sanitation unit responsible for the hostel's daily cleaning. The collected data was subjected to descriptive analysis. The majority of the secondary sources for data gathering were published sources of relevant literature, including textbooks and journals.

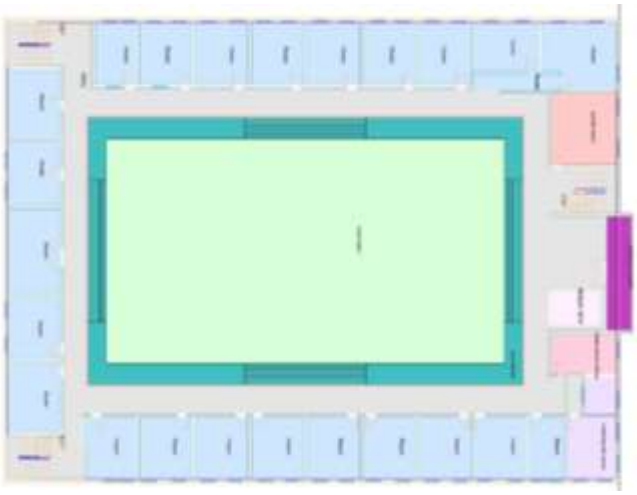

Plate 1: Ground Floor Plan of Male Bronze Hostel, Bells University

Source: Authors' Fieldwork, 2022

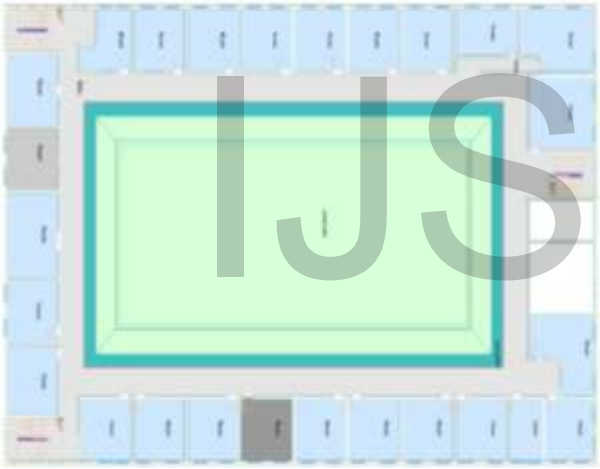

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Plate 2: First Floor Plan of Male Bronze Hostel, Bells University

Source: Authors' Fieldwork, 2022

4.0 FINDINGS AND DISCUSSIONS

In determining the character of these wastes and how they were managed from the various locations, the numerous foul wastes produced from all the toilets, bathrooms, and drainages around the male bronze were examined. The liquid foul waste from the toilets, bathrooms, and drainages in the courtyard of the hostel was drained directly onto the concrete deck behind the hostel and eventually ran off into the gutter behind the hostel(See plates 2).

According to the findings, food wastes, polythene bags, and polystyrene food packs were the biggest challenges to effective management of foul waste. Metal cans and plastic/rubber bottles made up a negligible amount of solid waste, while paper garbage, polythene bags, and leaves made up the majority. Since a sizable portion of occupants at the hostel publicly dispose of their waste, clogging drainage systems, these surfaces could develop breeding grounds for dangerous organisms and become potential hotspots for disease transmission.

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Plate 3: Clogged Drainage in Hostel due to Improper Disposals of PET bottles

Source: Authors' Fieldwork, 2022

It is impossible to overstate the negative effects of drainage obstruction, which significantly increase flooding, air and water pollution, a lack of aesthetic appeal in the surroundings, and an increase in mosquitoes, mice, cockroaches, and flies. Sensitizing occupants on how to dispose of waste properly is necessary to stop the Male Bronze Hostel from having clogged drainages. Human health and the environment must be protected from unhygienic conditions brought on by the careless disposal of foul waste, which has always resulted in pollution and disease outbreaks. For the benefit of both the environment and people as a whole, improper waste management is a serious issue. This study has recognized the current obstacles to the efficient management of foul waste in the Male Bronze Hostel and has also observed that the soakaway provided is either inadequate to the demands of the hostel or is not maintained regularly as foul waste can be seen overflowing.

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5.0 CONCLUSION AND RECOMMENDATIONS

This study examined foul waste management in Male Bronze Hostel, Bells University of Technology, Ota, Ogun State, Nigeria. The findings revealed that foul waste management in the hostel to some degree is not properly managed. There is a need to address these identified challenges and ensure a conducive environment for habitation for students. The study provides a measure to address these challenges with the following recommendations.

1. It is vitally necessary to increase the number of employees supporting the university sanitation unit.

2. As an alternative to the soakaway method of foul waste disposal, a biodigester can be installed as a sustainable replacement, which is far more efficient than the former and will require little periodic maintenance.

3. Students can also be sensitized on how to properly dispose of their solid waste so as not to clog the drainage systems and thereby reducing water stagnation. It is necessary to regularly inspect and maintain the services put in place for foul waste management.

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