

Assessment of Quality Waste Generated and Disposal Method (A Case Study of Offa and Oyun Local Government Areas, Kwara State)

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ABSTRACT

This research investigates the Assessment of quantity of waste generated and disposal method in Offa and Oyun Local Government Areas, Kwara State. The common method of disposal of wastes in the area is open air burning method which can wreck hazard on human health and the environment alike as noxious gases and substances are released during the burning process. In keeping a clean environment devoid of nuisance capable of triggering diseases outbreak and transmission, a structured questionnaire was developed and distributed among industries, private and government establishments in Offa and Oyun Local Governments. Information required range from types of service rendered, the quantity of waste generated, mode and frequency of collection, handling, transportation and disposal of wastes. The results in Offa and Oyun Local Government areas are 7.066tons and 3.325tons respectively, this shows that the volume of wastes generated in Offa and Oyun Local Government is proportional to their population density. It was discovered that proper and adequate collection and transportation of waste is not well practice in the areas which need to be improved on. The two local government areas are therefore advised to discourage burning of refuse within residential areas and office premises because it can lead to health hazards.

Keywords - Quantity of waste; waste handling; Offa and Oyun LGAs; human health; environment..

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1. INTRODUCTION

Waste could be seen as the materials for solid or semi-solid character that is no longer consider of sufficient value to retain. The compound of refuse are garbage and food waste; rubbish which include glass, tin, cans and pepper, and ashes trash which is also included refers to large item as tree limbs appliances, etc. which are not normally deposited into garbage cans. The essential objective or waste management is the promotion of public health. Unsatisfactory method of storage, collection and disposal of waste create ideal breeding facilities for file and other pests, which are themselves vectors of many epidemic diseases. In civilized societies, especially in Offa town where both liquid and solid waste are generated, constitute a greater public health hazards and unacceptable impact on the community, which bring major challenges in terms of disposal. Where waste are not properly dispose off, problem of smell, bad

odour, diseases and pollution is obvious hence; human and aquatic lives are endangered. The environment of man plays more important role on man's health than any type of matters one can think of.

Solid wastes are probably the most visible form of pollution. Man throws away billions of tons of solid material, each year. Much of these wastes end up littering roadsides, floating in lakes and streams and deposited in ugly dumps (World Book Encyclopedia 1975, Uchegbu, 1998) reported that what people throw away depends upon where they live, in industrialized countries; packaging contributes about 30% or the weight and 50% of the volume of household waste. Food and yard scraps account for most or the remainder. Paper constitutes by far the largest share of packaging, followed by glass, metal and plastic. Changes in packaging practices and improvements in the general standard of living have resulted in significant increase in the volume of solid wastes generated over the past 40 years (Corbitt, 1999). It is important therefore to properly manage solid waste to avoid environmental deterioration and degeneration. Wastes present a serious problem because most of the methods used for disposal results in some type of damage to the environment. When the wastes are put into open dumps, they ruin the attractiveness of the surrounding areas. Dumps also provide homes for disease carrying animals, such as cockroaches and rats. Some wastes can be destroyed by burning them but burning produces smokes that cause air pollution, when wastes are dumped in water they contribute to various forms of water pollution.

The problem of waste disposal is greatest in the industrial developed/ developing countries and in the countries with high population densities of the most used municipal waste treatment processes include compaction, incineration, shredding, drying and dewatering, pulverizing and compositing. Collection includes temporary Storage or containerization, transfer to a collection vehicle, and transport to a site where the waste undergoes processing and ultimate disposal. Processing and final disposal are challenging problems, but waste collection is the most expensive phase largely because it is labour intensive in addition, proper collection techniques are important to protect public health, safety and environmental quality (Nathanson 2000), (Olokesusi 1997) reported that in recognition of the need to take a holistic approach to environmental management in the country, the Federal Government created the Federal Environmental Protection Agency (FEPA) in 1988 All states and local government were directed by Decree No. 58 of 1988 to establish Environmental Protection Commission and Committee.

Study Area

Offa is an ancient town and Headquarters of Offa Local Government Area of Kwara State, Nigeria. It is the second largest town in the state, the administrative headquarter of Offa Local Government Area of Kwara State, Nigeria. Offa lies in the tropical forest and North Central part of Nigeria on longitude 4°43E to 4°70E and latitude 7°55N to 7°50N. The target population for the study area is General hospitals, Primary health centers, private hospitals, privately owned industries, schools and residential houses in different parts of Offa and Oyun Local Government.

2. MATERIALS AND METHODS

Research Tool

The main tools used for the collection of data are the administration of a structured questionnaire oral interview and physical observation of the surveyed areas. Ninety copies of the questionnaire were distributed within Offa Local government (Offa, Igbo-odun, Ogondoko,) and Oyun local government area (Ilemonna, Erin-ile, Ijagbo, Ipe, Igosun. Ira) while only eighty-six questionnaire were properly completed and returned, places covered include the General hospitals, Primary health centers, private hospitals, privately owned industries, schools and residential houses. The different sections of the questionnaire are to provide different kinds of information from general issues as, name, location, number of people living in the house, to specify such as, waste generation, storage, collection, transportation and disposal methods.

3. RESULTS AND DISCUSSION

Information regarding the weight, volume, and composition of waste generated is necessary for the proper planning, design and operation of collection and disposal facilities. These records are not kept by both the environmental department Offa Local Government and Oyun Local Government, which are the department handling wastes disposal in the local governments.

Composition of Waste

Figure 1 and Figure 2 shows the composition of domestic waste collected within Offa and Oyun Local Governments. The Figure indicates that most of the waste generated in the local Government's metropolis are mostly of rubbish such as glass, paper, metals, cans etc. Also from the trips, it was observed that both industries and residential areas do not practice waste separation.

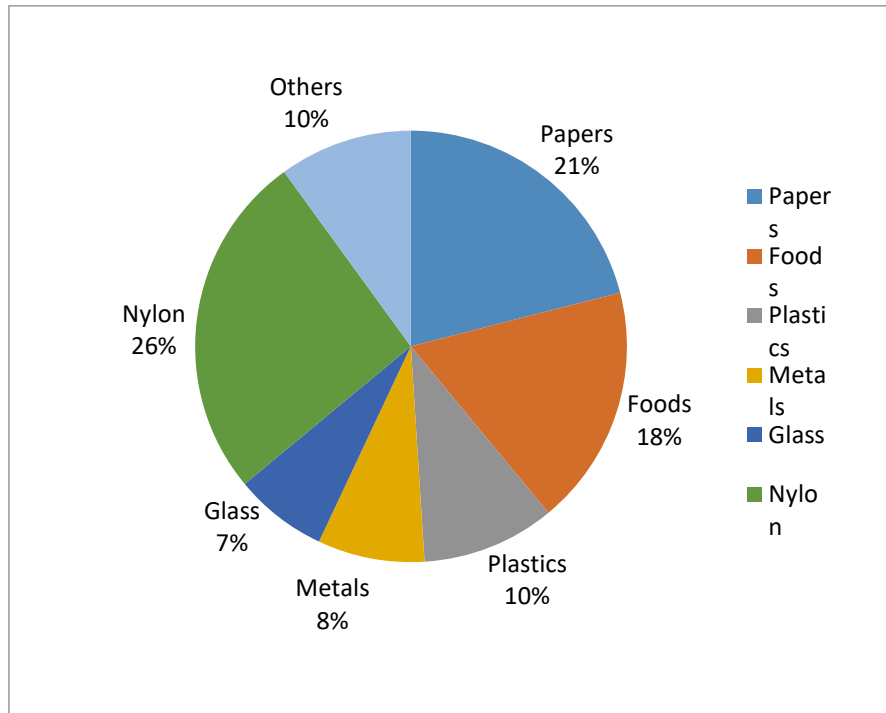


Figure 1: The composition of domestic waste collected within Offa Local Government.

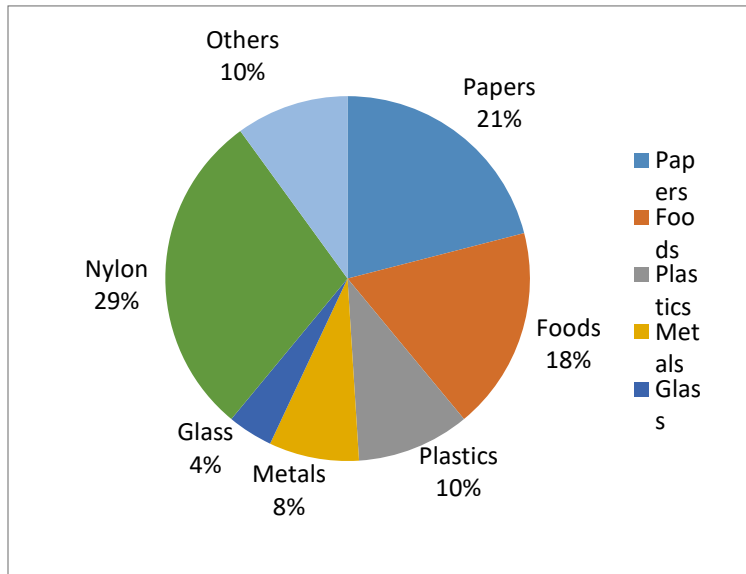


Figure 2: The composition of domestic waste collected within Oyun Local Government.

Frequency of Industrial Collection

An efficient waste management system should have a collection frequency that will match generation rate. Figure 3 and Figure 4 shows the frequency of waste collection in some government and private establishment located within Offa and Oyun Local Government.

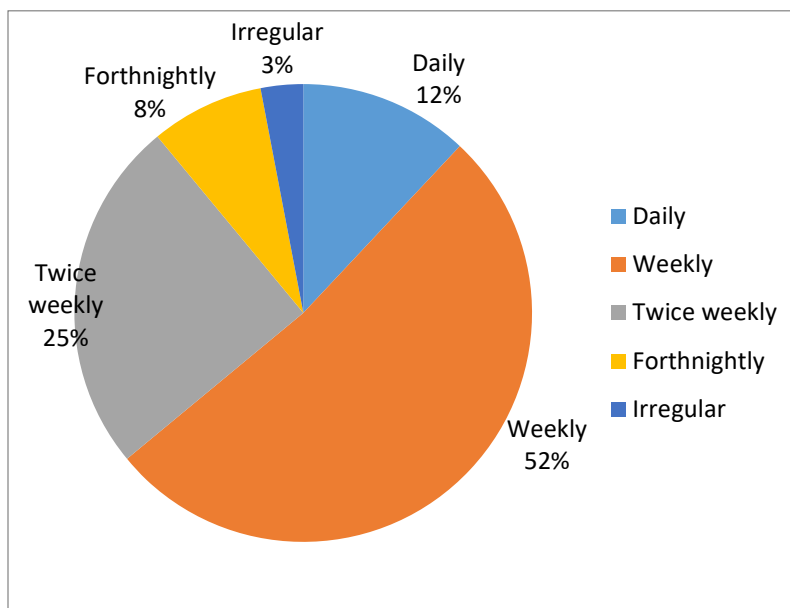


Figure 3: The frequency of waste collection in some manufacturing companies located within Offa Local Government.

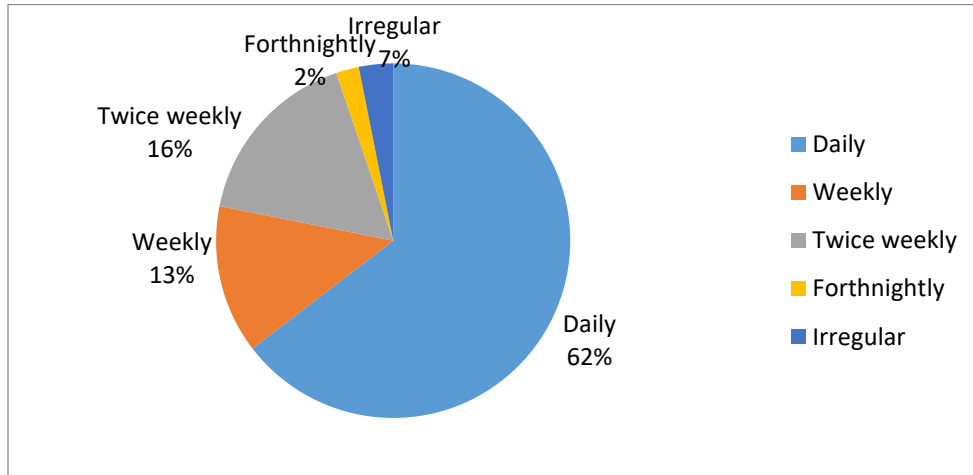


Figure 4: The frequency of waste collection in some schools and hospitals located within Oyun Local Government.

Frequency of Residential Waste Collection

From the respondent Figure 5 and Figure 6 shows in present daily, twice, weekly, fortnightly and irregular the frequency of waste collection in some residential houses located within Offa and Oyun Local Government.

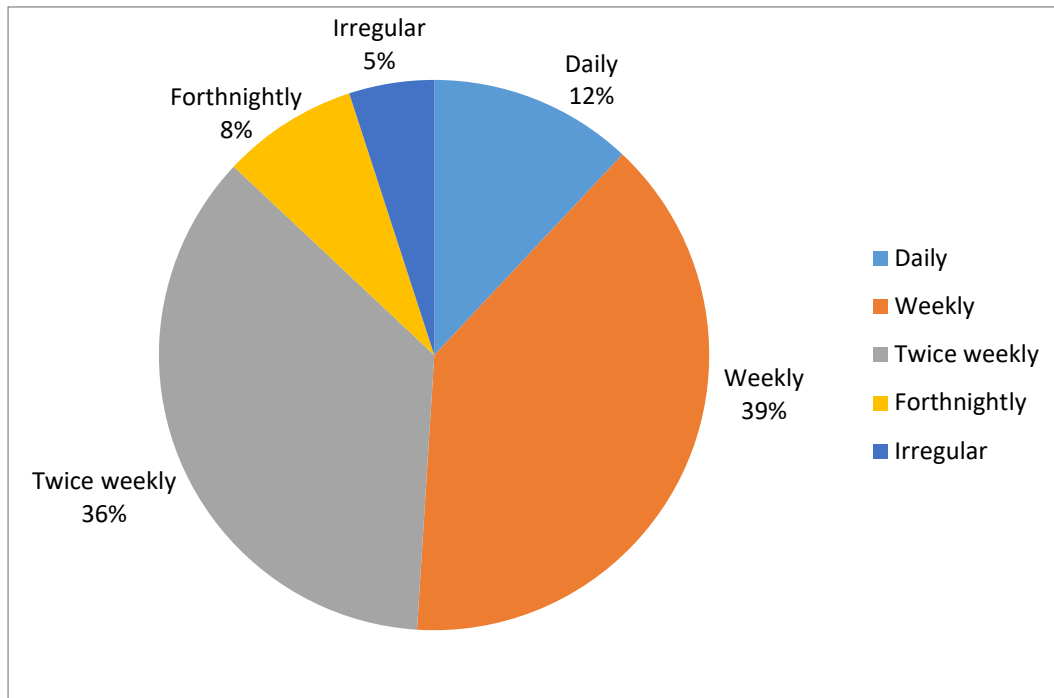


Figure 5: The frequency of waste collection in some residential houses located within Offa Local Government.

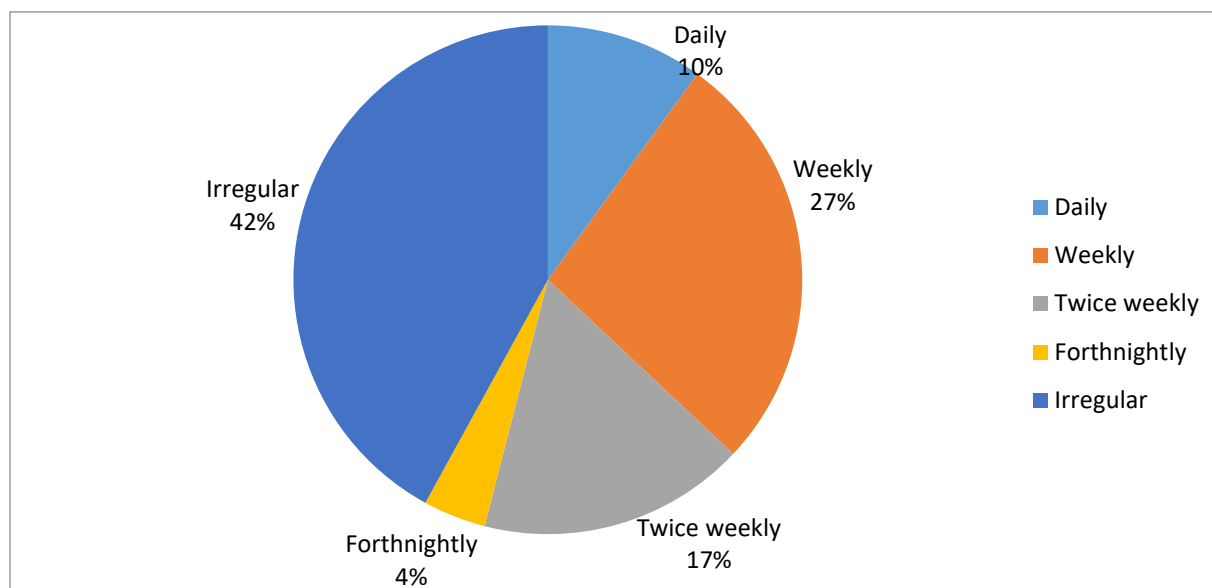


Figure 6: The frequency of waste collection in some manufacturing companies located within Oyun Local Government.

Quantity of Wastes Generated in School/Industries in Offa and Oyun Local Government.

Table 1: Quantity of Waste Generated in School / Industries in Offa Local Government.

Source of waste	Containers	Number of Containers	Size (ton)	Percentage fill (%)	Weekly average volume of waste (ton)
Pure water factory	Drum	17	0.120	100	2.040
Pure water factory	Dustbin	34	0.014	100	0.476
General Hospital	Dustbin	8	0.014	100	0.112
Primary health centers	Dustbin	5	0.014	100	0.070
Private hospitals	Dustbin	5	0.014	100	0.070
Pharmaceuticals	Dustbin	3	0.014	100	0.042
Schools	Dustbin	68	0.014	100	0.952
Total					3.762

Source:- From Field Survey

Table 2: Quantity of Waste Generated from Schools/Hospitals in Oyun Local Government

Source of waste	Containers	Number of Containers	Size (ton)	Percentage fill (%)	Weekly average volume of waste (ton)
Schools	Wastes baskets	62	0.014	100	0.868
General Hospital	Wastes baskets	2.5	0.014	100	0.035
Primary Health centers	Wastes baskets	2	0.014	100	0.028
Total					0.931

Source: From Field Survey

Quantity of Residential Wastes Generated

Table 3 and 4 shows the weekly average estimate of domestic wastes generated in some of the residential areas in the local governments. In table 3, (1.316ton) of waste was generated in residential houses with 21-30 occupants while (0.896ton) was generated by people dwelling in low density population houses (0-10). In table 4, (1.288ton) of waste was generated in residential houses with 11-20 occupants (1.106ton) were generated by people dwelling in low density population houses (0-10). This shows that the volume of wastes generated in residential buildings in the city is proportional to the population density of the occupants.

Table 3: Quantity of Waste Generated from Residential Houses in Offa Local Government

Population of Household	Containers	Number of Containers	Size (ton)	Percentage fill (%)	Weekly average volume of waste (ton)
0 – 10	Wastes baskets	64	0.014	100	0.896
11 – 20	Wastes baskets	78	0.014	100	1.092
21 – 30	Wastes baskets	94	0.014	100	1.316
Total					3.304

Source: From Field Survey

Table 4: Quantity of Waste Generated from Residential Houses in Oyin Local Government

Population of Household	Containers	Number of Containers	Size (ton)	Percentage fill (%)	Weekly average volume of waste (ton)
0 – 10	Wastes baskets	79	0.014	100	1.106
11 – 20	Wastes baskets	92	0.014	100	1.288
Total					2.394

Source: From Field Survey

Collection Mode

Table 5 and 6 shows the different collection modes used by the residential houses and industries in the local governments. Table 5 shows that for residential houses about 30% collect their waste in dustbins while about 70% collect their waste in waste baskets and 10% in polythene bags. For industries about 60% collect their waste in drums while 40% collect their waste in dustbins. Table 6 shows the different collection modes used by the residential houses and establishments. Results shows that for residential houses about 75% collect their waste in dustbins while about 20% collect their waste in wastebaskets and 5% in polythene bags. For establishments about 25% collect their waste in dustbin while 70% collect their waste in waste baskets and 5% in polythene.

Table 5: Different Collection Modes Used by the Residential Houses and Industries Offa Local Government.

Type of storage	Residential areas (%)	Industrial areas (%)
Dustbin (plastic)	30	40
Waste baskets	70	-
Drums	-	60
Polythene bags	10	-
Boxes	-	-

Table 6: Different Collection Modes Used by the Residential Houses and Establishments Oyun Local Government.

Type of storage	Residential areas (%)	Industrial areas (%)
Dustbin (plastic)	75	25
Waste baskets	20	70
Drums	-	-
Polythene bags	5	5
Boxes	-	-

Waste Storage

To prevent putrefaction, the World Health Organization (WHO, 1999), suggested the following maximum storage periods; 72 hours in winter and 48 hours in summer for temperature climates; 48 hours in cool seasons and 24 hours in the hot season for warm climates. It has been observed that most industries and residential areas do not follow these guidelines. Waste storage in these areas is as a result of the compulsory delay imposed on them by the state's Waste Management Board's vehicle which do not operate regularly everyday, thus the storage period of these wastes, is a function of the collection frequency.

Waste Transportation

In Offa Local Government truck is used to transport waste to the disposal point. The vehicle is a tipping type, diesel engine, but does not have the facility to reduce waste by mechanical grinding incorporated in it. In Oyun local government there is no proper transportation of waste to the disposal point as most people in the residential houses, schools actually burn their waste within their own premises and sometimes do not require the service of government for disposal of their waste.

Final Disposal

Environmental department of the local government disposes wastes collected (municipal, industrial and other waste) in a designated field along Alaya in the metropolis off Ira road. After the wastes have been tipped on the field from the truck, they are then burnt in the open air. No land filling is carried out. Some of the residential houses and industries actually burn their waste within their own premises and sometimes do not require the service of the environmental department for disposal of their waste.

4. CONCLUSION

From the present study, the following points are made:

1. In all the areas surveyed, management of waste is hampered by lack of basic waste generation data and record.
2. The result of 7.066tons shows that more waste is been generated in Offa local government and can be recycled rather than burning.
3. The road accessibility to most areas for waste collection is bad.
4. Sorting and separation of waste materials are not practiced in the local governments.
5. The generation of waste is a continuous process, which calls for continuous management of waste that needs adequate funding support.
6. The problems of finance seem to be most striking which affect the smooth running of the operation.
7. These operations are routine in nature and there is no expertise to bring in new ideas and development to the effective management of these wastes, most especially the engineering aspects.
8. Many people are ignorant of the problems caused by careless handling of wastes as wastes are been dump by road side for the agency to pack without considering its effect as regards human hygiene, pollution and environmental aesthetics.
9. The collection crews are not properly taken care of regularly and adequate medical treatment not given to them despite the fact that they are exposed to the danger of contacting dangerous disease.

5. RECOMMENDATIONS

1. Proper and adequate collection and transportation of waste should be practices.
2. More equipment should be purchase and more people trained as environmental sanitary for effective and clean environment officers.
3. The condition of service for people working in the environment sanitation area should be different from general civil service condition of service, and more incentives given to them.
4. The number of refuse collection van should be increased for effective refuse disposal.
5. The use of the basket and cartons for storing waste are in adequate and it should be prohibited.
6. Burning of refuse around residential and office should be discourage, because it can lead to fire hazards.

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