

Challenges of Solid Waste Management in Minna and Environs

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Abstract: - Solid waste disposal problem in urban centres such as Minna in most developing countries is a major concern to both the governments and residents of the area; this problem has become most worrisome in Nigeria where the generation is always on the increase because of increase in population and some socio-economic factors. Data for this study were obtained through the administration of questionnaires, direct interview and review of existing literature. The data obtained from the field were analyzed using pie chart. A total of three hundred questionnaires were distributed to some selected residents and business centres in Minna. For the various age groups 50 questionnaires were distributed per group. 56% of the respondents keep their waste containers inside the building, another category keep their containers outside their homes while business areas have a common collection points where the wastes are collected by the waste disposal agencies. 5% of the respondents admitted that they keep their containers in the curb side of their building while 25% of the respondents keep their containers outside their building. 60% of the generated wastes are disposed off on the major streets of Minna for the waste disposal agencies to collect while the second largest disposal method is the collective burning of the waste while 5% of the generated waste is burnt off by the respective owners. 63% of the respondents stated that the wastes generated were collected regularly by those in-charge while 37% stated otherwise. On further questioning, 61% of the respondents do not have an idea of those who collects their waste from wherever they are placed or dumped while 1% of the respondents stated that their wastes are disposed by the some community groups. It was concluded that people of the study area had poor attitudes and perceptions toward solid waste handling. They would store their household refuse in substandard refuse containers such as old buckets, sacks, baskets, polythene bags, and boxes that had no coverings.

Key-Words: - Domestic, Dumping, Industrial, management, solid waste, water

1 Introduction

In Nigeria, recent upsurge in waste generation and hap-hazard dumping due to poor management has translated into a serious problem. The heaps of refuse that are dumped indiscriminately along the streets, drains, gutters etc., not only devalue resources, pollutes soil and water resources but also constitutes potential health hazards to plants, animal and people (Otti, 2010).

Municipal solid waste (MSW) is defined to include refuse from households, non-hazardous solid waste from industrial, commercial and institutional establishments (including hospitals), market waste, yard waste, and street sweepings. Municipal solid waste management (MSWM) refers to the collection, transfer, treatment, recycling, resources recovery and disposal of solid waste in urban areas. The goals of municipal solid waste management are to promote the quality of the urban environment, generate employment and income, and protect environmental health and support the efficiency and productivity of the economy (Ogwueleka, 2009).

Solid waste management has emerged as one of the greatest challenges facing state and local government environmental protection agencies in Nigeria. The volume of solid waste being generated continues to increase at a faster rate than the ability of the agencies to improve on the financial and technical resources needed to parallel this growth. In recent years, there has been a phenomenal increase in the volume of wastes generated daily in the country which calls for proper handling in order to protect the environment and the population (Fakere, et al., 2012). Solid waste management in Nigeria is characterized by inefficient collection methods, insufficient coverage of the collection system and improper disposal of solid waste.

The quantity of solid waste generated in urban areas in industrialized countries is higher than in developing countries; still municipal solid waste management remains inadequate in the latter. Solid waste in developing countries differs from developed countries. Most developing countries, Nigeria, inclusive have solid waste management problems different from those found in industrialized countries in areas of composition, density, political, and economic framework, waste amount, access to waste for collection, awareness and attitude. The wastes are heavier, wetter and more corrosive in developing cities than developed cities (Ogwueleka, 2009).

An average Nigerian is estimated to generate about 0.49 kg of solid waste per day with households and commercial centres contributing about 90% of the total urban waste burden (Ogwueleka 2009). Existing information on industrial, agricultural and biomedical waste profiles in Nigeria is still little. Solid wastes comprise all the wastes arising from human and animal activities that are normally solid, discarded as useless or unwanted. Also included are by-products of process lines or materials that may be required by law to be disposed off (Agwu, 2012).

Solid wastes could be defined as non-liquid and non-gaseous products of human activities, regarded as being useless. It could take the forms of refuse, garbage and sludge. Minna in Nigeria, being among the fast growing cities in the world are faced with the problem of solid waste disposal. The implication is serious when a country is growing rapidly and the wastes are not efficiently managed. Waste generation scenario in Nigeria has been of great concern both globally and locally. Of the different categories of wastes being generated, solid wastes had posed a hydra-headed problem beyond the scope of various solid waste management systems in Nigeria, as the streets experience continual presence of solid waste from commercial activities (Babayemi and Dauda, 2009).

Considerable percentage of urban waste in developing countries is deposited either on the roads, or road sides, unapproved dump sites, in water ways (drainage system), or in open sites which adversely affect environmental friendliness. In fact, solid waste poses various threats to public health and adversely affects flora and fauna as well as the environment especially when it is not appropriately collected and disposed. However, whenever approved solid waste dump site is used there is no guarantee that wastes are appropriately disposed because of continuous expansion of the site. Thus, the adjacent areas including high ways, farmlands, forest plantation, etc, are encroached upon which takes its toll on biodiversity conservation (Kalu et al., 2009). Thus, most State Governments in the last decade have come to recognize the embarrassing situation caused by generated waste but poorly disposed off within their cities. In order to address this problem, many state governments in Nigeria, due to inability of Local Government to tackle the waste problem, have established a waste management organ to deal with the waste problems. Despite this laudable attention, collection, disposal processing, treatment, recycling

and utilization have defied solution as a result of the attitude of some Nigerians. It is believed that the waste disposal habit of the people, corruption, work attitude, inadequate plants and equipment among others are the major factors militating against effective solid waste management in major cities in Nigeria. The major effects of poor solid waste management in Nigeria include: blocked drains, flooding, erosion, traffic congestion, soil pollution, air pollution, health problems, unaesthetic dump sites and loss of community pride (Agwu, 2012).

The aim of this study to analyze the mode and frequency of solid waste collection; to assess solid waste management both at the household levels and the State Environmental Protection Agency (NISEPA) as well as the personnel status of Niger State Environmental Protection Agency (NISEPA) in handling solid waste in the study.

2 Methodology

2.1 Research Design

A descriptive survey design was employed to determine factors contributing to indiscriminate dumping of solid waste in Minna. Description survey designs are used in preliminary and exploratory studies to allow researchers to gather information, summarize, present and interpret for the purpose of clarification. This study is restricted to the major areas/settlement within Minna and her immediate environs.

2.2 The Study area

The study was conducted in Minna town and some surrounding communities of Bosso and Chanchaga town. The town is highly populated during the day unlike during the night. Solid waste management within the town center is the responsibility of the Niger State Environmental Protection Agency (NISEPA). Each commercial building in the town on average consists of at least 10 business/commercial establishments, with different business enterprises. For this study, the target population consist of 150 commercial/business establishments within Minna and 150 hundred residential homes.

2.3 Sampling Procedure

The sample size for this study will consist of 150 commercial/business establishment and 150 residential homes within and around Minna. This represents about a tenth of the total target of the various commercial and residential areas.

A cross-sectional study design was be used and a sample of 150 commercial and residential buildings each will be selected through multistage sampling technique as follows: five commercial buildings out of every street within Minna will be randomly picked likewise five residential buildings will also be considered using the same process. The five selected from each group will represent the commercial and residential buildings in one street. From the selected establishment, a credible respondent who is a business/office owner or attendant within an office will be interviewed and the questionnaire filled.

2.4 Research Instruments

The research instrument employed for this study is the questionnairing method. A questionnaire is a research instrument that gathers data over a large sample (Kombo and Tromp, 2006). The advantages of using questionnaires are: the person administering the instrument has an opportunity to establish rapport, explain the purpose of the study and explain the meaning of items that may not be clear. Engel (2005) describes a questionnaire in the context of communication discipline as structured, goal-oriented communication. Babbie (2004) observes that questionnaires are more appropriate when addressing sensitive issues, especially when the survey offers anonymity to avoid reluctance or deviation from respondents.

Questionnaires will be administered to the 150 each selected commercial establishments and residential homes to obtain information on type of waste produced, type of receptacle used, method of waste disposal, waste separation and frequency of waste collection.

3 Results and Discussion

A total of three hundred questionnaires were distributed to some selected residents and business centres in Minna. For the various age groups 50 questionnaires were distributed per section..

Various types of waste are generated in our environment. It was observed that the waste matter generated constituted mainly household waste which is generated by the respondents while e-waste and ashes generated formed the smallest portion. Figure 1 below shows the various types of waste generated within Minna. It is important to note here that most of the waste generated from both the residential and business premises was lumped together by the respondents. As almost all the respondents generate plastics/polythene bags, papers and food leftover.

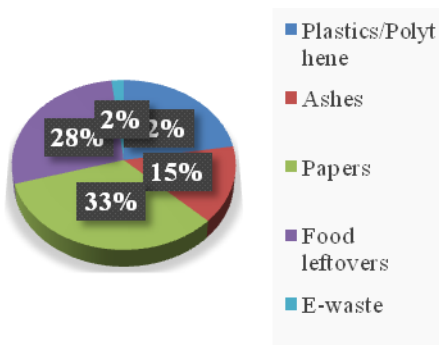


Fig. 1: Types of solid waste generated in the business and residential premises.

Out of the 300 questionnaires distributed, 178 of the respondents stated that they have waste containers in the respective homes and business areas while 122 of the respondents stated that they do not have a collection container in either homes or business areas. It was observed from the respondents that 56% of the respondents keep their waste containers inside the building, another category said that they keep their containers outside their homes and business areas, 5% of the respondents admitted that they keep their containers in the curbside of their building while 25% of the respondents keep their containers outside their building. Most of the respondents that do not keep their containers outside gave reasons that their containers are either constantly being stolen or destroyed or others dump their waste in such containers thus it gets filled up on time compared to when they used such containers alone. Figure 2 below shows the percentile distribution of the various areas where waste containers are kept either in our homes or business areas.

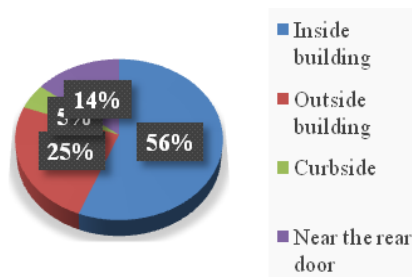


Fig. 2: Percentile distribution of where waste containers are kept.

The volume of waste generated could not be determined by the various respondents in all the areas considered for this study as all the respondents did not attach any form of importance to the various types of waste generated. The disposal methods of waste employed by the various residents and business centers varied from place to place. Figure 3 shows the various methods of waste disposal in Minna.

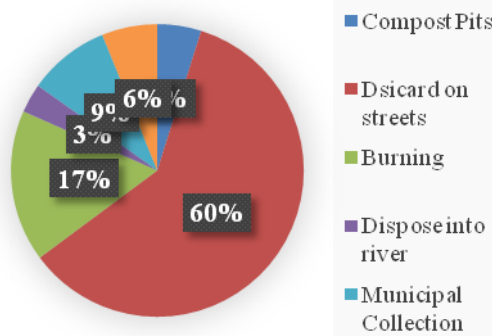


Fig. 3: Disposal methods of waste in Minna.

It was observed that 60% of the generated wastes are disposed off on the major streets of Minna for the Municipal collection to take place while the second largest disposal method is the burning of the waste and the least which is 5% is burnt off by the respective owners. Most of the wastes generated are usually not separated as all waste are lumped together and thrown into the waste bin. The respondents gave several reasons why they don't separate their waste as due to lack of time, its tedious nature and time demanding to separate and no extra storage containers since they all are considered as just waste. Figure 4 shows the percent distribution of the reasons why the various respondents do not separate their wastes. Since no

separation of the waste is carried out, the waste produced in Minna and her environs are not recycled.

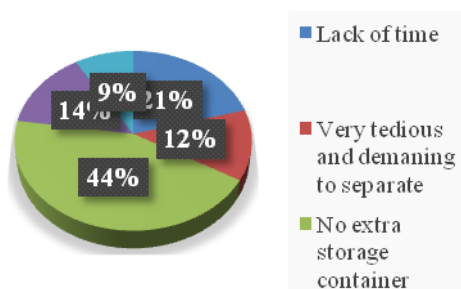


Figure 4: Percent distribution of reasons for non-separation of wastes.

The collection of waste around Minna and her environs are carried out using several methods the use of house helps for which most house owners do not have an idea of where the wastes are dumped, hired boys (Al Majeri), private collectors, self, and municipal sewage collectors (NISEPA). Figure 5 below shows the percent distribution of who is responsible for the disposal of waste from individuals and business owners dispose off their waste.

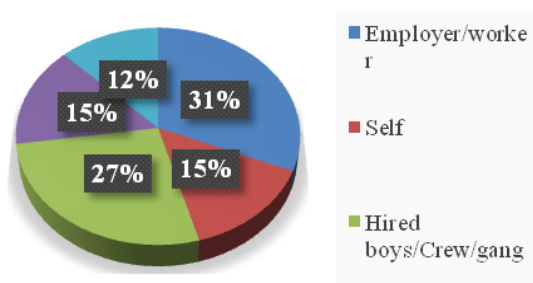


Fig. 5: Percent distribution of waste collectors.

Generated wastes from most residents and business premises in Minna are either collected daily, once a week, twice a week, and when necessary or convenient for the generators. Though, most educated and enlightened homes dispose off their waste on daily bases which has the least percentage of 19 with respect to the frequency of disposal while the highest 46% which is when necessary and convenient for the waste generator. Figure 6 below shows the frequency of disposal of waste. The dangers associated with non-collection of waste from the places where they are deposited becomes paramount on the health of individuals

who stay close-by such areas as they are known to cause diseases, accidents/injuries, unsightly/bad smell and breeding ground for diseases. Figure 7 below shows the percent distribution of the dangers associated with improper waste disposal.

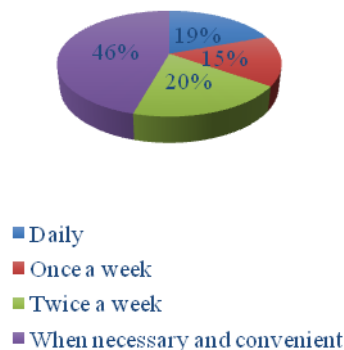


Figure 7: Convenience of collection of wastes

From the various respondents' opinion, it was observed that 63% stated that the wastes generated were collected regularly by those in-charge while 37% said that the waste generated were not collected regularly. On further questioning concerning those that are responsible for the collection of this waste, 61% of the respondents do not have an idea of who collects their waste from wherever they are placed or dumped while 1% of the respondents are those that are disposed by the some community groups where they are in existence. Figure 8 shows those responsible for the collection and disposal of solid waste.

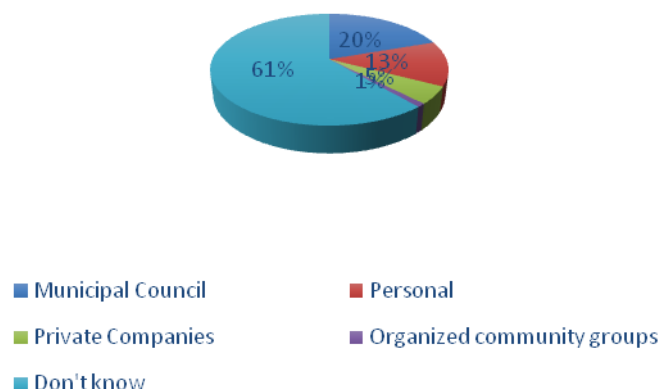


Figure 8: Those responsible for the collection and disposal of solid waste.

Several disposal methods have being introduced by individual homes and business premises as some of the waste generated are dumped in landfills, abandoned project sites, water ways and water

bodies, some are burnt while others are indiscriminately dumped. 47% of the respondents dump their waste on abandoned project sites which is the highest while the 5% crudely dump their waste in water ways and water bodies. Figure 9 below shows the various disposal methods employed by the various respondents in the study area.

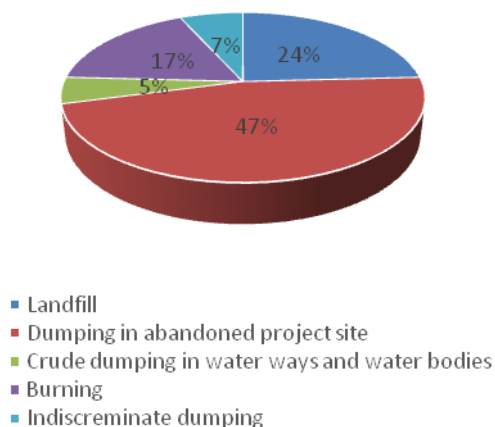


Figure 9: Waste disposal methods employed by the respondents

When asked if the various respondents were satisfied by the services provided by the Niger State Environmental Protection Agency (NISEPA) concerning their response towards the removal of waste from homes and business premises, 10% of the total population interviewed were satisfied with the prompt response to the removal of the waste, 60% were not satisfied with the response of those in-charge of the collection of the waste. These categories of individuals have their homes and business premises close to the dump sites. The remaining 10% were indifferent to whether the wastes are collected on time or not. The reason why NISEPA could not carry out some of this duties were identified as lack of modern technology, negligence of duty, inadequate personnel, lack of funds and lack of or poor equipment. Figure 10 below shows the percent distribution of what makes NISEPA not to collect and dispose off the waste adequately.

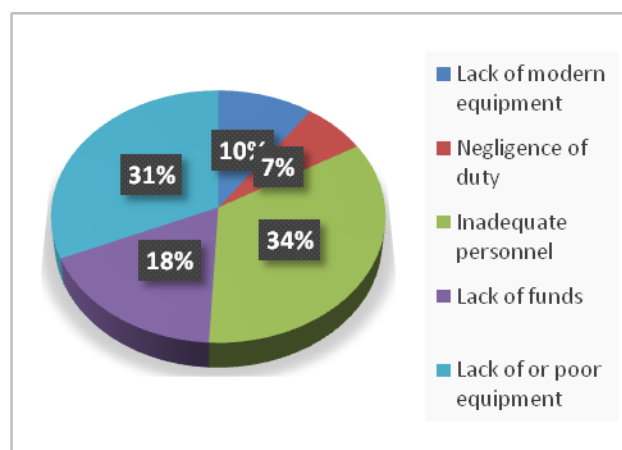


Figure 10: Percent distribution of what makes NISEPA not to collect and dispose waste

4 Conclusion

This study has been concerned with the problems of solid waste management in Minna and her environs. The study's findings showed that most people within the study area had poor attitudes and perceptions towards handling of solid waste. They would store their household refuse in substandard refuse containers such as old buckets, sacks, baskets, polythene bags, and boxes that had no coverings. This is in line with works of Malombe (1993). Most residents and business areas depends mostly on NISEPA facilities for their household refuse to be properly disposed not minding if there are equipment and personnel for handling solid waste in the area are enough or not. There are no special incentives for the workers who deal with solid waste in Minna as most workers are looked down upon by the various members of the society.

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