

An Assessment of the Effect of Disposal and Management of used Sachet Water Ploythene Bags in Potiskum City

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ABSTRACT

There is disequilibrium between man and his environment as a result of his economic activities; this has led to so many environmental problems. The daily activities of humans in order to meet their basic needs and nutritional requirements for sustenance generate a lot of unwanted materials. The amount of thrash generated from consumption of sachet water has been on the increase since the past few years throughout the country. This paper examines the effect of disposal and management of used sachet water polythene bags in Potiskum city, by examining the availability of logistics, machines, and personnel for management. The paper reveals that, used sachet water polythene bags are improperly disposed in Potiskum city due to inadequate logistics, machines, and personnel. Purposive and simple random sampling techniques were utilized in the study to select interviewees. The study relied on Qualitative tools such as interviews; observation, key informant interviews, as well as focus group discussions were used for data collection. Quantitative tools such as SPSS and Excel as software for data analysis as well as tables and charts were used for data presentation alongside descriptive analyses. Recommendations were made for sustainable waste management of these non-biodegradable wastes.

Keywords: Environmental effects, disposal, used, sachet water polythene bags

INTRODUCTION:

Solid Waste Management is a crucial problem not only for developing countries but for the developed countries as well. Enormous amount of Waste is generated throughout the world and the most crucially posed question is how to manage these wastes effectively and efficiently to save the environment and to ensure the continuous existence of mankind. "The problems facing developing countries in the handling of Municipal Solid Waste are not impossible to solve but they need concerted effort from all sectors of society. An all-inclusive approach should be adopted in order to achieve any meaningful and lasting solution" (Henry 2006). According to Akunyili 2003, it is the inability of the Government to persistently provide adequate potable water for the growing population that has tremendously contributed to the proliferation of the so-called 'pure water' producers in Nigeria. Thus, the quest for solutions to the dearth of potable water led to the production of sachet. The private water enterprises mainly collect their water as the end-product of initially treated water supplied by the government-owned public utilities and do little treatment such as the removal of the suspended solids to make the water produced by the Government more potable. They also do some minor treatment on water from natural springs, open wells and boreholes.

Many Municipalities, cities and towns continue to grapple with the problem of Solid Waste Management, Potiskum is not an exception. Potiskum city is the headquarters of Potiskum local government with administrative and commercial activities carried out in the city. Potiskum is the largest city in Yobe state with booming business in the area. Potiskum has been a thriving trade hegemony in Yobe State because of its strategic position as a center of commerce, learning, spiritual and cultural revival with a population of 205,876 at the 2006 census. Like many other cities of Nigeria, Potiskum has rapid increase of population which results to many environmental problems such as solid waste which in turn causes land degradation such as water flooding, erosion among others.

History reveals that sachet water was introduced to the Nigerian markets around 1990 but its regulation by the National Agency for Food and Drug Administration and Control started in 2001. It registered 134 different packaged water producers in Nigeria (Onemano, and Otun, 2003). Coincidentally, between 1992 and 1996, the years that sachet water production began to sprout, the rate of increase of the country's total water supply for industrial, agricultural and domestic uses was 1.0 percent while the population growth rate was 2.84 percent (Gbadegesin and Olorunfemi, 2007). According to Akunyili, 2003, inability of the

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Government to provide persistently adequate potable water for the growing population tremendously contributed to the proliferation of the so-called 'pure water' producers in Nigeria. Thus, production of sachet water came up as a solution to the dearth of potable water provision.

As the country population grew and industries increased, the supply of water by the public utilities became inadequate in quality and quantity. This led to the emergence, and proliferation of more and more private water enterprises that operated side by side with the government-owned public water utilities. Almost every nook and cranny in Potiskum is littered with sachet water polythene bags. This is as a result of indiscriminate disposal of sachet water bags onto the streets of virtually every corner in Potiskum. The sachets are made of non-biodegradable synthetic polyethylene (polythene), which does not decay, decompose or corrode, and which when burnt, produces oxides of carbon, nitrogen and sulphur. However, the water sources and purification technologies are not up to the safe standards. Sources of water are generally surface and ground water. National agency for food, Drugs, Administration and control (NAFDAC) approved tap water (surface water), borehole (ground water) and spring water as sources of raw water for packaged water production (Abati, 2005).

The oxides of carbon, sulphur and nitrogen, methane, particulate matter and others, produced from burning of disposed water sachets causes various health problems such as cancer, brain damage, dizziness, headache, fatigue, respiratory problem, and eye irritation. Such conditions, according to Adenuga 2006 can precipitate epidemics and national health crises. When the environment is damaged, both consumers and non-

consumers of sachet water are affected since the environment is exhaustively composed of the two groups. Notwithstanding the above negative externalities of sachet water production, due to the availability, accessibility and issues of packaging, sachet water for drinking is still prominent. This paper aims at filling the research gap on sachet water polythene bag waste management in Yobe state commercial center (Potiskum). It also provides a baseline data for policy makers and donors who are interested in the subject matter.

Methodology

Apart from the use of documented sources, the study also generated firsthand information from the field. Purposive and simple random sampling techniques were utilized in the study to select 90 interviewees. The study relied on qualitative and quantitative approaches, taken in to consideration, sources of data, sampling techniques, data collection techniques, as well as data analysis and presentation techniques. The study area, Potiskum was purposively chosen due to the fact that, it is commercial center of Yobe state with ongoing commercial activities, cognizance of the fact that there is a link between waste generation and level of commercial activities. Qualitative tools such as interviews, observation, key informant interviews, as well as focus group discussions were used for data collection. Quantitative tools namely SPSS and Excel as software for data analysis as well as tables and charts were used for data presentation alongside descriptive analyses. The study settled on a sample size of 80 based on the formular of Taro 1970. Ninety (90) questionnaires were administered, but only eighty (80) copies were properly filled out, returned and used for analysis.

Results

Equipment used in the management of sachet water plastic waste

Equipment used in the management of sachet water plastic waste in Potiskum city can be categorized into two. They are machines and personnel.

Machines used in the management of sachet water plastic waste in Potiskum city

The table below shows the machines required/ available in Potiskum city for the management of sachet plastic waste as at March, 2019.

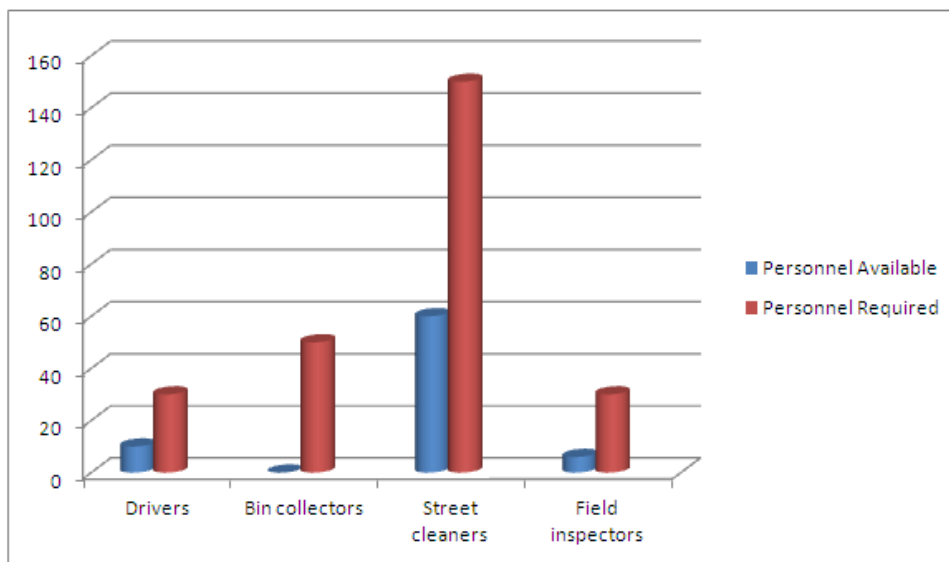
Machines	Number available	Number required
Roll on/off truck	3	8
Compacters	0	5
Pick-up truck	0	15
Bulldozer	0	5

Source: Field survey 2019

The city can only boast of a Roll on/off truck. It is the only machine available in the city for the collection of sachet water plastic waste and other solid waste. However, the absence of compacters, pickup trucks, and bulldozers in Potiskum city has hampered the management of sachet water plastic waste and other solid waste. These inadequacies of the machines are as a result of the fact that all the machines required are imported and hence expensive. Also the machines require specialized skills for operation. Also, spare parts to maintain these machines are not readily available when the machines break down.

Personnel for the management of sachet water plastic waste in Potiskum city

Figure 1: This figure shows a graph showing the number of personnel required/available in the management of sachet water plastic waste in Potiskum city as at March 2019.



Source: Field survey 2019

Figure 1, Presents the number of personnel required and the one available in the management of sachet water plastic waste in Potiskum city. The personnel are employed from within the community in order to ensure prompt service delivery. Figure 1 as well as table 1 suggests that machines and personnel for the management of sachet water polythene bag waste are inadequate leading to inappropriate management.

Factors contributing to inappropriate management of sachet water plastic in Potiskum city

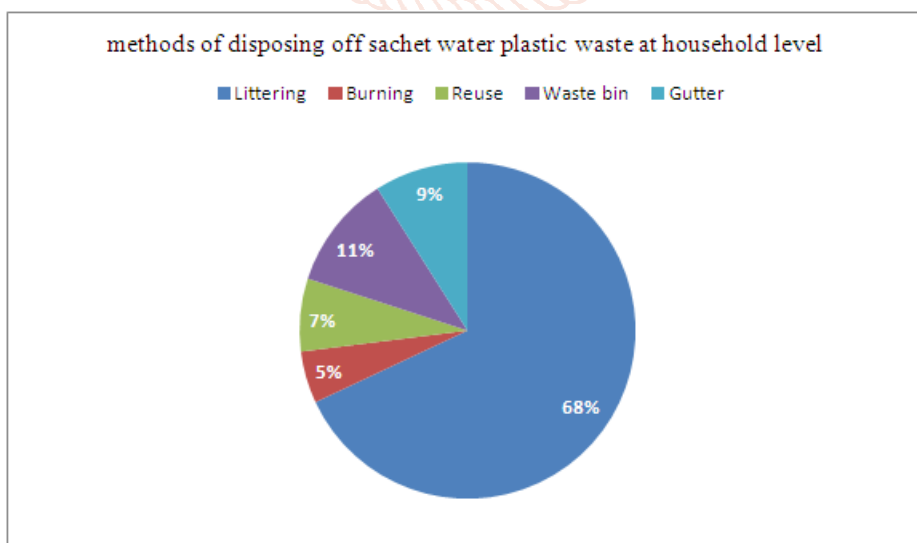
Inappropriate management of sachet water plastic waste in Potiskum city can be attributed to a number of factors. The analysis below provides a proof of some of the factors that cause the menace.

Inadequacy of equipment and personnel in the management of sachet water plastic waste in Potiskum city

Inadequate supply of equipment coupled with insufficient personnel curtails the ability of local government and state government to effectively clear the heaps of sachet water plastic waste in the entire state governments, and understaffed manpower for waste management in the study area.

Methods of disposal of sachet water plastic at household level

From figure 2 below, good percentages (68%) of respondents litter the streets with sachet water plastic waste on the streets while only 7% rely on an environmentally friendly way of disposing the sachet water plastic waste (reuse for nursing seedlings). More so only 11% of respondents are able to deposit their sachet water plastic wastes in the waste bin. It was explained that the dustbins are not available in the whole city to put the waste in. This has accounted for the inappropriate management of sachet water thrash at the household level in Potiskum city thereby increasing the burden of stretched community in order to ensure prompt service delivery.



Source: Field survey 2019

Causes of inappropriate management of sachet water plastic waste in Potiskum

Table 3 presents the views of waste management experts in Potiskum city with regards to factors contributing to improper management of sachet water plastic waste. 37.5% of the poorly managed (littered) sachet water plastic waste in Potiskum city is attributable to inadequacy of logistics and personnel in the city.

Table2: This table shows factors responsible for poor management of sachet water plastic waste in the Potiskum city.

Causes of poor management sachet water plastic waste	Frequency	Percentage (%)
Low patronage in community clean up exercises	20	25
Poor attitude of inhabitants towards management of sachet water plastic waste	25	31.25
Inadequate logistics /personnel	30	37.5
Others	5	6.25

Source: Field survey 2019

Consequences of inappropriate management of sachet water polythene waste

Inappropriate management of sachet water polythene waste poses a serious threat on the environment which in turn affects humanity. This consequence ranges from health, economic, even on governance.

Health Risk

Improper management of sachet water plastic waste has been identified as one of the major contributory factors to mosquito breeding which consequently contributes to the prevalence of malaria in the community. The littered plastic waste tends to collect water from rains. The water collected provides a conducive breeding environment for mosquitoes and thereby increasing the incidence of malaria in the community with its attendant consequences (Environmental Health Unit 2012)

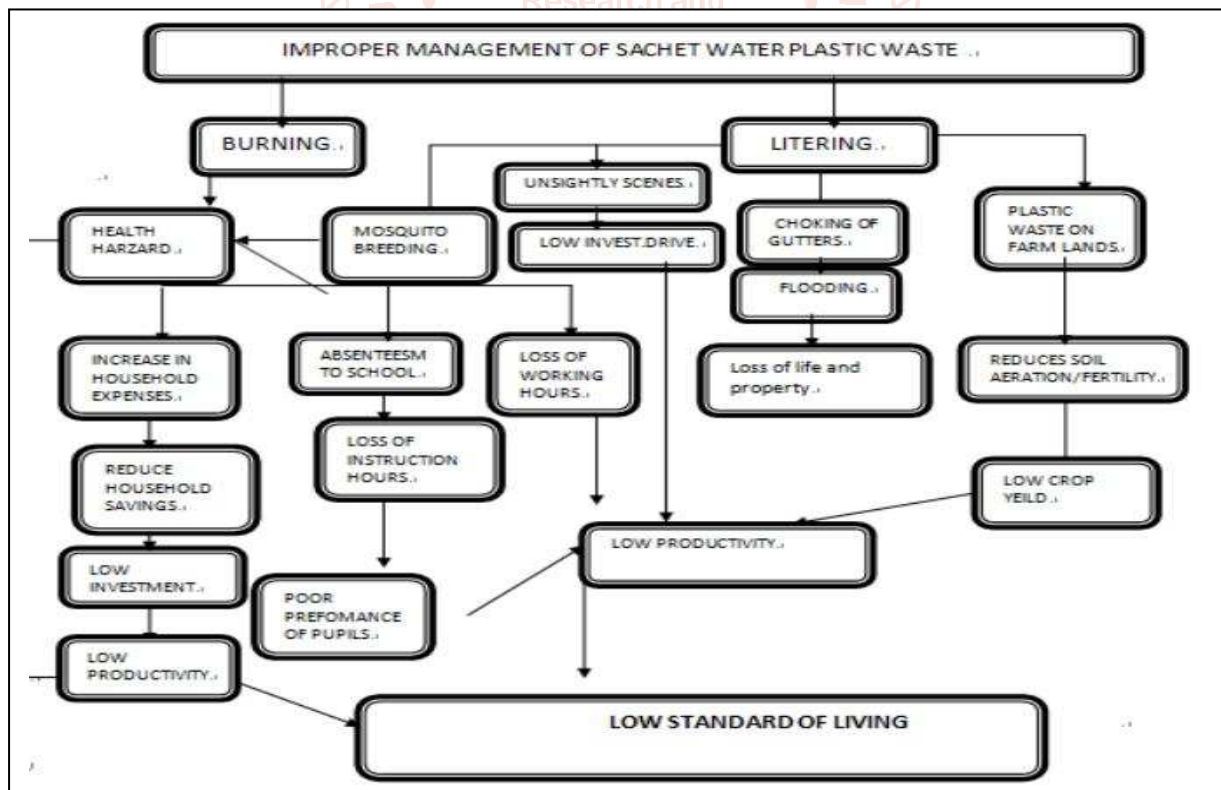
Disaster Risk

Littered sachet water plastic waste has been named by National Disaster Management Organization in the municipality as a number one anthropogenic cause of flooding. Littered sachet water plastic waste finds their way into the drainage systems in the community. With time the gutters gets choked. Consequently flooding occurs after heavy downpours (National Disaster Management Organization, 2015)

Environmental decay and Investment Drive

Unightly environment created by littering of sachet water plastic waste has also been identified as a major disincentive to investment drive in the community. In other words an environment characterized by poor environmental sanitation scares away investors (National Boards for Small scale Industries, 2013).

Figure 3: A diagram showing a chain of consequence’s that result from improper management of sachet water plastic waste in Potiskum city.



The conceptual model in figure 3 depicts the comprehensive views of respondents and stakeholders in waste management on the possible consequences of the improper management of sachet water plastic waste on the living standard of individuals as well as on the environment. These consequences are triggered by littering and burning of sachet water plastic waste. Once sachet water plastic waste is littered or burnt, a path of consequences unfolds to impact negatively on the inhabitants, environment as well as the government. These consequences tend to lower the living standards of the inhabitants.

Conclusion

The study has made efforts to identify the drivers of improper management of sachet water plastic waste in Potiskum city. It is clear from the study that, the menace results from inappropriate methods of disposing sachet water plastic waste by consumers. This coupled with low capacity of the local government authority to adequately scavenge sachet water plastic trash from the streets of Potiskum has resulted in the aggravation of the menace. This situation provides a conducive ground for mosquito breeding and consequently increases in the risk of malaria prevalence in the community with its attendant disaster and investment effects. In order that the situation of improper management of sachet water plastic waste is brought to the barest minimum, the study has identified a number of recommendations which when carefully implemented could best help curb the menace in Potiskum city. However, given the economic, political and socio cultural characteristics of the inhabitants of Potiskum city some of the recommendations would not be applicable. Some of these recommendations are as follows:

Polluter pays principle by imposition a well-defined plastic pollution responsibility charges that equally target all plastic producers and retailers whose products litter the streets, as well as consumers of plastics. Potiskum local government authority should introduce a Deposit Refund System as a useful method in managing the sachet water plastic trash from the streets. In this system sachet water should be offered for sale at two times higher than the current price, when a consumer purchases at this new price, there exist the opportunity for him or her to be paid back half the price if the trash is returned to the seller or any collection point. Interested stakeholders can now buy the empty sachets for reuse or recycling. Reuse (for nursing seedlings), Outright ban (Ceasing producers from the use of non-biodegradable material to package water), Increases the efficiency of institutions responsible for sachet water plastic waste adequate supply of waste-bins at vantage points to discourage littering, and Frequent organization of community clean up exercises.

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