

ENVIRONMENTAL IMPACTS OF SOLID WASTE, LANDFILLING IN YOLA NORTH LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA.

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Abstract

This study was designed to determine the environmental impacts of solid waste land filling in Yola North Local Government Area of Adamawa State. The specific objectives of the study were to identify the various types of solid wastes, sources of solid wastes generation, impacts of landfill on health and the environment and control measures in minimizing the impact on health and environment. Data was collected from 100 households (those near and far from the landfill). Data was analyzed using descriptive statistics (mean). The research revealed that various types of solid waste identified were glass, polythene bags, metals, plastics, clothes. Sources of solid waste include domestic, commercial, hospitals, institutional and household. Impacts included contamination of vegetables, accident, flood, health deterioration, soil fertility, pest infestation, smoke, disease transmission, income sources and air, water and land pollution. The effects that were assessed were the possible impacts of the solid waste land filling on the health and the environment and also residents view regarding the location of the landfill. In order to achieve its objective, a comparison was done between the nearby and faraway. The result showed that both residents were affected by the location of the landfill closer to their settlements. It was noted that the residents whose houses were (200m) to the landfill were most affected and were victims of malaria, chest pain, diarrhea and bad smell. However, residents whose houses were faraway (200-400m) were also affected with chest pain and bad smell from landfill, mainly when wind blew in their direction. In conclusion the study revealed that

landfills/dumpsites should be located faraway from human settlement. Therefore, the study recommended that landfill/dumpsite should be properly located and managed to minimize its effects on the environment. The government and municipalities should revise laws regarding the location of the landfills/dumpsites.

Keyword: *Land filling, solid waste, yola north, Nigeria.*

1.INTRODUCTION

The term "solid waste" means any garbage, refuse, or sludge from a waste treatment-plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid or contained gaseous material resulting from industrial, commercial, mining and agricultural operations (US Law-Solid Waste Act 2, 1999). Solid waste is an unwanted, useless, or dirty substance which is an outcome of human activities. Solid waste can be classified into different types depending on their source; household waste is generally classified as municipal waste, industrial waste as hazardous waste, and biomedical waste or hospital waste as infectious waste. The excessive generation of solid waste is an enormous threat to society and municipal authorities who face tremendous difficulties in disposing huge masses of piled up wastes. It is a major or source of survival for poor people (rag Pickers) and secures their livelihood in urban population (Neha, 2014). Population growth, forced migration, economic and cultural development has improved the standard of living and changed consumer habits in the community, resulting in a clear increase in the volume of wastes. Land filling is the simplest and normally cheapest method for disposing of

waste (Taylor, 2003). Landfill remains the simplest and most commonly used method for disposing municipal solid waste (Barrett and Lawlor, 1995). In most low to medium income developing nations like Nigeria, almost 100 percent of generated waste goes to landfills (Taylor and Allen, 2006). In spite of the recycling and composting of greater amount of municipal solid waste in the United States in the last forty years, the majority of municipal solid wastes generated still end up in landfills (National Solid Waste, Management Association, 2011).

When solid waste are disposed of on the land in open dump or in improperly designed landfills it causes the following impacts on the environment

- I. Ground water contamination by the leach ate generated by the waste dump
- II. Surface water contamination by the leach ate generated by the waste dump.
- III. Bad odor, pests, rodents and wind blow litter in and around the waste dump.
- IV. Birds menace above the waste dump which affect flight aircraft
- V. Fires within the waste dump.
- VI. Erosion and stability problems relating to slop at the waste dump
- VII. Epidemics through stray animals
- VIII. Acidity to surrounding soil
- IX. Release of greenhouse gases
- X. Skin and blood infections resulting from direct contact with waste and from infected wounds.
- XI. Eyes and respiratory infection resulting from exposure to infected dusts.
- XII. Intestinal infestations that are transmitted by flies feeding on the wastes(Neha, 2014)

2. MATERIALS AND METHODS

Jimeta, the headquarters of Yola North local government area of Adamawa state was established in 1912 by British Colonial Administration as part and model town to carter for the increasing influx of people into the town. Yola North is bounded in the north by Song Local Government, in the east by Fufore, in the West by Demsa and in the South by Yola South Local Government Areas of Adamawa State. It is located between latitudes 900 16 N to900 30 N and longitudes

12018 E to 120 34 E of Greenwich meridian. The population of the study area was 141,724 in 1991. With the growth rate of 2%, the population was 198,247 based on the(National population commission, 2006). The land use arrangement in the study area is that of mixed urban setting. These include among others, health, residential, institutional, administrative, commercial, recreational and industrial services. The residential area is of high density. Yola North local government area has 11 wards: Ajiya, Akalawa, Doubelli, Gwadabawa, Jambutu, Karewa, Limawa, Luggere, Nassarawo, Rumde, and Yelwa.

The area is distinctly tropical and is characterized by high summer temperatures and low, but variable, rainfall between March and September. It is one of the hottest areas during the summer. Temperatures of this area are always escalating, which makes the presence of the dumpsite to be felt by the surrounding communities.

Primary data was collected at Rumde, from residents of the area (Rumde ward Yola north local government area Adamawa state) because these residents are closer to the landfill /dumpsites. Sources of data were the residents of Rumde area who are the part of the sample population. Secondary data was also gathered from publications, environmental protection agency, Library and internet etc.The study area was divided into strata. The first strata is those household two hundred meters (200m) away from the landfill and the second strata are those households two hundred to four hundred meters (200-400m) away from the landfill.

The researchers administered questionnaire to enable him source information directly from one hundred (100) households from the target population in the study area (Rumde ward). This method ensured that there was no biasness in the selection of the population (household) who were part of the sample.The instrument used for the data collection for this research work was questionnaire which was divided into two sections. Section A (covered personal data of the respondents) while section B (covered questions). The questionnaire items were based on the stated objectives of the research work. The assessment of the questionnaire was done through the application of liker scale (strongly agreed, agreed, strongly disagreed, and disagreed).

Data collected for this study was analyzed and used for answering the research questions. Mean was used for each research question. The method of data analysis that was used is descriptive statistics. Data gathered was analyzed using Statistical Package for Social Science (SPSS) version 22 and excel.

3. RESULTS

Table 1: Shows the types of solid wastes obtained from Yola North L.G.A

s/n	Questionnaire items	SA	A	SDA	DA	MEAN (\bar{X})	REMARK
1	Glass	52	27	19	2	3.29	Agreed
2	Polythene bags	26	47	21	6	2.93	Agreed
3	Metal scraps	26	65	6	3	3.14	Agreed
4	Plastics	27	32	12	29	2.57	Agreed
5	Discarded clothes	70	20	6	4	3.56	Agreed
						15.42	

Table 2: Displays the Sources of solid wastes generated from Yola North L.G.A

s/n	Questionnaire items	SA	A	SDA	DA	MEAN (\bar{X})	REMARK
6	Domestic solid wastes	49	43	7	4	3.43	Agreed
7	Commercial solid wastes	21	65	6	8	2.99	Agreed
8	Hospital solid wastes	23	35	1	31	2.30	Agreed
9	Institutional solid wastes	31	24	33	12	2.74	Agreed
10	Household solid wastes	59	31	4	6	3.43	Agreed
						14.89	

Table 3: Address the Impact of landfill on health and the environment of Yola North LGA.

s/n	Questionnaire items	SA	A	SDA	DA	MEAN (\bar{X})	REMARK
11	The main source of contamination of nearby vegetables and other crops is the landfill	41	56	1	2	3.36	Agreed
12	Improper landfills and management are the main causes of accident, flood and health deterioration	25	40	26	9	3.97	Agreed
13	Land filling increases soil fertility which lead to high crop yield in farm around the area	55	32	7	6	3.36	Agreed
14	Landfill is the main causes of air and water pollution, pest infestation, smoke, explosion, transmission of disease in nearby residence	39	20	35	6	3.52	Agreed
15	Some solid wastes disposed in landfill may be a source of income for rag pickers	36	30	7	27	2.75	Agreed
						16.96	

Key for the tables above:

SA	=	Strongly Agreed
A	=	Agreed
SDA	=	Strongly Disagreed
DA	=	Disagreed

4. DISCUSSION

The result from table 1 above analysis revealed the mean (\bar{X}) distribution of various types of solid wastes in the study area. Glass has 3.29, polythene bags 2.93, metal scraps 3.14, plastics 2.57 and clothes 3.56 respectively.

Table 2: The result of the analysis revealed that domestic solid wastes has the mean (\bar{X}) distribution of 3.43, commercial solid wastes 2.30, institutional solid wastes 2.74, household 3.43 respectively. Domestic and household solid wastes had the highest mean distribution and the lowest been hospital sources.

Table 3: The result of the analysis showed the mean distribution of the impact of landfill on health and the environment. Contamination of nearby vegetable and crops had 3.39, causes of accident, smoke, flood and health deterioration at 3.97 (highest), increase soil fertility and crop yield around the study area at 3.36, causes of air, water, and land pollution, pest infestation, transmission of diseases 3.52, sources income for rag pickers 2.75 (lowest) respectively.

5. RECOMMENDATIONS

As regards to this findings of the research work, we therefore recommend that:

- I. Landfills should be properly located and managed to minimize its effects on the environment.
- II. There should be funding which is one of the greatest obstacles hindering any successful environmental sanitation.
- III. The agency responsible for waste management should intensify public enlightens campaigns both in the print and electronic media. As many members of the public do not know the health related risks associated with improper waste disposal.

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