

## Original Research Article

# Health Risk Implication among Solid Waste Workers in Obio Akpor LGA of Rivers State.

**Comment [U1]:** Title, aim and conclusion of study are not in line with each other

### ABSTRACT

**Aims:** To examine the Health Risk implication among solid waste workers in Obio Akpor LGA of Rivers state

**Study design:** Descriptive design

**Place and Duration of Study:** The study was carried out at the Rivers State Waste Management Agency in Obio-Akpor Local government area of Rivers State between January 2019-March 2019

**Methodology:** The survey method was employed whilst 265 copies of questionnaire were used to elicit information from the number of employee..

**Results:** The findings showed that the major source of solid waste is from the residential area and plastics is one of the major composition of solid waste furthermore it was discovered that majority of the individuals in Obio akpor local government area prefer to dump their waste at authorized dump site and this is normally done within 1-5days and this is done daily. It was also discovered that majority of the respondents had a pre requisite knowledge on the effect of poor waste disposal to human health likewise the health implication of such action as they indicated that they are prone to typhoid and other forms of diseases.

**Conclusion:** The Government of Rivers State should adopt a Waste Policy which entails occupational safety, health and environmental management issue.

**Comment [U2]:** Elaaborate in two three lines so that atleast reader can get some idea from abstract regarding the methodology

**Comment [U3]:** What health implications specifically you were looking for? Mention them in methods section and then results should be based upon them

**Comment [U4]:** It should be based on objective

*Keywords: Health and solid waste*

### 1. INTRODUCTION

Solid waste comprises of different type of discarded goods mainly left-over food, textile, glass, paper, metals and other spoiled goods [1].The process of generation, storage, collection, transportation and final disposal of waste are important process which most times involves the use of human labour in many developing country including Nigeria [2].

It is also of importance to note that waste management contributes tremendously in upholding public health by reducing the risk of diseases,

24 however the job exposes those who are involved and are known as solid  
25 waste workers to high risk of fatal and non-fatal occupation accidents [3] .

26

27 However, in the early days, the population of humans were small and there  
28 were relatively no adverse health effects of waste considering the large land  
29 mass. People migrated from one location to another, so there was tendency  
30 to relocate from previous waste dump site to new environment. Thus, waste  
31 was disposed of without the fear of its consequences to the environment and  
32 of any serious health risk to people [5].

33

34 As man increased on the surface of the earth, as well as the onset of  
35 civilization, the quality and quantity of waste production also changed and  
36 increased. The advent of industrialization has altered the nature and quantity  
37 of waste generated on a higher level. The increasing complicated arena of  
38 waste handling harbours significant potential for human health and safety  
39 risks. [6] Contend that workers not properly and adequately managed may  
40 cause some health and environmental risk which may result in sickness,  
41 impaired health and well-being or significant discomfort among people. The  
42 aim of solid waste workers is to remove garbage to safeguard public health  
43 and welfare as well as prevent environmental pollution.

44

45 Despite the significance of this job done by the waste workers, they are  
46 exposed to several kinds of hazards in the cause of discharging their duties.  
47 Major hazards faced by solid waste workers can be chemical, biological,  
48 agronomic, physiological hazard.

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50 Amongst the injuries experienced by theses solid waste workers are  
51 accidental injuries such perforation wounds, laceration, burns, dog and rat  
52 bites which are deep cuts caused by scrap metals, jagged edges of cans and  
53 bins, glass cutters or nails in waste bag and when they drop heavy  
54 containers on their feet or legs [7]

55

56 In developing countries example Nigeria , waste segregation is rarely  
57 practised, that is why traces of medical waste and poisonous industrial  
58 wastes are mixed with the domestic waste stream [8].Furthermore nothing  
59 has really be done about the health and safety of these solid waste workers.

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61 It is against this background that the aim of this research was to examine the  
62 Health Risk Implication among solid waste workers in Obio Akpor LGA of

63 Rivers State . The specific objectives of the study were to: identify the source  
64 and composition of solid waste in Obio Akpor Local Government area of  
65 Rivers State, Identify the waste disposal method in Obio Akpor local  
66 government area and to identify the Waste disposal method in Obio Akpor  
67 Local Government area of Rivers State.

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## 68 69 2. METHODOLOGY

Comment [U6]: Methodology is inconclusive.  
Reader cannot understand what you wanted to do or  
what you have done

70  
71 The population of the study will consist of the staff of Rivers state waste  
72 management agency (RIWAMA). For the purpose of the study the sampling  
73 technique adopted was the simple random sampling technique. This  
74 technique helped in giving a number to each subject or individual from the  
75 open populace putting the numbers in a compartment and picking them  
76 randomly. It gives every unit of the population an equal and known chance of  
77 being chosen in the sample and it has to do with a definite number of  
78 population. Furthermore sampled respondents were given structured  
79 questionnaires.

80 The questionnaires were self-administered randomly to selected sample  
81 respondents of RIWAMA. The data retrieved from the questionnaire was put  
82 together using the statistical package for social sciences (SPSS). For the  
83 purpose of a clear and detailed representation of data, the uses of tables  
84 were employed in order to present the gathered data for the research study.  
85 Descriptive analysis was used which consists of the Mean, Median mode of  
86 analyzing

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## 89 3. RESULTS AND DISCUSSION

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### 91 3.1: Demographic Characteristics of Sampled Population

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93 **Table 1: Distribution of Solid waste handlers at RIWAMA according to**  
94 **their job task**

Job Task	Number of employees	
	( N=265)	(%)
Truck Drivers	46	17
Refuse Collector	67	25
Street sweepers	79	30
Waste Pickers	73	28

Total	265	100
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95 Source: [8]

96 Table 1 above shows the distribution of Solid waste handlers at RIWAMA  
 97 according to their job task. It reveals that majority of the respondents under  
 98 survey 30% (70) were street sweepers, 28 (73%) were waste pickers, 25%  
 99 (67) were refuse collector and the least 17% (46) are truck drivers. The  
 100 implication of this result is that majority of the respondents have an overview  
 101 of the issue discussed based on their experience in the handling of solid  
 102 waste in course of their job description

### 103 3.2 Sources and composition of solid waste in Obio Akpor LGA

104 To examine the source and composition of solid waste in Obio Akpor LGA  
 105 two category of questions were asked, they included what are the source of  
 106 Solid waste and what are the type of Solid waste

#### 107 Sources of Solid Waste

108 **Table 2 Sources and Types of Solid Waste (n=265)**

Items	Freq.	%
Residential	178	67
Commercial	67	25
Industrial	87	33
Institutional	78	29
Others	65	25

110 Source: [8]

- 111 • Multiple Response

112 Table 2 above shows the sources of solid waste as indicated by the  
 113 respondents. Data Analysis based on multiple response revealed that  
 114 majority of the respondents had their opinion that the major source of solid  
 115 waste is from residential buildings, 33% (87) respondents had opinion that  
 116 the source was from industrial, 29%(78) had opinion that the source was  
 117 from institutional while 25% (67) and 25% (65) respondents had opinion that  
 118 the major source of solid waste was from commercial and other sources not  
 119 mentioned respectively.

#### 120 Types of Solid Waste

121 **Table 3: Types of Solid Waste (n=265)**

Item	Freq.	%
Paper	45	17

Plastic	187	71
Glass	76	29
Metal	95	36
Sanitary	77	29
Food Waste	87	33
Debris	22	8
Hazardous Waste	66	25
Animal Waste	24	9
Ashes	33	12

123 Source:[8]

124 • Multiple Response

125 On the type of solid waste, data analysis as seen in table 3 revealed that  
 126 36% (95) of the respondents indication that metal was part of the  
 127 composition of the solid waste they handle, 33% (87) respondents indicated  
 128 food waste, 29% (77) indicated sanitary waste, 25% (66) respondents  
 129 indicated hazardous waste , 12% (33) respondents indicated ashes, 17%  
 130 (45) indicated paper 29% (76) respondents indicated glasses and majority  
 131 71% (187) indicated plastic as major composition of solid waste.

132

### 133 3.3 Waste Disposal Method in Obio Akpor LGA

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135 To identify the waste disposal method three categories of questions were  
 136 asked, they included the waste disposal method, how long it takes to dispose  
 137 waste and how often do they dispose waste.

138

#### 139 Waste Disposal Method

140 **Table 4: Waste disposal Method**

Item	Freq.	%
RIWAMA	23	9
Authorized dump site	164	62
Unauthorized empty plot	34	13
Burning	15	6
Personal Bin	29	11
Total	265	100

141 Source: [8]

142

143 Table 4 shows the waste disposal method adopted by residents. Data  
 144 analysis reveals that majority of the respondents 62% (164) indicated that  
 145 residents use authorized dump site to dispose their waste, 13% (34)

146 respondents indicated that residents use unauthorised empty plot so as to  
147 dispose their waste, 11% (29) of the respondent indicated that most  
148 residents use their personal bin , 6% (15) of the respondents indicated that  
149 most residents prefer burning and 9% (25) use RIWAMA as a source of  
150 dumping their waste

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### 153 **How long does it takes to dispose waste**

154 **Table 5: Duration of Waste Disposal**

Items	Freq.	%
1-5 days	198	75
6-10 days	23	9
11-15 days	44	16
>15 days	-	-
Total	265	100

155 Source: [8]

156

157 On how long it takes residents to dispose their waste, majority of the  
158 respondents said most residents normally dispose their waste within 1-5 day,  
159 16% (44) of the respondents indicated that most residents dispose their  
160 waste within 11-15days while 9% (23) of the respondents dispose their waste  
161 within 6-10days

162

### 163 **Frequency of Waste Disposal**

164 **Table 6: Frequency of Waste Disposal**

Items	Freq.	%
Daily	95	36
Once a week	103	38
Twice a week	67	25
Total	265	100

165 Source: [8]

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167 On how often they do dispose their waste, majority of the respondents  
168 indicated that majority 38% (103) indicated that residents dispose their  
169 waste once a week, 36%(95) respondents indicated that residents dispose  
170 their waste daily and 25% (67) indicated that residents dispose their waste  
171 twice a week

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173 **3.4 Major health risk affecting solid waste solid waste workers in Obio**  
174 **Akpor LGA**

175 To identify the major health risk affecting solid waste workers in Obio Akpor  
176 LGA two categories of questions were asked, they included if poor waste  
177 disposal are harmful to human health and its health implication.

178  
179 **If Poor Waste disposal are harmful to Human Health**

180 Data analysis as seen in Table 7 reveals that all the respondents were  
181 conscious of the fact poor waste disposal is harmful to human health.

182 **Table 7 Harmful consequences of poor waste disposal to human Health**

Item	Freq.	%
Yes	265	100
No	-	-
I don't know	-	-
Total	265	100

183 Source: [8]

- 184 • Multiple Response

185  
186  
187 **Health Implication**

188 **Table 8: Health Implication**

Item	Freq.	%
Malaria	143	54
Diarrhoea	109	41
Typhoid	178	67
Acute Back pain	56	21
Painful joint	67	25
Possible Liver and Kidney damage	23	9
Others	178	67

189 Source: [8]

- 190 • Multiple Response

191 Table 8 shows respondents opinion on the health implication of poor waste  
192 disposal, 67% (178) of respondents indicated that when waste are not  
193 properly handled it could make them vulnerable to typhoid, 54% (143)  
194 respondents had opinion that they could be vulnerable malaria, 41% (109)  
195 respondents had opinion that they could be vulnerable to Diarrhoea, 25 %  
196 (67) respondents had opinion they could be expose to experiencing painful

197 joints, 21% (56) respondents had opinion that they could be exposed to  
198 experiencing acute back pain, 9% (23) had opinion that they could  
199 experience a possible liver and kidney damage and 67% (178) respondents  
200 had opinion that they could experience other symptoms not mentioned  
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#### 4. CONCLUSION

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#### Waste Disposal Method in Obio Akpor LGA

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#### Major health risk affecting solid waste workers in Obio Akpor LGA

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On the aforementioned objective it was concluded that majority of the  
respondents understudy had a pre requisite knowledge on the effect of poor  
waste disposal to human health likewise the health implication of such action  
as majority indicated that they will be prone to typhoid and other forms of  
diseases.

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#### ACKNOWLEDGEMENTS

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Sokorie Andra from the Department of Geography and Environmental  
Management, University of Port Harcourt. Choba Rivers state

**Comment [U7]:** Not in line with objective and also not according to the guidelines of any good medical journal. Read few articles first and then formulate your data into aa manuscript which can be published in a well reputed journal



230 **COMPETING INTERESTS**

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232 Authors have declared that no competing interest exist

233

234 **ETHICAL APPROVAL**

235

236 Approval for this study was obtained from the Department of geography and  
237 Environmental Management, University of Port Harcourt Choba. Also, verbal  
238 informed consent was obtained from each respondent. All the participants  
239 were informed that the study is voluntary and that they could opt out of the  
240 study at any time. Also participants were assured that confidentiality would  
241 be maintained during and after data collection and that information given will  
242 be used for research purposes only. And lastly articles and authors used  
243 were sighted accordingly in this research |

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245 **REFERENCES**

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Comment [U8]: Merge in methodology section

Comment [U9]: Add more referenced and recent references

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UNDER PEER REVIEW