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3 **Health Risk Implication among Solid Waste**

4 **Workers in Obio Akpor Local Government Area**

5 **of Rivers State.**

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11 **ABSTRACT**

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The aim of the study was to examine the Health Risk implication among solid waste workers in Obio Akpor LGA of Rivers state. 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. The survey method was employed and the simple random technique was adopted whilst 265 copies of the questionnaire were used to elicit information from the number of employee. The result finding showed that the major health implication that was identified was Typhoid, malaria, Diarrhea and other form of disease, this was as a result that respondents had a pre requisite knowledge of the effect of poor waste management to human health Furthermore it was revealed from the findings that the major source of solid waste is from the residential area and plastics are a major composition of the solid waste. 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 concluded that solid waste workers should be provided with vaccination programs, pre-employment and periodic health surveillance in order to detect early signs of disease and monitor their ability to work

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14 *Keywords: Health and solid waste*

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17 **1. INTRODUCTION**

18 Solid waste comprises of different type of discarded goods mainly left-over

19 food, textile, glass, paper, metals and other spoiled goods [1].The process of

20 generation, storage, collection, transportation and final disposal of waste are

21 important process which most times involves the use of human labour in

22 many developing country including Nigeria [2].

23 It is also of importance to note that waste management contributes

24 tremendously in upholding public health by reducing the risk of diseases,

25 however the job exposes those who are involved and are known as solid

26 waste workers to high risk of fatal and non-fatal occupation accidents [3] .

27

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

34

35 As man increased on the surface of the earth, as well as the onset of
36 civilization, the quality and quantity of waste production also changed and
37 increased. The advent of industrialization has altered the nature and quantity
38 of waste generated on a higher level. The increasing complicated arena of
39 waste handling harbours significant potential for human health and safety
40 risks. [6] Contend that workers not properly and adequately managed may
41 cause some health and environmental risk which may result in sickness,
42 impaired health and well-being or significant discomfort among people [9].

43

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.

49

50 Amongst the injuries experienced by these 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.
60 The aim of solid waste workers is to remove garbage to safeguard public
61 health and welfare as well as prevent environmental pollution.

62

63 It is against this background that the aim of this research was to examine the
64 Health Risk Implication among solid waste workers in Obio Akpor Local
65 government area of Rivers State.

66

67 **2. METHODOLOGY**

68

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

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

84

85

86 **3. RESULTS AND DISCUSSION**

87

88 **3.1: Demographic Characteristics of Sampled Population**

89

90 **Table 1: Distribution of Solid waste handlers at RIWAMA according to**
91 **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

92 Source: [8]

93 Table 1 above shows the distribution of Solid waste handlers at RIWAMA
94 according to their job task. It reveals that majority of the respondents under
95 survey 30% (79) were street sweepers, 28% (73) were waste pickers, 25%
96 (67) were refuse collector and the least 17% (46) are truck drivers. The

97 implication of this result is that majority of the respondents have an overview
98 of the issue discussed based on their experience in the handling of solid
99 waste in course of their job description

100 **3.2 Sources and composition of solid waste in Obio Akpor LGA**

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

104

105 **Sources of Solid Waste**

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

107 • **Multiple Responses**

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

108 Source: [8]

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

117

118 **Types of Solid Waste**

119 **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

120 Source:[8]

- 121 • Multiple Response

122 On the type of solid waste, data analysis as seen in table 3 revealed that
 123 36% (95) of the respondents indication that metal was part of the
 124 composition of the solid waste they handle, 33% (87) respondents indicated
 125 food waste, 29% (77) indicated sanitary waste, 25% (66) respondents
 126 indicated hazardous waste , 12% (33) respondents indicated ashes, 17%
 127 (45) indicated paper 29% (76) respondents indicated glasses and majority
 128 71% (187) indicated plastic as major composition of solid waste.

129

130 3.3 Waste Disposal Method in Obio Akpor LGA

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

135

136 Waste Disposal Method

137 **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

138 Source: [8]

139

140 Table 4 shows the waste disposal method adopted by residents. Data
 141 analysis reveals that majority of the respondents 62% (164) indicated that
 142 residents use authorized dump site to dispose their waste, 13% (34)
 143 respondents indicated that residents use unauthorised empty plot so as to
 144 dispose their waste, 11% (29) of the respondent indicated that most
 145 residents use their personal bin , 6% (15) of the respondents indicated that
 146 most residents prefer burning and 9% (25) use RIWAMA as a source of
 147 dumping their waste

148

149

150 **How long does it takes to dispose waste**

151 **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

152 Source: [8]

153

154 On how long it takes residents to dispose their waste, majority of the
155 respondents said most residents normally dispose their waste within 1-5 day,
156 16% (44) of the respondents indicated that most residents dispose their
157 waste within 11-15days while 9% (23) of the respondents dispose their waste
158 within 6-10days

159

160 **Frequency of Waste Disposal**

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

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

162 Source: [8]

163

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

169

170 **3.4 Major health risk affecting solid waste solid waste workers in Obio** 171 **Akpor LGA**

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

175

176 **If Poor Waste disposal are harmful to Human Health**

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

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

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

180 Source: [8]

- 181 • Multiple Response

182

183

184 **Health Implication**

185 **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

186 Source: [8]

- 187 • Multiple Response

188 Table 8 shows respondents opinion on the health implication of poor waste
189 disposal, 67% (178) of respondents indicated that when waste are not
190 properly handled it could make them vulnerable to typhoid, 54% (143)
191 respondents had opinion that they could be vulnerable malaria, 41% (109)
192 respondents had opinion that they could be vulnerable to Diarrhoea, 25 %
193 (67) respondents had opinion they could be expose to experiencing painful
194 joints, 21% (56) respondents had opinion that they could be exposed to
195 experiencing acute back pain, 9% (23) had opinion that they could
196 experience a possible liver and kidney damage and 67% (178) respondents
197 had opinion that they could experience other symptoms not mentioned

198

199 **4. CONCLUSION**

200 **This study assessed the Health implication among solid waste workers so as**
201 **to draw up a conclusion on the Health Risk Implication among solid waste**

202 workers in Obio Akpor Local government area of Rivers State. On the waste
203 disposal method data analysis revealed by respondents that majority of the
204 individuals in Obio akpor local government area prefer to dump their waste
205 at authorized dump site, also it was discovered that it takes 1-5days for
206 majority of the individuals to dispose their waste and this occurs daily while
207 on the major health risk affecting solid waste workers in Obio Akpor Local
208 government area it was concluded that majority of the respondents
209 understudy had a pre requisite knowledge on the effect of poor waste
210 disposal to human health likewise the health implication of such action as
211 majority indicated that they will be prone to typhoid and other forms of
212 diseases.

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214

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218

219 **COMPETING INTERESTS**

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221 Authors have declared that no competing interest exist

222

223 **ETHICAL APPROVAL**

224

225 Approval for this study was obtained from the Department of geography and
226 Environmental Management, University of Port Harcourt Choba. Also, verbal
227 informed consent was obtained from each respondent. All the participants
228 were informed that the study is voluntary and that they could opt out of the
229 study at any time. Also participants were assured that confidentiality would
230 be maintained during and after data collection and that information given will
231 be used for research purposes only. And lastly articles and authors used
232 were sighted accordingly in this research

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