

**THE IMPACT OF COMPOST AND BURNING OF WASTE ON PUBLIC HEALTH:A
CASE STUDY OF AKPAN ANDEM MARKET AND MECHANIC VILLAGE
COMMUNITIES IN UYO, AKWA IBOM STATE**

By

Udobia, Unwana Joe

And

Akpan, Idongesit Michael
Department of Public Administration,
Akwa Ibom State University

ABSTRACT

The study analyzed the impact of compost and burning of waste on public health: A Case Study of Akpan Andem Market and Mechanic Village Communities in Uyo, Akwa Ibom State. A Survey research design was adopted for the study. Uyo urban constitute the study area. The population of the study made up of the entire indigene/ residence of the two communities under study, Aka Offot community for Akpan Andem Market and Afaha Offot Community for Mechanic village environments. Proportionate Stratified Purposive technique was used to select a total of 393 number of respondent. The instrument for the collection of primary data was a structured questionnaire with a 4 likert scale, which was duly administered to the respondents. The face validity and content validity of the research instrument were determined after thorough evaluation by the supervisors and other experts. The reliability of the research instrument was tested using Cronbach's Alpha method of reliability coefficient. The reliability coefficient of the overall items in the research instrument was obtained as 0.84. Simple regression models are used in the analysis of relationships between the dependent and independent variables in this study. The study showed the existence of a positive and significant relationship between burning waste and public health in Akpan Andem Market and Mechanic village communities in Uyo, Akwa Ibom State. The study also showed that there is a positive and significant relationship exists between compost waste and the public health of Akpan Andem Market and Mechanic village communities in Uyo, Akwa Ibom State. The study concluded that the indiscriminate waste dumping is a serious issue because of the environmental effects these waste brings. These issues range from its negative effects on environment, health and also people's attitude which will have multiplier effects on the present and future inhabitants of the area. One of the recommendations made was that the Akwa Ibom State government in collaboration with the Uyo local government area should make stringent waste management policies in the state.

Keywords: Compost of Waste, Burning of Waste, Public Health, Akpan Andem Market, Mechanic Village, Communities, Uyo, Akwa Ibom State

INTRODUCTION

Wastes are materials considered to have no useful economic value and demand, which in some cases are harmful to man and must be disposed. According to Samuel (2016), solid wastes are regarded as discarded materials arising from operational activities taking place in different land use such as residential, commercial and industrial. There is a growing domestic waste disposal problem in most developing countries like Nigeria, which is gradually approaching crisis level. This trend has gone unchecked for so many years now; the situation appears to be intractable. Solid waste disposal sites are found both within and on the outskirts of developing cities. With increase in the global population and the rising demand for food and other essentials, there has been a rise in the amount of waste being generated daily by each household. This waste is usually thrown into disposal sites and due to poor and ineffective management, the dumpsites turn to sources of environmental and health hazards to people living in the vicinity of such dumps (Samuel, 2016).

In AkwaIbom State, the domestic waste disposal problem is typified by overflowing domestic mountains of open refuse dumps at virtually every street corner, with their attendant problems and existence of improperly operated landfills which are often rodent infested with potentials for surface and ground water pollution. Commercial wastes are those that arise from shops, supermarkets, shopping malls, market and others; they include paper carton, polythene bags and nylon. The industrial wastes are those waste materials that arise from industries; these could be solid, liquid, or emotive little attached to them like toxic, hazardous and special waste. The industrial waste includes metals, scraps and chips from machines, ships, sawdust, paper pieces and glass (Samuel, 2016).

In developing nations like Nigeria and especially Uyo metropolis in AkwaIbom State, a great proportion of solid waste generated are dumped either in controlled landfills or open dumps which constitute sources of health risks to surrounding residents. Such health risk includes, water pollution, air pollution, environmental pollution, erosion, among others. To Ebong (2019), the exposure to hazardous waste in dumpsites can affect human health, children being the most vulnerable to these pollutants. Direct exposure can lead to diseases through chemical exposure as the release of chemical waste into the environment leads to chemical poisoning.

STATEMENT OF PROBLEM

In management of waste disposal and public health in Uyo capital city, specifically AkpanAndem market and Mechanic village communities, the government of AkwaIbom State has come with various strategies of waste management. Unfortunately, there are no sufficient facilities for storage of solid waste and provision for recycling purpose which is of economic importance and the effect on those problems are numerous. These waste if not properly managed can pose serious health risk to the people. In view of this, this study is poised to examine the effect of the waste disposal and public health of AkpanAndem market and Mechanic Village communities in Uyo capital city, AkwaIbom State.

RESEARCH OBJECTIVES

1. To evaluate the impact of compost of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.
2. To examine the effect of burning of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.

RESEARCH QUESTIONS

1. What is the effect of compost of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State?
2. What is the effect of burning of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State?

RESEARCH HYPOTHESIS

1. The following hypo To evaluate the impact of compost of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.
2. To examine the effect of burning of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.

CONCEPTUAL REVIEW

COMPOST OF WASTE

Composting is a form of waste disposal where organic waste decomposes naturally under oxygen-rich conditions. Although all waste will eventually decompose, only certain waste items are considered compostable and should be added to compost containers. Composting can eradicate degradable organic wastes. Degradable organic wastes are otherwise known as biodegradable wastes (Abdel-Shafy and Mansour, 2018). Composting is a workable means of transforming various organic wastes into products that can be safely used and beneficially employed as bio fertilizers. Recalcitrant substances, polythene bags, and plastics, among others, cannot be composted. Composting is a safe way of managing organic wastes, but it is associated with odor production and release of greenhouse gases. Composting strategy is a biochemical process in which degradable organic materials such as lawn clippings and kitchen scraps, among others are decompose by micro-organisms mainly fungi and bacteria to a rich solid like material. The finished product which looks like soil is high in carbon and nitrogen and is an excellent medium for growing plants. Although composting method takes time and space, it is one of the best methods of waste management as unsafe organic products are turned into safe compost for plant use. This method is not only environment friendly but also keeps unnecessary refuse out of landfills and replenishes the soil with nutrients. In AkwaIbom State, composting has been practiced as a traditional waste management strategy a long time now and is used by the state Agricultural scheme to improve soil fertility and farm yields.

BURNING OF WASTE

Burning of waste is one of the oldest and traditional ways of waste management technique; it is one of the most harmful behaviours practiced by waste collection workers to reduce the quantity and heap of waste, especially during the dry season. This is the process of burning combustible wastes at high temperatures. This method reduces the volume of such wastes by 90%. The leftover from the burning of materials like ashes, glass, and metals are then disposed of in a sanitary landfill. This method only reduces the size of wastes, it is not a total means of waste disposal, and it is also associated with fire disaster and the release of greenhouse gases. Energy can be produced from incineration. This energy is preferable to energy produced from coal. This method could save about 2–2.6 Mt of CO₂ eq per year (Salem, Raab & Wagner, 2020).

Open waste burning is one of the major contributors of greenhouse gases (GHGs) and poses major health hazards owing to the cocktail of air pollutants it discharges. Burning of waste is one of the common methods adopted by the community and waste management agency in Akwa Ibom State to reduce the volume of waste since there is only one deposited site, excess waste are burnt at the dumped site time to time to reduce its volume, the health implications of waste burning are enormous. According to Samuel (2016), burning of waste causes air pollution, water pollution, excess heat to both the workers and the environment at large. Pollution according to (Ebong, 2019), involves the release of harmful substances in the environment that could cause adverse change.

POLICY ON INDISCRIMINATE WASTE DUMPING

Solid waste management is one of the most pressing environmental challenges faced by developing countries including Nigeria. With a population of 170 million (2006 national census), Nigeria produces a large volume of solid waste out of which less than 20% is collected through a formal system. The existing solid waste management system is affected by economic, institutional, legislative, technical and operational constraints. The aforementioned issues surrounding the current state of solid waste management in Nigeria has necessitated the need for the country to develop and implement a comprehensive solid waste management policy to serve the sector. In light of this, the Federal Ministry of Environment with support from the United Nations Industrial Development Organisation (UNIDO), other technical partners, and critical stakeholders in the public and private sectors have developed this National Solid Waste Management Policy as a statement of intent to be implemented as a procedure or protocol in the management of solid waste in the country.

In view of the above, the first comprehensive environmental policy legislation was enacted by decree 55 of the Federal Environmental Protection Agency (FEPA) Act in 1988, it was obviously in order to protect the environment and to prevent further dumping of foreign toxic waste in Nigerian territory, as was perpetrated by Italy at the koko port in then Bendel state, mid-western Nigeria. Subsequently, Nigeria would become a signatory to the Basel Convention on the Trans boundary Movement of Hazardous Waste in 1990.

PUBLIC HEALTH

Health was traditionally thought of as a state of absence of disease, pain, or disability, but has gradually been expanded to include physical, mental, and societal well-being. Public health is the science of protecting and improving the health of communities and populations. It involves:

1. Promoting healthy lifestyles
2. Researching disease and injury prevention
3. Detecting, preventing, and responding to infectious diseases
4. Making sure water is clean
5. Providing vaccinations
6. Encouraging healthy habits
7. Maintaining a clean environment through proper waste disposal

Public Health is an empiric and multidisciplinary field whose goal is to assure conditions in which people can be healthy. While medicine mainly focuses on treating illness in separate individuals, it is the central goal of public health activities to increase health at the population level. The ruling principle of public health is to deal with the health of the population in its totality. Health interventions on the population level include community hygiene, sanitation, health education, immunization, and promotion of nutrition. Public health covers preventive, curative, and rehabilitative actions. The success of public health depends on adhering to the basic rules of equity, partnerships, and social justice, as well as the mobilization of local, national, and international resources.

COMPOSTING OF WASTE AND PUBLIC HEALTH

Composting is a decomposition process that involves the biological conversion of mixed wastes into humus-like substances, also known as compost, by mixed microbial population. Sometimes, for the process to be successful, it must be performed under very optimum and controlled environment with the appropriate moisture level, aeration and temperature (Atalia, et al, 2015).

While composting provides a range of environmental benefits, such as improving soil nutrients, reducing greenhouse gas emissions, recycling nutrients, and mitigating the impact of droughts among others; it is worth mentioning that to maintain public health safety posit composting must be managed properly by controlling the biological and oxygen demand as it process passes through different stages till the final compost is achieved (Ugwu, et al, 2021). In corroborating the above assertion, there are some drawbacks to composting as it requires a precise balance of materials, moisture content, particle size, oxygen flow and temperature to be effective, which complicates the process and leaves significant room for potential errors. It also introduces organic materials to the earth's soil, which affects the atmosphere as materials decompose. Notably, composting process is aided by bacteria in decomposing organic waste. These bacteria can facilitate the spread of diseases, posing a threat to human and animal health as well as attract pests to business sites, which can further increase the risk of disease (Baker commodities, 2023).Composting has an adverse effect on health especially to people and waste workers. The draw back with this method is that it pollute the environment and affect the entire well-being

of the people and workers involved, during the transfer of the compost waste, bad odour (foul smell) is being inhaled directly into the body and is capable of causing upper respiratory tract infection. According to Samuel (2016) certain waste if inhaled or touched can equally cause widespread epidemics. The waste collectors are also bare to a number of pathogens (bacteria, fungi, viruses, parasite and cysts). Waste collectors in Uyo particularly in the study areas do not wear personal protective clothing, they use shovel while carrying out their duty thereby exposing themselves to musculoskeletal problems, like back pains, shoulder pains, cut by sharp object exposes the worker to fungal spores causes pulmonary diseases, Allergic alveolitis, invasive aspergillosis, lung tumors, nausea, diarrhea, upper airway irritation, headache, fatigue, and skin irritation. The pesticides used in composting plant to eliminate pathogens are toxic and cause allergies (Samuel, 2016).

BURNING OF WASTE AND PUBLIC HEALTH

Burning of waste is one of the common methods adopted by the community and waste management agency in Akwa Ibom State to reduce the volume of waste since there is only one deposited site, excess waste are burnt at the dumped site time to time to reduce its volume, the health implications of waste burning are enormous. According to Samuel (2016), burning of waste causes air pollution, water pollution, excess heat to both the workers and the environment at large. Pollution according to (Ebong, 2019), involves the release of harmful substances in the environment that could cause adverse change. A study conducted in Addis Ababa by Ebong in (2019) revealed that 78.6% of waste collection workers habitually engaged in waste burning and they often experience eye problems such as; burning sensation, watering redness and itching of the eyes, those scavenging the waste to burn also complain of skin burns, skin rashes and dehydration.

Burning of waste is one of the oldest and traditional ways of waste management technique; it is one of the most harmful behaviours practiced by waste collection workers to reduce the quantity and heap of waste, especially during the dry season. Many dangerous health conditions can be caused by inhaling or ingesting even small amounts of these pollutants. People with preexisting respiratory conditions can be especially vulnerable to some of these pollutants. The smoke from burning waste produces significant quantities of dioxins. Dioxins are group of compounds found to be highly toxic, they are produced in naturally small quantities, but are primarily the result of human activity and household waste is known to contain traces amount of chlorine (Akpan&Usoroh, 2020).

Dioxins are potent toxicants with the potential to produce a broad spectrum of adverse effects in humans dioxins can alter the fundamental growth and development of cells in ways that have the potential to lead to many kinds of impacts. These include adverse effects upon reproduction and development, suppression of the immune system, disruption of hormonal systems and cancer. Smoke created by garbage burning especially affects people with sensitive respiratory systems, as well as causing the risk of heart disease, causes rashes, nausea and headaches. Exposure to carbon monoxide can cause impairment to the central nervous system.

Poisonous substances are found in which is the remains of burning waste may contain mercury, lead, chrome and arsenic. Incessant burning of waste and improper incineration causes eye irritation, air, soil and water pollution (Akpan&Usoroh, 2020).

Open burning releases harmful chemicals and particulate matter that affect human health and the environment. The type of pollutants being emitted depends on what is being burned. Smoke from burning vegetation and organic materials contains toxic gases such as carbon monoxide, carbon dioxide, other greenhouse gases, nitrogen oxides, hydrocarbons, and particulate matter that is small enough to enter the lungs and affect the respiratory system. Smoke from the burning of trash, which is illegal, is especially toxic due to synthetic chemicals in coated papers, plastics, and other materials that people commonly throw away. This smoke may contain the above pollutants as well as dioxins, arsenic, mercury, chromium, polychlorinated biphenyls (PCBs), lead, and other hazardous air pollutants that have been found to be carcinogenic (Ikelegbe&Eribo, 2016).

INDISCRIMINATE WASTE DUMPING AND PUBLIC HEALTH

According to Alam&Ahmade (2018), indiscriminate dumping of wastes contaminates surface and ground water supplies, clogs drains, creating stagnant water for insect breeding and floods during rainy seasons. The solid wastes in most cases are being blown around by winds or rainstorm making the environment dirty. Also waste may eventually, get washed away by runoff water to contaminate water bodies (Nwofe, 2018). Greenhouse gases are generated from the decomposition of organic wastes in landfills, and untreated leachate pollutes surrounding soil and water bodies. Open dumps are associated with bad and unpleasant odours. Insect and rodent vectors are attracted to the waste and can spread diseases such as cholera and dengue fever (Gaya et al., 2018). Ike et al., (2023) reported that a high percentage of those living near disposal sites and workers who handle refuse are usually infected with gastrointestinal parasites, worms, and other related organisms as a result of contamination of subsurface water by the leachate from solid wastes, which contain toxic chemicals and pathogenic organisms.

Indiscriminate dumping is a major environmental and public health hazard prevalent in most developing countries as this practice is still rife (Ogedengbe&Oyedele 2006).

METHODOLOGY

Survey research design was adopted for the study. Uyo urban constitute the study area. The population of the study made up of the entire indigene/ residence of the two communities under study, Aka Offot community for AkpanAndem Market and AfahaOffot Community for Mechanic village environments. Proportionate Stratified Purposive technique was used to select a total of 393 number of respondent. The instrument for the collection of primary data was a structured questionnaire with a 4 likert scale, which was duly administered to the respondents. The face validity and content validity of the research instrument were determined after thorough evaluation by the supervisors and other experts. The reliability of the research instrument was tested using Cronbach's Alpha method of reliability coefficient. The reliability coefficient of the overall items in

the research instrument was obtained as 0.84. Simple regression models are used in the analysis of relationships between the dependent and independent variables in this study.

Result and Analysis

Table 1: The effect of compost of waste on public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State

S/ N	Statements	SA	A	D	SD	Total
1.	Composting can help reduce the spread of disease and protect public health.	118 (31.89)	144 (38.92)	66 (17.84)	42 (11.35)	370
2.	Composting enriches soil with nutrients, which can help prevent plant diseases and pests.	121 (32.70)	152 (41.08)	54 (14.59)	43 (11.62)	370
3.	Atmospheric dust from compost may contain microorganisms and toxicants that can be inhaled.	99 (26.76)	112 (30.27)	91 (24.59)	68 (18.38)	370
4.	There is concern that pathogens can be transferred from compost to the food chain.	96 (25.95)	108 (29.29)	95 (25.66)	71 (19.19)	370
5.	Composting of waste contributes to climate change as it releases carbon dioxide into the atmosphere.	89 (24.05)	98 (26.48)	96 (25.95)	87 (23.51)	370

Source: Field Survey (2024)

Table 1 above reveals that majority of the respondent agreed overwhelmingly that Composting can help reduce the spread of disease and protect public health. For this item 31.895% of the respondents strongly agreed, 38.92% agreed, 17.84% disagreed while 11.35% strongly disagreed. Accordingly, for item two, 32.70% of the respondents strongly agreed; 41.08% agreed; 14.59% disagreed; while 11.62% strongly disagreed that composting enriches soil with nutrients, which can help prevent plant diseases and pests. The third item stated that Atmospheric dust from compost may contain microorganisms and toxicants that can be inhaled. For this item, 26.76% of the respondents strongly agreed, 30.27% agreed, 24.59% disagreed; while 18.38% strongly disagreed. For item four, 25.95% of the respondents strongly agreed that there is concern that pathogens can be transferred from compost to the food chain. However, 29.29% of the respondents agreed; 25.66% disagreed while 19.19% strongly disagreed. For the last item, 24.05% of the respondents strongly agreed; 26.48% agreed; 25.94% disagreed; while 23.51% of the respondents strongly disagreed that composting of waste contributes to climate change as it releases carbon dioxide into the atmosphere.

Table 2: Responses on the effect of burning of waste on public health AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State

S/N	Statements	SA	A	D	SD	Total
6.	Open burning of waste can have significant negative impacts on public health and the environment.	126 (34.05)	176 (47.57)	45 (12.16)	23 (6.22)	370
7.	The burning of waste can release greenhouse gases like carbon dioxide (CO ₂) and methane (CH ₄), which contribute to climate change.	128 (34.59)	182 (49.19)	49 (13.24)	11 (2.97)	370
8.	Smoke from open burning can cause rashes, nausea and irritate the eyes.	143 (38.65)	189 (51.08)	24 (6.49)	14 (3.78)	370
9.	Smoke from the burning of waste damage the lungs and cause breathing difficulties.	109 (29.46)	124 (33.51)	89 (24.05)	48 (12.97)	370
10.	Smoke and soot burning from waste can travel long distances and contaminate the environment.	134 (36.22)	187 (50.54)	32 (8.65)	17 (4.59)	370

Source: Field Survey (2024)

Table 2 above that 34.05% of the respondents strongly agreed that open burning of waste can have significant negative impacts on public health and the environment. Also, for this item, 47.57% agreed; 12.16% disagreed; while 6.22% strongly disagreed. Accordingly, for item seven, 34.59% of the respondents strongly agreed that the burning of waste can release greenhouse gases like carbon dioxide (CO₂) and methane (CH₄), which contribute to climate change. It was also observed that, 49.19% of the respondents also agreed; while 13.24% and 2.97% disagreed and strongly disagreed respectively. For item 8, only 38.65% of the respondents strongly agreed that Smoke from open burning can cause rashes, nausea and irritate the eyes. For this item, 51.08% agreed, 6.49% disagreed; while 3.78% strongly disagreed on the item. The respondents, 29.46% strongly agreed that Smoke from the burning of waste damage the lungs and cause breathing difficulties. More so, 33.51% agreed; 24.05% disagreed; while 12.97% strongly disagreed on this item. Finally, 36.22% of the respondents strongly agreed that smoke and soot burning from waste can travel long distances and contaminate the environment; 50.54% agreed; 8.65% disagreed; while 4.59% strongly disagreed.

HYPOTHESIS TESTING

Testing Null hypothesis 1: There is no significant effect of compost waste on the public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.

Table 3a: Pearson Product Moment Correlation Coefficients for Hypothesis One

	CM1	CM2	CM3	CM4	CM5
Pearson Correlation	1	-.015	.153**	-.042	.089
Sig. (2-tailed)		.768	.002	.410	.078
N	370	370	370	370	370
Pearson Correlation	-.015**	1	.256**	-.134**	-.065
Sig. (2-tailed)	.768		.000	.008	.198
N	370	370	370	370	370
Pearson Correlation	.153**	.256**	1	-.428**	-.126*
Sig. (2-tailed)	.002	.000		.000	.012
N	370	370	370	370	370
Pearson Correlation	-.042**	.134**	-.428**	1	.163**
Sig. (2-tailed)	.410	.008	.000		.001
N	370	370	370	370	370
Pearson Correlation	.089	-.065	-.0126*	.163**	1
Sig. (2-tailed)	.078	.198	.012	.001	
N	370	370	370	370	370

Table 3a indicates that on the statements Composting can help reduce the spread of disease and protect public health; Composting enriches the soil with nutrients, which can help prevent plant diseases and pests; Atmospheric dust from compost may contain microorganisms and toxicants that can be inhaled; there is concern that pathogens can be transferred from compost to the food chain, and Composting of waste contributes to climate change as it releases carbon dioxide into the atmosphere, the Pearson Product Moment Correlation (PPMC) coefficients generated include 0.153, 0.089, 0.256, 0.134, and 0.163, were found to be statistically significant at 5% level of significance. This is an indication of the significant influence of compost waste on public health.

However, on the nature and degree of relationship between compost waste (independent variable) and public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State, the regression and correlation results are presented in Table 4.3.1b.

Table 3b: Analysis Results for Hypothesis One

PH = 2.151 + 0.427CW
t-stat= (16.257) (11.278)
Prob. = (0.000) (0.000)
R= 0.495; R² = 0.245; F-stat= 127.203; Prob. (F-stat) = 0.000

Source: Researcher's Computation (2024)

Table 3b shows that public health (PH) will remain positive at an average of 2.151 units if there are no changes in the compost of caste. This implies that if compost of waste remains constant, there is likelihood that public health will remain positive. Similarly, a unit change in the level of compost Waste will lead to an increase of 0.427 units change public health. This positive relationship is statistically significant with a computed t-statistic value of 11.278 and a probability value of 0.000 (Sig = 0.000) since the probability value obtained is less than 0.05 at a 5% level of significance.

The correlation (PPMC) coefficient R-value of 0.495 indicates the existence of a positive correlation between compost waste (CW) and public health (PH). However, this can be said to be a low positive correlation. Also, the predictive power of compost waste (CW) to explain the changes in public health (PH) is low given the obtained coefficient of determination (R²) value of 0.245 obtained. This implies that only 24.5% of variations in public health (PU) have been explained by compost waste (CW). The remaining 75.5% of the variations are attributable to other factors or variables not considered in this study. This is given by the error term.

Finally, given that the computed F-statistic value obtained is 127.203 and the probability (sig) value is 0.000, the relationship between compost waste (CW) and public health (PH) can be said to have goodness of fit. This implies that the relationship is statistically significant. This is an indication that the null hypothesis earlier stated will fail to hold and is hereby rejected. This implies that a positive and significant relationship exists between compost waste and the public health of AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State. The finding is collaborated

by the view of Samuel (2016) who holds that certain waste if inhaled or touched can equally cause widespread epidemics.

Hypothesis Two

Testing Null hypothesis 2: There is no significant effect of the burning of waste on public health in AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbom State.

Table 4a: Pearson Product Moment Correlation Coefficients for Hypothesis Two

		BW1	BW2	BW3	BW4	BW5
BW1	Pearson Correlation	1	.034	.025 ^{**}	-.045 ^{**}	-.288 ^{**}
	Sig. (2-tailed)		.507	.627	.372	.000
	N	370	370	370	370	370
BW2	Pearson Correlation	-.034 ^{**}	1	.048	-.004	.013
	Sig. (2-tailed)	.507		.354	.939	.801
	N	370	370	370	370	370
BW3	Pearson Correlation	.025	.048	1	.069	.119 [*]
	Sig. (2-tailed)	.627	.345		.170	.018
	N	370	370	370	370	370
BW4	Pearson Correlation	-.045	-.004	.069	1	.169 ^{**}
	Sig. (2-tailed)	.372	.939	.170		.001
	N	370	370	370	370	370
BW5	Pearson Correlation	-.288 ^{**}	.013	.119 [*]	.169 ^{**}	1
	Sig. (2-tailed)	.000	.801	.018	.001	
	N	370	370	370	370	370

Source: Researcher's Computation (2024)

Table 4a indicates that the statements that Open burning of waste can have significant negative impacts on public health and the environment: The burning of waste can release greenhouse gases like carbon dioxide (CO₂) and methane (CH₄), which contribute to climate change; Smoke from open burning can cause rashes, nausea and irritate the eyes; Smoke from the burning of waste damage the lungs and cause breathing difficulties, and Smoke and soot burning from waste can travel long distances and contaminate the environment the Pearson Product Moment Correlation (PPMC) coefficients generated include 0.34, 0.25, 0.43, 0.13, 0.69, 0.119 and 0.169 were found to be statistically significant at 5% level of significance. This is an indication of the significant influence of burning waste on public health, given the high correlation coefficients obtained.

However, on the nature and degree of relationship between the burning of waste (independent variable) and public health, the regression and correlation results are presented in Table 4.3.2b.

Table 4b: Analysis Results for Hypothesis Two

Table 4b: Analysis Results for Hypothesis Two

PH = 2.308 + 0.368BW

t-stat = (26.544) (15.501)

Prob. = (0.000) (0.000)

R= 0.616; R² = 0.380; F-stat= 240.294; Prob. (F-stat) = 0.000

Source: Researcher's Computation (2024)

Table 4b shows that public health (PH) will remain positive at an average of 2.308 units if there are no changes in burning waste (BW). This implies that if burning waste (BW) remains constant, there is likelihood that public health (PH) will remain positive. Similarly, a unit change in the level of burning waste (BW) will lead to an increase of 0.368 units in public health (PH). This positive relationship is statistically significant with a computed t-statistic value of 15.501 and a probability value of 0.000 (Sig = 0.000). Since the probability value obtained is less than 0.05 at a 5% level of significance.

The correlation (PPMC) coefficient R-value of 0.616 indicates the existence of a positive correlation between public health (PH) and burning waste (BW). However, this can be said to be a high positive correlation. Also, the predictive power of burning waste (BW) to explain the changes in public health (PH) is low given the obtained coefficient of determination (R²) value of 0.380 obtained. This implies that 38.0% of the variations in public health (PH) have been explained by burning waste (BW). The remaining 62.0% of the variations are attributable to other factors or variables not considered in this study. This is given by the error term.

Finally, given that the computed F-statistic value obtained is 240.294 and the probability (sig) value is 0.000, the relationship between public health and burning waste can be said to have goodness-of-fit. This implies that the relationship is statistically significant. This is an indication that the null

hypothesis earlier stated will fail to hold and is hereby rejected. This implies that there is the existence of a positive and significant relationship between burning waste and public health in AkpanAndem Market and Mechanic village communities in Uyo, AkwaIbomState. Additionally, Ebong (2019) asserted that 78.6% of waste collection workers habitually engaged in waste burning often experience eye problems such as; burning sensation, watering redness and itching of the eyes, those scavenging the waste to burn also complain of skin burns, skin rashes and dehydration.

CONCLUSION

In conclusion the indiscriminate waste dumping is a serious issue because of the environmental effects these waste brings. These issues range from its negative effects on environment, health and also people' attitude which will have multiplier effects on the present and future inhabitants of the area. Indiscriminate dump of solid waste causes infectious disease among people, contamination of food and water, air pollution, sharp objects and chemicals illegal disposed thus causing harm to people. It also serves as breeding sights for disease vectors. Indiscriminate dump of refuse causes environmental degradation, soil pollution, creates harmful soil that is bad for crops production, environmental mess and poor environmental hygiene.

RECOMMENDATIONS

- The Akwa Ibom State government in collaboration with the Uyo local government area should make stringent waste management policies in the state.
- Uyo Local Government Council in partnership with the Akwa State Environmental Protection and waste Management Agency (AKSEPWMA) should embark on sensitization and awareness campaigns to educate the residents in Uyo particularly in the study areas the danger of burning of waste.

REFERENCES

- Abdel-Shafy, H.I. & Mansour, M.S. (2018) Solid waste issue: Sources, composition, disposal, recycling, and valorization. *Egypt. J. Petrol.* , 27, 1275-1290.
- Akpan, A. E. & Usoroh, C. I. (2020). Problems Associated with Improper Management of Household Waste. *Journal of Home Economics Research Association of Nigeria*, 6 (2), 200- 205.
- Alam, P. & Ahmade, K. (2018) Impact of Solid Waste on Health and the Environment. *Int. J. Sustain. Dev. Green Econ.* 2, 165-168.
- Atalia, K.R. Buha, D.M. Bhavsar, K.A. Shah, N.K. (2015) A Review on composting of municipal solid waste. *J Environ Sci Toxicol Food Technol* 9:20-9
- BAKERCOMMODITIES, (2023, February 28). *5 flaws of commercial composting nobody tells you* <https://bakercommodities.com/blog/2023/02/28/flaws-of-commercial-composting-nobody-tells->
- Ebong, R. D. (2019). *Community health and issues*. Riduma Printers and Publishers. Nigeria, p.160
- Gaya, F. I., Ali, A., Adamu, M.K. & Zanuwa, M.A. (2018). Impact of solid waste disposal on health and environment in Kano metropolis, Nigeria. *International Journal of Scientific & Engineering Research*, 9(7): 1404-1416.
- Ikelegbe, O. O. & Eribo, I. O. (2016). Solid Waste Management in Benin City Markets and Weather Variability. *Nigeria Journal of Education, Health and Technology Research (NJEHETR)*, 8, 1-8
- Nwofe, P. A. (2018). Management and disposal of municipal solid wastes in Abakaliki metropolis, Ebonyi State, Nigeria. *International Journal of Scientific Research in Environmental Sciences*, 3(3), 107-118.
- Ogedengbe, P. S., & J. B. Oyedele. 2006. "Effect of Waste Management on Property Values in Ibadan, Nigeria." *Journal of Land Use and Development Studies* 6 (9): 29-35.
- Salem, M., Raab, K. & Wagner, R. (2020). Solid waste management the disposal behaviour of poor people living in Gaza strip refugee camps. *Resour: Conserv. Recycle*; 153, 1-9 Samuel (2016)
- Samuel, E. S. (2016). Environmental sanitation knowledge among primary School pupils in Idemili North Local Government Area of Anambra State. *Journal of Environmental Health*, (3), 1, 5.

Ugwu, O. C. Chigbogu, G. O. Paul, A. O. Ndukwe, A. Mbohwa, C. (2021) Waste reduction and utilization strategies to improve municipal solid waste management on Nigerian campuses. *Fuel Communications*.9:1-10 <https://doi.org/10.1016/j.jfueco.2021.100025>