

MLP -11

Frequency of Abattoir Waste Generation and Management in Port Harcourt Metropolis

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Abstract

The study examined abattoir waste generation and management in Port Harcourt metropolis, Rivers State, Nigeria. Abattoir operations generate numerous wastes that pose a threat to the environment. Three abattoirs, located in Port Harcourt metropolis, were used for this study, namely; Trans-Amadi, Ogbunabali, and Naval Officers Wife Association Borikiri (NOWAB). Data on the number of cattle and goats slaughtered daily was collected between November and December, 2017 through interviews and participatory observation. Data collected were analysed using descriptive statistics. The results show that on average, about 159 cattle and 353 goats were slaughtered daily in the metropolis abattoirs per working day. Trans-Amadi abattoir recorded the highest percentage (97.66%) of animal slaughtered in the metropolis, while the least (0.78%) was recorded at Naval Officers Wife Association Borikiri, abattoir. A total of 2,003.4 tons of blood, 1,272 tons of Intestinal content, 1,876.2 tons of bone and 1,017.6 tons of tissues waste, respectively from cattle weredischarged into the environment daily. The slaughtering of goats was found to take place only at the Trans-Amadi and Ogbunabali abattoirs. Waste generated daily from goats was higher in Trans-Amadi abattoir (1,690 tons) than Ogbunabali abattoir (14.49 tons) in the metropolis. All the abattoirs visited use nearby streams as means of discharging these wastes slurry thereby giving rise to offensive odour and increase in the microbial loads of the streams. This awareness is expected to reawaken the interests of all stakeholders to eradicate this scourge in earnest.

Keywords: Abattoir, effluent, waste generation, management practices

Introduction

Abattoir which is also known as slaughter house is a place where animals (cattle, goats, sheep, pigs etc)meant for human consumption purposes such as meat andedible by-products are slaughtered or dressed.Most abattoirs in Port Harcourt metropolis are located within the residential areas for easy accessibility to meat consumers. Despite the close proximity to human residence, many abattoirs in the metropolis lack basic waste treatment facilities, thereby dispose their waste directly into the nearby streams and rivers. Sometimes, these streams and rivers serve as a source of water supply to the residents. Waste generated by abattoirs include solid waste, made up of paunch content, bones, horns, and faecal components, slurry of suspended solids and fat (Sangodoyin and Akeredolu, 1992). The liquid wastes usually comprise of dissolved solid, blood, gut contents, urine and wash water (Bello and Oyedemi, 2009). For adequate abattoir waste management, it is important to know the quantity being generated daily and existing waste management practices.

Therefore, this study was undertaken to evaluate the quantity of various types of wastes generated and management practices from three selected abattoirs in Port Harcourt metropolis.

Materials and Methods

The study was conducted in Port Harcourt city, Port Harcourt is a coastal city located in the Niger Delta region of Nigeria within latitudes 6o 58' – 7o 60'E and longitudes 4o 40' – 4o55'N. The monthly rainfall in Port Harcourt follows a sequence of increase from March to October before decreasing in the dry season months of November to February. The investigative approach to data collection was adopted and additional information was collected through interviews with key informants (veterinary experts and meat inspectors) using interview schedule. Data on the number of cattle and goats slaughtered daily was collected (through participant observation) between November and December, 2017.Waste materials (blood, intestinal content, waste tissue and bone) generated from abattoir operations was estimated based on calculations by Aniebo *et al.* (2009) (Table 1). Three (3) different abattoirs, located in Port Harcourt metropolis, were used for this study, namely; Trans-Amadi, Ogbunabali, and Naval Officers Wife Association Borikiri (NOWAB). Data collected were analysed using descriptive statistics.

Table 1: Data for estimating abattoir effluent

	Cattle	Goat
Blood/head (Kg)	12.6	0.72
Intestinal content/head (Kg)	8.0	0.25
Waste Tissue (Kg)	6.4	0.80
Bone/head (Kg)	11.8	2.06

Source: Aniebo *et al.* (2009).

Results and discussion

Table 2 indicated the average number of animals slaughtered per working day in Port Harcourt metropolis abattoir. Trans-Amadi abattoir recorded the highest percentage (97.66%) of animal slaughtered in the metropolis, while the least (0.78%) was recorded at Naval Officers Wife Association Borikiri (NOWAB) abattoir. Goats were higher (68.94%) than cattle (31.06%) slaughtered in the metropolis. The slaughtering of goats was found to take place only at the Trans-Amadi and Ogbunabali abattoirs.

The average number of cattle and goats slaughtered depended on the market forecast or day of the week and social needs of the butchers. The higher percentage of goats slaughtered might be attributable to the degree of most Nigerians preferences for goat meat which agrees with the findings of Ikeme (1990).

Table 2: Average numbers of animal slaughtered per working days in Port Harcourt metropolis abattoir

Abattoir	Animal Slaughter		Total	(%)
	Cattle	Goat		
Trans-Amadi	150	350	500	97.66
Ogbunabali	5	3	8	1.56
NOWAB	4	-	4	0.78
Total	159	353	512	100
	(31.06%)	(68.94%)		

Source: field survey, 2017. NOWAB=Naval Officers Wife Association Borikiri

Table 3 shows the waste generated from cattle slaughtered in Port Harcourt metropolis abattoir. From Table 2, a total of 159 cattle are slaughtered daily in Port Harcourt metropolis abattoir, when this is related to Table 1, about 2,003.4 tons of blood, 1,272 tons of intestinal content, 1,876.2 tons of bone and 1,017.6 tons tissues waste were generated and discharged into the environment daily. Trans-Amadi abattoir recorded the highest quantity (5,280 tons) of waste generated in the metropolis, while the least quantity (155.2 tons) was recorded at Naval Officers Wife Association Borikiri (NOWAB) abattoir.

Fearon *et al.* (2014) and Oruonye (2015) reported lower quantity of waste generated daily from cattle at Sheshegu and Jalingo abattoirs, respectively when compared to Trans-Amadi abattoir. However, the values were higher than waste generated from Ogbunabali and NOWAB abattoirs, respectively. This might be attributable to the difference in the number of cattle slaughtered per day. Cattle blood in the study area was collected during animal slaughter by some residents for preparation of animal feeds. Bone management system in NOWAB abattoir was relatively better than management systems on the other abattoirs visited. Bone waste generated were often sold together with the meat (Fearon *et al.*, 2014) or processed into animal feed. In the other abattoirs, these bones were not managed properly.

Table 3: Cattle waste generation in Port Harcourt Metropolis abattoir

Abattoir	Waste			Category	
	Blood/Head (Kg)	Intestine/Head (Kg)	Bone/Head (Kg)	Tissue Waste/Head (Kg)	Total/Day
Trans-Amadi	1890	1200	1770	960	5,820
Ogbunabali	63	40	59	32	194
NOWAB	50.4	32	47.2	25.6	155.2
Total/day	2,003.4	1,272	1,876.2	1,017.6	

Source: field survey, 2017. NOWAB=Naval Officers Wife Association Borikiri

Heaps of abattoir waste are common sight in most abattoirs in Nigeria as well as the study area which constitute serious environmental and public health hazards, as they are left to degrade, producing bad stench

(Fearon *et al.*, 2014), heavy fly and rodent infestations (Nwachukwu, 2006; Abiade Paul *et al.*, 2006). It has also been reported that abattoir waste piled up within the environment produced methane gas that intensifies greenhouse effect (Adeyemo, 2002). The abattoirs in this study claimed they have been visited by Sanitary Inspectors from environmental agency at one time or the other. They also claimed that government made no provision for abattoir waste treatment facilities or waste recycling system to enhance the safety of their discharges from the abattoirs. Although officials of the veterinary services were seen inspecting meat, many other health and sanitation concerns have been ignored by the authorities

Table 4 shows the waste generated from goats slaughtered in Port Harcourt metropolis abattoir. From Table 2, a total of 353 goats are slaughtered daily in Port Harcourt metropolis abattoir with the exception of NOWAB abattoir, when this is related to Table 1, about 254.16 tons of blood, 441.25 tons of intestinal content, 282.4 tons of bone and 727.18 tons tissues waste are generated daily from the three abattoirs in the study and these translates into a total of 254.16 tons (blood), 441.25 tons (Intestinal content), 282.4 tons (bone) and 727.18 tons (tissues) waste respectively are discharged into the environment daily. Annual waste generated from Trans-Amadi abattoir (1,690.5 tons) was higher than Ogbunabali abattoir (14.49 tons) in the metropolis.

Fearon *et al.* (2014) reported lower quantity of waste generated daily from goats at Sheshegu abattoir when compared to Trans-Amadi abattoir. However, the values were higher than waste generated from Ogbunabali abattoir per day. This might be attributable to the difference in the number of goats slaughtered per day especially in the festive month of December. It was observed that intestinal contents were washed into an open drain and empties into a nearby river which serves as a tributary of the Bonny River (Odeyemi, 1991). When the intestinal contents were not washed into open drain; they form heaps. This has also generated a lot of odour during degradation and makes life uncomfortable for people living around the area.

Table 4: Goat waste generation in Port Harcourt metropolis abattoir

Abattoir	Waste			Category	Total/day
	Blood/ Head (Kg)	Intestine/ Head (Kg)	Bone/Head (Kg)	Tissue Waste/Head (Kg)	
Trans-Amadi	252	437.5	280	721	1,690.5
Ogbunabali	2.16	3.75	2.40	6.18	14.49
NOWAB	-	-	-	-	-
Total/day	254.16	441.25	282.4	727.18	

Source: field survey, 2017. NOWAB=Naval Officers Wife Association Borikiri

Conclusion and Recommendations

Abattoir activities generate large quantities of wastes daily that are beneficial to farmers and can adversely affect the environment if not properly handled. Laws requiring odour abatement plans and provision of environmental impact assessment for abattoirs should be enforced in the metropolis. Public awareness and enlightenment campaign on possible impact of pollution from abattoir wastes should be embarked upon by relevant agencies in the study area.

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