

ABATTOIR ENVIRONMENTAL HEALTH

BY

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Introduction

- Increased population growth has led to increased demand for protein leading to increased production and slaughter of game and livestock animals
- However, the meat production processes have led to pollution challenges (Akinro *et al.*, 2009)
- Slaughter processes and waste management at the abattoirs are of major concern needing more review

Abattoir

- An licenced and registered slaughtering facility and meat-processing plant;
 - High hygiene, sanitary conditions/standards (Meat Safety Act 2000),
 - Effective slaughtering,
 - Regular inspection ,
 - Processing, effective preservation and safe storage of meat products for human consumption,
 - Design based on Meat Safety Act No 40 of 2000.

ABATTOIR PLANT AND PROJECT DESIGN ENGINEERS



Picture 1: Abattoir operations (<http://www.divac.co.za/Home.htm>)

Abattoir

- In South Africa about 436,620 animals slaughtered per year
 - 45,360 cattle, 275,439 sheep, 115,674 goats
- Major economic losses;
 - Condemned products; livers (6.9%), lungs (5.3%), carcasses (0.2%)
 - Liquid and solid waste rehabilitation
- 42 million cubic metres of solid waste from abattoirs, of which 5 million is hazardous (DEAT, 2007)

Abattoir waste

- Solid waste
 - condemned organs, carcasses, hides, carcass trimmings, undigested feed, bones, horns, hair, aborted foetuses, fat.
- Liquid waste
 - Blood, bile, urine, dissolved detergents, chemicals and water.
 - High organic matter, high biological nutrients, high alkalinity (Chukwu *et al.*, 2011)
 - Blood constitutes the highest pollution load and highest COD of all the components of liquid abattoir effluents, followed by fat

Table 1. Waste generated per cow and goat in abattoirs.

	Cow	Goat
Blood/head (kg)	12.6	0.72
Intestinal content/head (kg)	8.0	1.25
Waste tissue/head (kg)	6.4	0.8
Bone/head (kg)	11.8	2.06

Source: Aniebo *et al.* (2011)

Human health and environmental challenges

- Public health risks from food contamination
- Condemned products and carcasses which are unsuitable for human consumption are eaten by scavengers or persons living off refuse sites
- Offensive smells/odours spread to public areas
- Diseases and death

Images of abattoir waste



Figure 1: Intestinal waste



Heap of intestinal waste

Waste disposal

- Many abattoirs use nearby streams and ponds as means of discharging wastes
 - Unhygienic and dangerous to human health
 - contribute high organic and nutrient loads in streams leading to eutrophication
 - Fresh water life compromised
- Municipal sewerage disposal
 - On-site pre-treatment of waste
 - Expensive, sophisticated
 - Effective in controlling pollution



- Figure 3: Heaps of bones



- Figure 4: Effluent after slaughter, meat processing and cleaning



**There is no
environmental friendly
waste management
system for most
abattoirs**

Way forward

- South Africa is bound by the Basel Convention on waste disposal from the chemical industry, but:
 - there is not much legislation or Act dealing with the disposal and handling of waste
 - There is need for strict laws on abattoir and environmental hygiene
- Target areas for sanitization include: infrastructures and facilities contained therein, equipment, surrounding areas, abattoir workers and visitors;
- Strict enforcement of existing health and hygiene regulations
- Development of appropriate, cost effective waste disposal and environmentally friendly technology

Take home message

- The livestock industry produces non-meat products and wastes that need to be recycled into useful by-products for further agricultural and other industrial uses
- Let us not ignore abattoir waste management since it also contributes to our environment hygiene
- We snooze to take action, we lose environmental balance.

Thank you!!!