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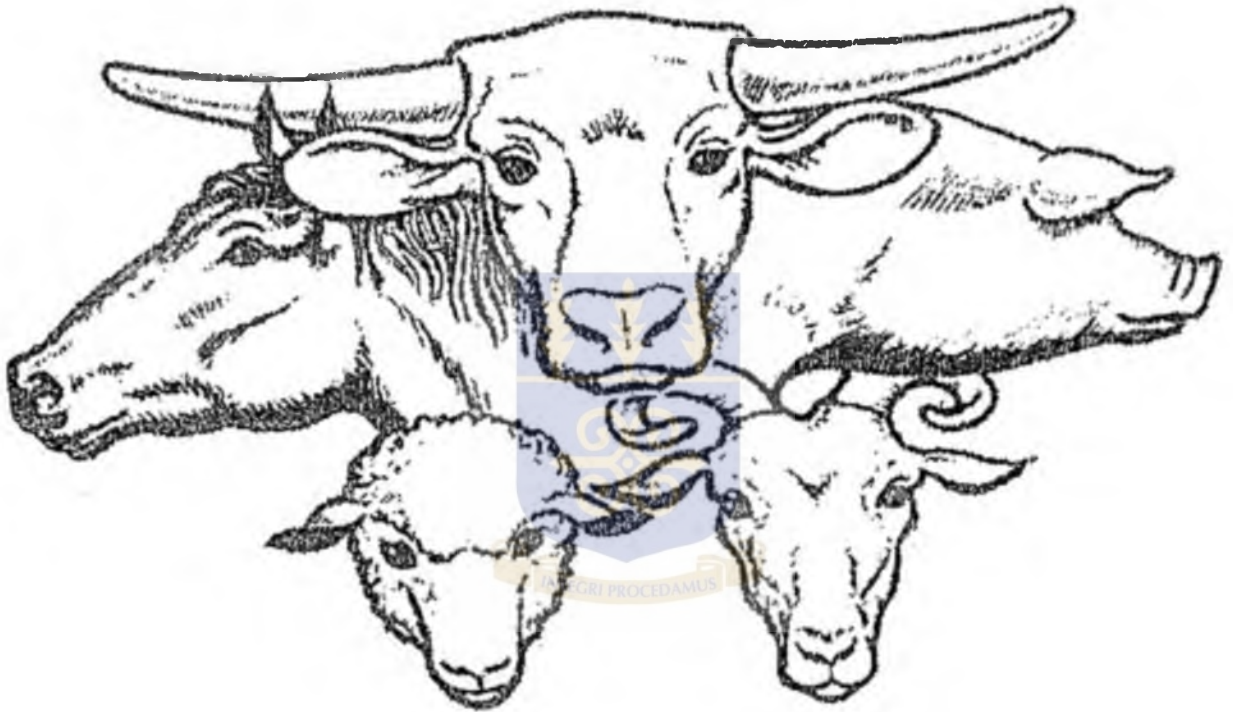
**HYGIENIC PRACTICES OF ABATTOIRS
WITHIN THE ACCRA METROPOLITAN AREA.**



MRS. EMELIA EDWINA BREW-BUTLER

**PRESENTED TO THE SCHOOL OF PUBLIC HEALTH
IN PARTIAL FULFILMENT OF REQUIREMENTS
FOR THE AWARD OF MASTER OF PUBLIC HEALTH DEGREE**

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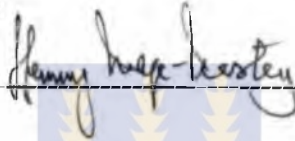


DECLARATION

I declare that this dissertation is an original research work undertaken by me under supervision.

Academic Supervisors :

Mr. H. Noye-Nortey



Dr. W. Owusu

Field Supervisor:

Dr. Edith Clarke



Resident



Mrs. Emelia Brew-Butler

DEDICATION

To my late father Mr. Edwin M. Ogoe for his enthusiastic interest in my academic endeavours, especially the MPH Course.

To my husband Nana and children Archyn, Rama, Shmuel, Emil for their endurance when my attention for them had to be sacrificed for this achievement.



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ABSTRACT

The study was conducted in the Accra Metropolitan Area of the Greater Accra Region. It is the National as well as the Regional Capital.

In many developing countries lack of appropriate slaughtering facilities and practices go to affect the end product available for consumption.

One abattoir, the Accra Slaughter House in James Town was built about 70 years ago during the colonial rule as a small facility to serve the comparatively small area. It had since not seen any further development. Besides this, other slaughter slabs were in operation within the Metropolis.

A cursory observation of these slaughter houses in Accra indicated unhygienic conditions and practices. There was filth and stench at such places.

The study aimed at describing the extent of and the reasons for the practices of poor hygienic standards at these slaughter houses. The study was descriptive in using qualitative methods. Interviews were conducted using interview guides as well as observations using a check list to evaluate resources available. Slaughter house and slabs lacked infrastructure facilities, appropriate equipment and financial support. Furthermore, the slabs lacked supervision and qualified personnel to carry out ante-mortem and post-mortem examinations. suggestions to improve the situation included:-

1. Upgrading and renovation of the slaughter house and slabs to appreciable standards by providing appropriate facilities and equipment.
2. Registration of the slaughter slabs with AMA for supervision and assistance.
3. Education and training of workers at the abattoirs on proper handling of meat, personal hygiene, occupational health and other health issues.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

The Accra Metropolitan Area is one of five districts in the Greater Accra Region. Besides being the National Capital and the seat of Government, it is also the Regional Capital. Accra is a typical urban settlement. Some of the peculiarities of Accra are that of over population leading to extensive urban sprawl, poor environmental sanitation, inadequate housing facilities, extensive movement of vehicles and co-habitation of various ethnic groups with varied traditions and customs. (Ref Fig 1)

Location/Boundaries

On the International scale, the Accra Metropolitan Area can be located within latitude 4° N and 6° N and longitude 0° N and 2° N.

On the map of Ghana, it is located on the coast that forms the southern boundary of Ghana. To the south therefore, it is bounded by the Gulf of Guinea .

It shares its other boundaries with two districts of the region. To the north and also to the west is the Ga District, while to the east is the Tema Municipal Area.

Area

The District occupies a land area of approximately 144 km sq, stretching on the coast from Nungua to Chemu Lagoon near Chorkor.

1.4 Vegetation, Topography, Climate

The area is mostly coastal savanna grassland with a patch of forest reserve at Achimota. There are three (3) lagoons namely the Kpeshie, Korle and Chemu Lagoons.

The land is generally flat with an average elevation of 20 meters above sea level.

The temperature is generally hot and humid during the day, but cool in the evening as a result of the influence of the direct sea breeze blowing inland. Relative humidity is 82%. Mean temperatures range between 20-30⁰ C throughout the year, the highest occurring, between February and March (end of the dry season) and the lowest between June and July (during the major rainy season).

There are two rainfall patterns. The first and major rainy season starts from mid March and ends mid July, peaking in May-June. The second and minor rainy season lasts shorter in September and October. On the average Accra has an annual rainfall of 31.0 inches (715.5mm). However intermittent local showers occur in August.

In January and February Accra, like many parts of Ghana, experience the harmattan season which is characterised by dry winds with cold weather in the early morning and at night.

Demography (Population Density)

Although the Accra Metropolitan Area is small it has the largest population in the Region (i.e. 71%) and 10% of the population of the country. By projection of 1984 census, at a growth rate of 3%, the current population should be 1,516,232.

History of the People⁽⁷⁾

Some historians have it that the people of Lante Dzawe were the first settlers in Accra. Others believe it was the Guans. However, it is traditionally believed that the Gas (as the indigenous people of Accra are called) migrated originally from Nigeria, and first settled in places such as Osu (Christianborg). Teshie, Nungua and Tema followed. Today many more settlements continue to spring up within and on the outskirts of Accra. All these parts are inhabited by people of various tribes who have migrated, mostly for economic reasons, from the different regions of the country.

History of Accra Metropolitan Authority⁽⁷⁾

The first attempt to set up a Town Council dates back to 1859. In 1944, a new constitution came into being after the Accra Town Council had existed for 46years. It was revised in 1953, enlarging its membership from 14 to 31, with 4 representing traditional authority. The Accra Municipal Council was then also established.

After Ghana attained independence, an Amendment to the 1953 Constitution removed traditional representatives completely, the Council becoming a wholly representative institution.

On 29th June 1961, Accra was declared a city and the Council became Accra City Council. A further development took place in March 1963 when the Accra-Tema

Development Corporation was established with the responsibility for certain duties that were formally carried out by the Council. Then a year later, the Accra City council was dissolved and the Greater Accra Area was created with the appointment of a Special Commissioner. The Greater Accra Area comprised of the Dangbe Local Council, Shai Local Council and Ga Local Council. The Accra-Tema City Council was also formed and an Executive Chairman appointed. Later, he was charged with the responsibility for the administration of the Greater Accra Area in addition to the administration of the Accra-Tema City Council.

After the 1966 Coup, the then ruling National Liberation Council suspended the Accra-Tema City Council and appointed a Management Committee to administer the Council. It included one representative of the Community and had the Regional Administrative Officer as its Chairman. Unlike other City Councils the Management Committee of the Accra-Tema City Council was made responsible directly to the Ministry of Local Government and no longer to the office of the Head of State.

On 3rd August 1982, a three-man Interim Management Committee was appointed by the Provisional National Defense Council (PNDC) to take over the Administration of Accra City Council. The membership was widened in 1985 to include representatives of Committee for the Defence of the Revolution, (CDR) National Council on Women and Development (NCWD), National Mobilization Programme and the National Youth Organising Commission (NYOC).

On 18th March 1989, Accra was declared a Metropolis and the Council thus became the Accra Metropolitan Assembly (AMA)

It is this Accra Metropolitan Assembly that is in charge of establishing abattoirs in Accra, among other functions.

Development of Abattoirs

An abattoir is defined basically as a place where animals are slaughtered for food. In some places they are known as slaughter houses.

Early slaughter houses were operated on a small scale but the increasing demand for meat and the concentration of population in the expanding urban areas led to the establishment of large abattoirs.

The first known abattoir built in America was in 1640, on the bank of the Connecticut River, by William Pynchon. From then commercial abattoirs developed along the Atlantic Seaboard during the 17th and early 18th Century. Each workman performed single cut or act as the carcasses, suspended head down from endless belts, were pulled slowly across the processing room.

Then refrigeration cars were introduced and by 1870 Chicago Packers processed, dressed and shipped more than 10,000,000 meat animals per year. Succeeding decades saw the development of huge abattoirs.

In Europe, slaughter houses during the 19th Century were governed purely by local considerations and were small, serving consuming areas. The local town council often provided public abattoirs, thus maintaining control of the interests of public health, at which any farmer or butcher could slaughter his own animals on payment of a fee. Consequently European abattoirs did not adopt mechanical equipment as early as the large meat packing centers of US did. Nonetheless, in the 1960s in some European Countries large and well-equipped abattoirs were in use.

Having been a colony of a European Country for a long time, Ghana followed the same line of development as in Europe. The Accra Slaughter House in James Town, built about 70 years ago was provided by the Accra Local Council during the colonial rule. It

was built small to serve the comparatively small Accra area. It was and still is open to the general public, and butchers come to slaughter their animals on payment of a fee. It has however not seen any further development since it was built.

Requirements of Abattoirs⁽²⁾

The safeguarding of a country's meat supply depends on the diligent implementation of legislation relating to abattoir construction and operations and meat inspection along with control of the following:

1. The use of chemical and pharmaceutical preparation on the farm.
2. The promotion of high health standards in livestock and their general care during transportation, at auction markets and in meat plant lairages.
3. Ante-mortem examination.
4. Post-mortem examination of the carcass and offal immediately after slaughter; including laboratory testing where necessary.
5. Removal of materials unfit for human consumption and its efficient destruction at processing plants located outside the meat plant.
6. High standards of hygiene at all stages from the farm to meat plant, meat processing factory, cold store, restaurant kitchen and the consumer's home.

A good hygiene system results not only in the provision of a sound and wholesome product for human consumption with good keeping quantities, but it can also make an important contribution to the control of animal disease by making available to producers the valuable information obtained on meat inspection.

The primary function of meat inspection is to protect the public health but it also has an additional duty economically to prevent condemnation of valuable commodity.

In recent years, however, more attention has been paid to another important aspect of meat inspection - that of providing statistics which can be utilized for animal disease

control purposes. Indeed, the abattoir is the only place where certain conditions can be evaluated but as yet not enough use is being made of this valuable source of disease information, not only from a disease point of view but also from the research stand.

Abattoirs are usually provided by local authorities and are open to all who wish to slaughter animals for human food, the revenue being derived from lairage fees (for the confinement of animals awaiting slaughter) slaughter charges, cold-storage charges and a variety of other rentals.

The actual system of operation may comprise:-

- a. A complete factory abattoir which denotes employment for regular full-time slaughter men to deal with all the livestock. It is a method that ensures economic handling of the by-products which includes the hides, offal's , glands, blood and condemned meat.
- b. An abattoir adapted to allow for slaughtering and dressing by individual butchers.
- c. A building with dressing accommodation rented by individual butchers.

The above groups are capable of many variations and combinations to suit local conditions.

1.1.9 Food Animals

The great majority of animals slaughtered in all countries for human consumption consist of cattle, sheep, Goats and poultry. Subsidiary sources of meat include rabbit, horse flesh and other kinds of game. Some repugnant to many and include dog, cat, pig, etc.

1.1.10 Planning

The first step in planning an abattoir is to ascertain the ultimate maximum daily kill of each class of animal and the proposed disposal and treatment of the edible and inedible by products.

1.1.11 Site

The main essentials of an abattoir site are that:-

- I. There should be available an ample supply of water (4,500 litres/450kg dressed carcass weight)
- II. Adequate facilities for sewage disposal.
- III. An electricity supply.

In modern abattoir the following buildings are usually provided:-

- Lairage
- Slaughter hall and work rooms
- Chill rooms or hanging rooms
- Store (for hide, skin, condemned meat, gut, tripe)
- Laboratory
- Offices

In general, the premises must be designed so that all operations may be carried out under hygienic conditions so that adequate space and facilities are available for ante-mortem inspection of animals intended for slaughter and post-mortem inspection of carcasses.

1.1.12 Lairage

The importance of a suitable lairage accommodation for animals awaiting slaughter cannot be over estimated. A period of rest for at least 24 hours (and not exceeding 72 hours) has a markedly beneficial effect on the subsequent marketability of the carcass. It also provides place and facility for inspecting the animals prior to slaughter.

The lairage must include accommodation for the isolation of any animals which are or are suspected of being diseased. The walls or fences, gates and floors must be of impervious non-slip material to allow for thorough cleaning which must be carried out regularly before entry of the animals. There needs to be a facility for the removal of manure which forms a considerable part of lairage waste.

1.1.13 Slaughter Hall

The slaughtering and dressing areas must be so arranged as to ensure that meat will not be contaminated by dirty material. Blood must not be allowed to gain access to gullies as it quickly blocks the drains. It must be collected especially if intended for human food (in which case it must be properly stored).

The blood and offals should be identifiable with the carcasses. Facilities should also be provided for scalding, skinning and singeing.

1.1.14 Accommodation for by-products

This need not be extensive as it should be cleared daily. The emptying and cleaning of stomachs (into tripes) and intestines should form separate units from the main building.

1.1.15 Accommodation for meat and offal

The treatment of the carcass immediately after dressing is of importance, a desirable condition being rapid cooling in a dry atmosphere. In large slaughtering centers a space is necessary for pre-cooling with good ventilation. Chilling should be ample to accommodate at least two day's kill and it is preferable to provide several small chill rooms than one large one at about 30-40° F (- 1.5 - 4.5°C). The idea is to preserve the carcass.

An important requirement is the provision of facilities for cleansing of overhead runners and meat hooks. Separate rooms must be available for the isolation of meat or offal requiring further inspection. Separate lockable accommodation must be provided for any condemned meat and offal kept on the premises, awaiting disposal.

1.1.16 Facilities for personnel

Separate rooms must be provided where employees may change their clothes (as they need to wear protective clothing), wash off after work, and eat their meals.

The efficient operation of a meat plant depends greatly on the well-being of its personnel. A trained Industrial Health officer as well as a well-established first aid room are essential to deal with the many cuts and other problems associated with slaughtering operations and to assist in raising staff hygiene standards.

In brief, essentials of good abattoir practices include:-

- 1/ Thorough cleansing of all walls and floors which must be of impervious non-slip material.
- 2/ Adequate lighting, especially where meat inspection is carried out.
- 3/ A sufficient, wholesome supply of water at adequate pressure throughout the premises
4. An effective drainage system incorporating traps for solids and in proper working order
5. Convenient washing facilities and lavatory accommodation situated so as to avoid direct communication with any room where food products are handled, processed or stored. Detergents, nail brushes and clean towels must always be provided.
6. Provision of equipment must be of metal or other durable material resistant to corrosion and capable of being thoroughly cleansed and sterilized (e.g. stainless steel). They must be provided for collection and removal of waste and blood. They must also be clearly identifiable and used for no other purpose. Cutting

boards composed of impervious material must be provided. Wood and leather should be prohibited.

7. Provision of boiling water or steam sterilizers which must be readily accessible to those who need them. All equipment must be sterilizers which must be readily accessible to those who need them. All equipment must be sterilized at the end of each working day.
8. Avoidance of the risk of contamination of meat at the whole premises.
9. Isolation and slaughtering of diseased or suspected animals.
10. Provision of protective clothing for and worn by employees. This should include overall, head-cover and rubber or plastic boots.
11. Practice of general personal hygiene. No person may engage in handling of meat with a sore unless it is kept effectively covered with suitable waterproof dressing. No person may work in the slaughter house with infectious such as typhoid fever, salmonella, dysentery, staphylococcus, etc. Spitting is not permitted in any part of the slaughter house. Tobacco must not be used except in recreational rooms.
12. Prevention of rodents, birds and insects about the premises.

1.1.17 Ante-mortem Inspection

This practice is of great value, for it aids the detection of animals suffering from scheduled or infectious diseases such as anthrax, rabies and glanders which are communicable to man, thus subsequently eliminating unfit animals. It also makes provision for special post-mortem inspection.

Further, many diseases of toxic or infectious nature are difficult to detect in the carcass and organs after slaughter, and ante-mortem inspection is of particular value in the recognition of these diseases such as septic metritis and matitis, study and tuberculous meningitis. In specific diseases such as tetanus or rabies the recognition of the typical

symptoms is of the greatest value for in the diseases the post-mortem findings are but slight and of little diagnostic value.

Amte-mortem inspection is also of value in the prevention of food-poisoning outbreaks, for many of these outbreaks can be traced to the consumption of meat from animals slaughtered while obviously ill but whose carcass and organs may show little noticeable change on post-mortem examination. E.g. salmonella infections. Routine ante-mortem inspection should be carried out daily and the final one within 24 hours of slaughter.

The same routine examination applies to poultry. However, it can only be instituted where marketing arrangements make it practicable e.g. orderly marketing and central slaughtering facilities. Conditions such as the various respiratory diseases may be detected on ante-mortem inspection.

1.1.18 Post-mortem Inspection

A routine post-mortem examination should be carried out as soon as possible after dressing of the carcass is completed, for carcasses of beef and port set rapidly and examination of the lymph nodes is rendered more difficult. Recording should be kept on the conditions of the carcasses, especially of diseases found. Post-mortem examination is also for grading purposes.

1.1.19 Abattoir Effluent Treatment

The efficient disposal of effluent from abattoirs is important because of the possible pollution of water courses or bodies. A measure of strength of the sewage effluent is based on the amount of suspended solids and on the biochemical oxygen demand (BOD) which is the amount of oxygen required for biological decomposition of the organic matter. The higher the BOD level the greater its pollution capability. The problem of abattoir effluent treatment begins in the plant, where every effort must be made to adopt

In the main drain discharging the abattoir effluent the situation was worse than the gutters within, with large masses of solid waste trailing down to the end where pigs, vultures and flies were seen feeding.

Elsewhere outside, by a heap of refuse, whole animals hides and offal parts were being singed on open fires of burning rubber tyres. From there they were simply washed with sponge in a common trough of water that was blackish. Although services were open to all slaughter and dressing process were usually carried out by private butchers and their assistants. Besides this, another slaughter house used to be in operation at Dzorwulu in the Ayawaso Sub-district under the ownership of the Meat Marketing Board, it ceased to exist when the latter was liquidated. A number of slaughter slabs were also in operation, often found at large animal markets. Although unauthorised and unsupervised these are known by AMA.

1.2 STATEMENT OF THE PROBLEM

Abattoirs, being places where meat is handled for human consumption is expected to have hygienic conditions and environment. It must be properly planned to ascertain the maximum daily kill and includes the provision of appropriate facilities, equipment ample supply of water, an electricity supply and adequate sewage disposal:

In general the premises must be designed so that all operations may be carried out under hygienic conditions.

A cursory observation of slaughter houses in Accra suggested unhygienic conditions and practices. There was filth all around :- in places of slaughter and of dressing of the carcass. The waste from these places found in the open. These created unsightly scenes and gave off horrible stench while attracting flies and other vectors of diseases. The exiting conditions indicated therefore a complete deviation from what should pertain at

places such as these where food is being handled for the consumption of the general public some of the questions that arose were:

- 1) How low were the hygienic conditions and practices at the abattoirs?
- 2) Why were hygienic condition and practices at the abattoirs poor?
- 3) Who was responsible for ensuring hygienic conditions?
- 4) What does it take to ensure hygienic conditions?
- 5) How could this be assessed?

The questions needed a more accurate description of the conditions that pertained in the slaughter houses and the reasons for the situation as it was. The facilities needed to be evaluated as well as assessed by way of the mode of operation of the slaughter houses towards the production of healthier and more hygienic meat for the consumption of the general public. In addition, the training and attitude of staff required to work at slaughter houses needed to be assessed.

The factors that could contribute to the problem of low hygienic conditions and practices are shown diagrammatically in Fig 3

They fall into broad categories as follows:

1. Management issues structure, maintenance and repairs of structure and equipment and leadership styles.
2. Facility issues that evaluate actual resources and needed resources, as well as the handling of these resources.

3. Personnel issues which assess the knowledge altitude, practice and welfare of workers at the slaughter houses that promote hygienic meat production.

1.3 LITERATURE REVIEW

Documentation on abattoirs in general is not easily available. The existing literature describe. What the standard design should be, how they should be equiped and what services or practices should pertain there. Some are very general in their descriptions and some are more specific to suit certain kinds for communities. One such book (FAO 1988) presents a design suitable for small communities in the South Pacific region and other developing countries with modifications to suit local conditions. The design was based on “Guidelines on Small Slaughter Houses and Meat Hygiene for Developing Countries” (WHO publication VPH 83.56) with modification to accommodate likely mix of stock. The minimum site area required was given. In practice, compromises would inevitably be needed in selecting a site. It states abattoirs should not be located close to dwelling schools, churches and other public or commercial buildings due to possible nuisance from noise, small and congestion. borehole and well water were safe for use at abattoirs.

In Dubai, a book has been produced for public education on abattoir management. It provides a brief insight into the abattoirs and the services they provide. It includes the organisational structure, description of functions, work procedures, its various buildings, number of staff, the abattoir laboratory and production and financial statistics.

In its history, Dubai in the 1940s did not have any proper slaughter house. People used to slaughter animals in their own houses. In the 1950s a small slaughter area was established which consisted simply of a cement floor with wooden posts. Running water was not available and supplies where brought by pottery. In mid 1960s two slaughter houses were built. Slaughtermen were self employed slaughtering and meat cutting were

carried out on the floor. Drainage was not disposed of in the creeks slaughtering, skinning and carcass dressing procedures is absolutely primitive and lacked even the minimum health requirements. The stench and bad down used to be unbearable.

In Ghana, the Department of Public Health at the Korle Bu Teaching Hospital had shore reports written by public health student who visited the Accra Slaughter House. These reports described the students' observations and experiences. The descriptions were not in detail.

In addition a short news item focusing and highlighting conditions of the Accra Slaughter house was produced by the Ghana Broadcasting Corporation in December 1996.

The film showed the states or conditions under which meat was prepared there, giving the public an insight into the procedures at the Slaughter House. It was a preamble to the introduction or opening of a new modern abattoir in Lashibi, near Tema which started to function in January 1997.

One of the national newspapers, The Daily Graphic, carried in its April edition a short story on this new abattoir, describing the services it hoped to render to the general public. This included production of high quality meat under hygienic conditions. Its functions included service - slaughter for individuals and institutions which would like to slaughter their animals for a fee, and raining of traditional butchers in hygienic way of slaughtering and handling meat.

1.4 OBJECTIVES

MAIN OBJECTIVES

1. To describe the extent of and reasons for the practice of low hygienic standards at the at the abattoirs.

SPECIFIC OBJECTIVES

- 1) To describe the management and staffing of the abattoirs
- 2) To describe the state of disrepair and maintenance of structure and equipment provided.
- 3) To calculate the number of users of the facilities
- 4) To evaluate resource availability
- 5) To describe the system of disposal of waste and cleansing of the abattoirs
- 6) To evaluate the level of awareness on hygienic practices of abattoir staff and butchers.
- 7) To describe procedures employed in the treatment of the animals before and after slaughtering
- 8) To evaluate the morale of staff and sense of ownership of the workers.

CHAPTER TWO:

RESEARCH METHODS

2.1 TYPE OF STUDY AND SITES

The study was designed as a cross sectional descriptive study of facilities, management and staff issues, as well as practices in abattoirs. The sites investigated were the Accra Slaughter House in James Town and three slaughter slabs within the Accra Metropolis.

1. Inunsah Slaughter Slab near the Neoplan Station (by the Kwame Nkrumah Circle)
2. Alhassan Slaughter Slab at the Kokomba Market (Accra Central)
3. Big J Slaughter Slab at the Kokomba Market. (Ref. Map in Fig. 2)

2.2 VARIABLES

The independent variable identified for the study is ‘Low hygienic practices within abattoirs’. The dependent and independent variables derived from the problem analysis and considered in the study are as follows:-

1. Low/Lack of repairs of building and equipment
2. Low/Lack of maintenance of building and equipment
3. Poor Management
4. Low Staff Morale
5. Lack of Ownership by butchers and workers
6. Low qualification / training of personnel to slaughter and dress carcass.
7. Low knowledge on hygienic standards by workers at the abattoirs
8. Inadequate resources (financial, equipment, human)
9. Poor waste disposal within and outside the abattoirs

10. Poor cleansing due to inadequate water supply and cleansing materials
11. Overload of facility due to large number of users

These are illustrated in the diagram in Fig 3

2.3 SAMPLING

The sampling procedure was purposive in nature for all the study units considered because of the limited number of abattoirs in the Accra Metropolitan Area.

1. Abattoirs

The Accra Slaughter House, being the only one provided by the Local Authority, was an obvious inclusion in the study. It was proposed that at least one slaughter slab in each of the Metropolitan Sub-districts would be selected for inclusion in the study. However, some Sub-district did not slaughter slabs. Therefore, three slabs known to the authorities and so they were located and included in the study. These were:-

- 1) Inunsah Slaughter Slab near Neoplan Station (near the Kwame Nkrumah Circle)
- 2) Alhassan Slaughter Slab at Kokomba Market; Accra Central
- 3) Big J Slaughter Slab at Kokomba Market.; Accra Central

2. Management

The heads of these four institutions, as well as a Senior Officer in AMA were selected for interview in consideration of their rank or position.

3. Working Staff

Labourers were interviewed. Then for uniformity in the selection of workers to answer

questions on knowledge and morale, and considering the low staff strength at the slaughter slabs, the number of the least staffed slab, ie five (5), was used as a standard. Again for uniformity, since the slabs were unsupervised and therefore were not likely to engage the services of Veterinary or Environmental Health Officers these were excluded from the knowledge and morale test. However, at the abattoirs, due to certain constraints mentioned later on in this report, two (2) workers were interviewed at each slab or slaughter house.

2.4 PRETESTING AND INTERVIEWER TRAINING

The questionnaires, the interview guides, the checklists, the tape recorder and the camera to be used for data collection were pretested on the staff at the Head Office of the Meat Marketing Board, Dzorwulu. Though the institution had been liquidated and the slaughter house no longer in existence, it was used for the purpose in order to avoid having to pretest at the already scarce slaughter slabs in operation.

Upon information that workers at the slabs could be apprehensive towards strangers with questionnaire, because they were not registered, it was decided to use interviewers from the Metropolitan Public Health Department of AMA who were known by these workers. They were selected with the help of the Acting Chief Environmental Officer of the Metropolitan Public Health Department.

After obtaining their agreement to carry out the investigation and seeking permission from their heads a two-day training session was organised for the interviewers. The kind of questions on the various instruments and the responses expected were explained to them. They were trained to administer the tools, to elicit the responses and record them. They were also trained to use the tape recorder and the camera. In addition they had practical sessions to pretest the tools among themselves.

2.5 FIELDWORK

Permission was sought from the Acting Environmental Health Officer, Metropolitan Public Health Department, (MPHD) to undertake the study. This unit was in charge of abattoirs, among other functions, within the Metropolis.

Two Field Assistants, conversant with abattoir operations, were selected and trained on how to elicit responses from the workers for the questions on the instruments. They were also trained on the use of the recorder and camera.

The various instruments were pretested on the staff at the defunct Meat Marketing Board, though their abattoir was no longer in operation.

Visits were made to the Offices of the Public Health Department of AMA and the Accra Slaughter House by the Principal Investigator. At the offices, an interview guide was used to derive information from the Acting Chief Environmental Health Officer on the role AMA played in connection with abattoirs.

At the Slaughter House, Investigator was taken around by one of the Environmental Health Officers. Using the Checklist as a guide, the facilities available were observed and recorded. Questions were also put occasionally to the Environmental Health Officer for clarification. At the end of the 1 hour tour, the Investigator interviewed the Head of the abattoir in formally on the practices and procedures put in place for the management of the abattoirs. The interview about forty-five minutes after which three workers were also interviewed using an interview guide for about 1 hour and twenty minutes. At all times, the Principal Investigator did the writing on the questionnaires. The other slaughter slabs were visited by the interviewers and the Principal Investigator.

After obtaining permission from the various managers, data was collected using the different instruments applied as appropriate. At the slaughter slabs interviews were

carried out by the assistants while the Principal Investigator stood some distance away to observe the facilities available as well as check on the way the interviews were being conducted. The Assistants took note of all facilities available using the checklist. At the same time interviewed the Heads of the slabs informally on the management of the slabs. Each worker was interviewed one at a time their knowledge and morale. The Assistants did all the filling in of the questionnaires. Interviews at the slabs took about two hours in all at each place.

Also, pictures were taken at the various places. (Ref. Pictures AI - E5)
Ref. Annexes 1-4 for data collection instruments used.

Problems on the Field

- 1) Despite the pretesting, when the film from the camera was processed, none of the pictures taken at the field site turned out. So they had to be taken again at a later date.
- 2) Environmental Health Officers (EHOs) and Veterinary Officers (VOs) were constantly under pressure by butchers to carry out examinations on carcasses so that they could catch the early market.
- 3) Examinations were done separately from embossment.
- 4) Some meat got smuggled out because of many exits.

2.6 DATA HANDLING AND PROCESSING

The various instruments were checked on the field to ensure that all questions were answered. For those that were incomplete, the respondents were reinterviewed on the uncompleted questions. They were also checked for consistency and accuracy. The answered instruments were then put together in groups as management, facility, personnel issues and stored in an expandable file with partitions and labels.

2.7 ETHICAL CONSIDERATIONS

The only ethical consideration was that Moslems considered slaughtering as both a religious and a work function, and therefore only a few qualified men performed the slaughtering. The principle was to cut once for the animal to die. There was to be no pressure applied, no slanting, no stabbing, no pausing and no tearing of any part of the muscle. This therefore required a very sharp edged knife.

Another ethical consideration that was possible but not felt was that by observing their practices, Veterinary Officers, Environmental Health Officers and butchers may have felt their professional rights being impinged upon.

2.8 LIMITATIONS OF THE STUDY

1. As the slab owners considered their operations were unauthorised, they were not ready to talk to strangers.
2. At the abattoirs, due to constraint of time, workers were not available to answer the knowledge and morale test.
3. The first set of pictures were spoilt. Some vital shots were lost.
4. There was a limited number of slaughter houses and slabs and therefore the study units were limited.
5. There was no written information on abattoirs available at the Metropolitan Public Health Department of AMA, which was a supervisory body for the abattoirs. Much of the data therefore had to be taken verbally.

6. A lot of observation was done to supplement the findings because the workers and butchers not readily available to respond.
7. Using staff from AMA was very likely to create biased response because the butchers knew them and knew what kind of responses were expected from them.
8. Statistical data could not be undertaken due to limited facilities and time.

2.9 DATA ANALYSIS

The responses in each group of data were put together on sheets of paper. For each question, the response from all slaughter places were put together. Where possible, the frequencies were computed. They were also put under headings and sub headings.

The data collected were described in writing under different themes as:-

1. Case studies (where data for each abattoir was described)
2. Conditions of Supervised and Unsupervised Abattoirs
3. General conditions.
4. Standard and Existing Practices in Abattoirs.

CHAPTER THREE

ANALYSIS OF FINDINGS

In this section, the data are going to be analysed under the four main themes as follows:

3.1 CASE STUDIES: ACCRA SLAUGHTER HOUSE AND THE SLAUGHTER SLABS (Ref. Pictures A1 - D2)

3.1.1 ACCRA SLAUGHTER HOUSE

The Accra Slaughter House, situated at James Town near the Light House, was headed by a Veterinary Surgeon. It had a staff strength of 29 (5 Veterinary Officers, 5 Environmental Health Officers, 9 Labourers, 7 Revenue Officers and 3 Security men)

1. Facilities

a) General Facilities

The Slaughter House consisted of a lairage, slaughter and dressing halls which were partitioned into chambers, 3 offices, a piggery and lavatories.

Provision for isolation of diseased animals was non-existent. This was not necessary because the animals were confined for less than 15 hours, not long enough for diseases to develop. Besides, ante-mortem examinations were carried out on the farms by Veterinary Officers who certified the animals for slaughter in the form of movement permits to abattoir authorities. If any animal seemed ill, it would be sent back as the slaughter house was not provided with treatment facilities.

The facility was serviced with water which flowed daily through stand pipes but run under low pressure. Both flowing and stored water appeared clear. Water was also stored in closed plastic 'Polytank' tanks so that in times of shortages, or cut offs. Additional water was supplied by the Fire Service at such lean times too.

Electricity was also supplied daily except during power cuts, which was quite frequent in Accra.

b) Lairage

While at the lairage, the animals were provided with water regularly in metal buckets, usually placed before them to minimise being fouled or knocked over. They were not fed while in confinement in view of their short stay at the lairage unless for some reason they must stay longer than 15 hours. They would then be fed with cassava peels, plantain peels and/or grass.

Prior to slaughter, each animal was examined again by Veterinary Officers at the lairage and records kept as slaughter permits.

c). Slaughtering and dressing

The same area used for slaughtering was also used for dressing

Cattle, sheep, goats and pigs were slaughtered at different parts of the slaughter halls; sheep and goats being grouped together. The average daily kill for these was as follows:

Cattle	70 - 90
Sheep/ goat	60
Pigs	15

The cattle slaughtering area was enclosed and was big enough to take 50 animals at a time. Their walls were partly painted and tiled half way up from the floor. These had no windows but had vents so that ventilation was inadequate; especially at the peak of slaughtering when the halls were full to capacity with people and carcasses. The floors, which were also constructed with cement were wet and slippery during working hours. This was because it sloped only slightly towards the cement lined drains that were laid along the sides of the walls.

Cattle were ensnared at their feet with rope as they walked into the slaughter hall so that they fell on their sides. There and then, their throats were slashed the Jewish way and the blood allowed to flow freely on the floor and into the drains which did not have traps for solids nor anti coagulants. Their skins were manually removed on the floor because the carcasses were too heavy to be lifted up. There was no means of mechanical hoisting. After evisceration, the cattle were cut up in quarters and hung on overhead hooks for post-mortem examination. For identification with the carcass, the internal organs were displayed on concrete slabs and these were examined as well. In order to convince buyers of the freshness of the meat, blood that collected in the visceral cavities during evisceration were scooped out and smeared all over the carcass.

Another interesting practice was observed whereby the stomach of the cattle was smashed hard twice on the floor to shrink it.

The slaughtering area for pigs was also enclosed. Pigs were first stunned by clubbing and then stuck in the throat with a knife to induce bleeding. They were then dipped for 15 minutes into a scalding tank heated by fire made of pieces of wood, and the fur scraped off on the floor with a sharp knife. They were eviscerated on wooden tables where post-mortem was also carried out.

The slaughtering area for sheep and goats was semi-enclosed and had adequate ventilation. For sheep and goats, after slashing the throat to induce bleeding, the animals were either skinned manually on the floor or singed on fires far out and away near refuse dumps. The fires were made of firewood and automobile rubber tyres.

They were then washed with sponge in troughs of water and eviscerated on the floor. All singed animals were washed in the same troughs of water which got changed only once a day, at the close of work.

In all cases, the stomach and intestines were emptied directly into the gutters and washed in containers of standing water. These waters were used over and over again and got changed only at the close of day.

d) Post-mortem Examination

With every kind of animal, post-mortem examination was carried out immediately after dressing by making incisions into the lymph nodes, cutting through the heart to expose all chambers, palpating the lungs and visually examining the meat and other parts. Post-mortem was carried out by both Veterinary Officers and Environmental Health Officers. To certify wholesomeness of meat, the carcasses were embossed by one of the workers after examination. Hardly had meat ever been condemned though some diseases such as pneumonia, cysticercosis and, diastomatoses had been identified. All such information and others were recorded in books and files for returns and referencing. A few observations were noted here:

- 1) The animals were allowed to view the slaughtering of others. This was because there was no way of preventing that as different people worked on different animals at the same time and there was no time to wait for one slaughter at a time.
- 2) A couple of workers just spat right on the floor where the carcasses were being dressed.
- 3) Pregnant animals were slaughtered but under emergency situations. e.g. during a difficult labour which might result in death, and when involved in

an accident. This was to save wastage of meat. The foetus was simply removed and discarded while the meat was passed for consumption.

e) Cleaning

The slaughter halls were cleaned daily after each session with water and hard brush, washing off blood, and all other matter into and along the gutters to the main outlet. When there was a cut off in supply, water in the standing drums were used for cleaning.

None of the equipment or tools were ever sterilised because most of them could not be sterilised. It was also because that facility was not available. To ensure the tools were hygienic they were simply washed with soap and water.

f) Disposal of Waste

The horns and hooves were not considered a waste, as these were sold to interested parties for craft work.

The hide and head were also sold separately to interested parties, some of which were used for craftwork and others for singeing into “wele” for human consumption.

With contaminated meat, they are dosed with used engine oil to render them unattractive and unwanted and then buried. This procedure was not witnessed as there was no condemned meat at hand. Generally disposal was done as and when the need arose. Disposal of meat this way was supervised by Environmental Health Officers though these disposal sites themselves were not monitored.

The main outlet for effluent discharge led directly into the sea nearby. The effluent was not pretreated before discharge and this attracted an uncontrolled number of rodents and vultures to the effluent sites which were also not monitored for environmental impact.

g) Packaging and Transporting Meat

Meat leaving the slaughter house was packaged in light density polythene bags, brown paper or basins. Larger pieces of meat were carried on the bare backs and shoulders of workers into the open but lined booths of vehicles.

Chill rooms or storage facilities were not available for meat be kept on the premises. Blood collected for human consumption was carried away immediately.

2) Personnel

a) Employment

Workers at The Accra Slaughter House were recruited by the AMA. For the Inspectors a high level of education was required but for the other workers, basic education was sufficient.

According to Staff, On employment, they were initially screened for diseases. There were subjected to chest X-ray and urine, stool and blood tests. However during employment, they did not undergo further check ups.

b) Health Care

In the absence of an Industrial Health Worker any worker who fell sick was asked to seek the help of a doctor elsewhere. In the case of injuries on the job, such as cuts and general accidents, they were offered first aid. However most workers took care of themselves and sought medical attention when the situation got serious.

c) Personal Protection

Workers were provided with protective clothing such as overalls and rubber boots.

d) Other Provisions

Changing rooms and lavatories, with showering facilities, were provided for workers. They however lacked a recreation room for eating and smoking. Offices were provided for use by senior staff only.

e) Knowledge and Morale

i. Education - Apart from senior staff who had obtained secondary education and formal training on their jobs, the rest of the workers had had primary or no education at all. The latter formed a greater majority (60%). Almost all of them (85%) had had training on the job since being employed, ranging from 3 months to 6 months. This they found useful as it increased their output and efficiency.

ii. Knowledge - Regarding their knowledge on ideal abattoir practices and the rationale behind those practices (as checked against a standard list) the workers seemed to be in the know. They had about 90% of the answers right. Their views about the importance of check ups was impressive as most of them answered that it was for fitness and to prevent diseases. They also mentioned the kinds of diseases not allowed near meat preparations as cholera, whooping cough, chicken pox, TB and other infectious diseases.

iii. Morale - The workers seemed satisfied with their jobs under the prevailing conditions. These were “normal” and earned them their living. None anticipated leaving soon. They rather desired further training in advanced meat preparation procedures, some to broaden their minds and others to increase their output.

Such opportunities were not available to them and they would appreciate assistance in the form of workshops and further training programmes. This would serve as incentive for them since they did not have formal promotion opportunities nor any other benefits. The only level up to them was to be assigned a higher responsibility based on experience and number of years worked.

General accidents (like cuts) and dehydration (due to working under hot conditions) were mentioned as the main health risks associated with the jobs. Nothing had been put in place by the authorities nor themselves to help the situation. Social interrelationship with superiors and colleagues were generally good.

Despite these risks and lack of incentives, they still expressed their desire to continue working on the job.

Management

a) Finance and Administration

Workers at the Accra Slaughter House were salaried workers receiving money from the AMA (Government). It was the same agency that was responsible for repairs and maintenance which were carried out as and when the need arose. It was also in charge of the payment of all bills at the abattoir. In other words, the AMA fully financed the Accra Slaughter House.

b) Collaboration

The abattoir received supervision directly from AMA. It did not have links with the farms and sources directly, as the animals were brought in by individuals and middlemen.

The EHOs followed meat up in the markets to ensure that only certified, wholesome meat sold under hygienic conditions were offered for sale to the general public.

c) Problems

The main problems facing the abattoir were:

- 1) Overcrowding - The abattoir was being utilized by more people than it had the capacity to serve. Therefore at peak slaughtering time, the place was overcrowded.
- 2) Waterflow - The pressure from the taps was low and made cleaning especially, which should be done under pressure, difficult.

The Accra Slaughter House was equipped with a few infrastructure dating back to the time it was built. There had not been any additions since. It therefore lacked a number of structures, equipment and other requirements that was essential of a modern abattoir and that which would promote hygienic practices. Thus the general conditions was not good enough.

3.1.2 THE SLAUGHTER SLABS

All the slaughter slabs under study were personally owned and were headed and managed by the owners themselves. These were unauthorized and unsupervised by AMA. The Inusah Slaughter Slab (ISS) near the Neoplan station was owned by Mr. Inusah Aklikah and had a staff strength of 25. The Alhassan Slaughter Slab (ASS) situated at the Kokomba market was owned by Mr. Alhassan Tenwi and the Big J Slaughter Slab (BJSS) also in the Kokomba market was owned by "Big J." Each had a staff of 5. At these places, staff were not ranked. Each worker, being a butcher and labourer at the

same time, was assigned an animal on which all operations of meat preparation were carried out by him.

1. Facilities

a) General facilities

The slabs consisted of cemented areas for slaughtering and dressing. All these slabs were supplied with water daily from stand pipes which appeared clear. They also stored water for emergency in concrete tanks which were partially covered. The water contained there had cloudy appearance. None of the slabs were supplied with electricity and work ended for them at 5.00pm. Also, none of these had permanent structures for operations except the ISS which had a large wooden kraal attached to it. It had the capacity to hold 300 to 350 sheep and was of the partitioned type with adequate ventilation. The ground was bare and damp, the animal waste being collected and removed twice in a week. At the kraal in ISS, the animals were fed with cassava peels, plantain leaves and grass on the bare floors. Their drinking water was supplied in buckets. Provision was also made for the isolation of diseased animals which were identified, through experience, by obvious signs such as wet fleece from diarrhea, and weakness in the limbs. The animals here belonged to the slab owner who sold them to customers.

b) Lairage

None of the slabs had lairage. Animals brought to the slabs by others were almost immediately slaughtered.

c) Slaughtering and Dressing

The animals were either slaughtered on the bare floor (as at BJSS and ASS) or on cemented floors. At each of the slabs, cemented areas were provided for dressing the

carcass, hence the name 'slab'. At the ASS, this was enclosed by wooden walls and roof while a shed was constructed instead at ISS. Such structure were absent at the BJSS.

The slabs slaughtered only sheep and goats, about 20-25 daily. Sometimes grasscutters and antelopes were brought in for singeing. Because the owners were predominantly Moslems, pigs were not allowed on the premises.

Slaughtering was carried out on the bare floor by slashing the throat to induce bleeding. The blood was then allowed to flow freely on the floor and into trenches. They were sometimes skinned on request but were usually singed on open fires made of firewood and automobile rubber tyres nearby. After that they were washed with sponge and water in troughs, and eviscerated on the cement floors or slabs.

At ISS a wooden table was also provided for this purpose. The stomachs and intestines were emptied into containers and washed in other containers of water. These containers of water were used over and over again for those purposes and got changed only at the end of the day's work.

d) Post-mortem Examination

Due to unavailability of qualified personnel, neither ante-mortem nor post-mortem examinations were carried out at the slabs. If meat was contaminated it could only be identified, through experience, by obvious visible signs.

e) Cleaning

The slabs were cleaned by simply washing off with water and broom into dugout trenches that led into the community drainage system or into bushes nearby (as in the case at BJSS). This was done about three times a day.

For hygiene the knives and cutlasses used were simply washed with soap and water. None were sterilised.

e) Disposal of Waste

The horns and hooves were sold to interested parties for craft work. and the hide and head were also sold to people for singeing into “Wele” for human consumption.

Solid wastes were carried off to rubbish dumps while contaminated meat, if found, were buried in the ground near refuse dumps without pre-treatment. These wastes attracted vultures and other scavenging animals to the disposal sights which were not monitored either.

Effluent from the slabs were discharged, without prior treatment, into bigger ~~used~~ drains used for drainage by the communities.

g) Packaging and transportation of meat:

Large parts of carcasses were carried on the shoulders of workers but smaller pieces were carried in basins on polythene bags.

2. Personnel

a) Employment

Most workers at the slaughter slabs were relatives or dependants of the owners and were between the ages of 20-27 years with primary or no education at all. The only training they received was on the job.

Prior to employment, they were not screened for diseases nor did they undergo checks during employment.

b) Health Care

Any worker who fell ill or got injured at work sought medical help from elsewhere as there was no industrial health workers available.

c) Personal Protection

Workers were not provided with protective clothing of any sort, nor lavatory or showering facilities, let alone recreation room.

d) Knowledge and Morale

- i. Education Most workers, from owners to the labourers, had received only primary or no education at all
- ii. Knowledge The workers' knowledge about ideal abattoir practices and the rationale behind these,, as checked against a standard list, was satisfactory. They had about 60 - 70% of the answers right. They also answered that the importance of check ups was to prevent the spread of diseases like TB and whooping cough, which they judged affected personnel should not go to the work site with.
- iii. Morale - The workers found their jobs and earnings "normal" and satisfactory. They however desired training (on the job or through workshops) on advanced meat preparation procedures since such opportunities were not available to them. This they hoped would broaden their minds and enhance the social and work output. Promotion for the workmen was non-existent, except to be assigned a higher level of responsibility which was based on experience. There were no

incentives either. General accidents like cuts and dehydration were mentioned as the main risks to their jobs. However, nothing had been put in place by themselves nor the owners to help. The social atmosphere between them and their heads or colleagues was good.

Despite the risks and lack of incentives, they did not anticipate leaving within the next two years, at least.

3. Management

With the owners as managers, almost all responsibilities lay with them i.e. repairs, maintenance, wages and bills. They supervised all activities but were themselves not supervised by any other authority.

The slaughter slabs were not equipped at all in infrastructure, appropriate equipment, utilities, nor other requirements. There was breakdown in clean procedures also much filth prevailed at slaughter sides, work sites and effluent discharge sites.

3.2 CONDITIONS OF SUPERVISED AND UNSUPERVISED ABATTOIRS

3.2.1 Advantages

As the Accra Slaughter House was Government owned it had a few advantages over the unauthorized by way of the following:-

- 1) Staff were recruited by a separate body other than the Management of the abattoir so that qualified personnel was assured.
- 2) The abattoir received supervision and financial support from a parent body i.e. AMA, so their salaries and payment of bills were assured.
- 3) The abattoir was better equipped with
- 4) Ante-mortem and post-mortem examinations were provided for meat production.
- 5) Protective clothing were available to workers.
- 6) Pre-employment examination was carried out on the workers.

The advantages that the slaughter slabs had over the slaughter house were that :-

- 1) Being personally owned, there was a sense of belonging and commitment to the progress and success of the work.
- 2) The slaughter slabs had direct links with the animal rearers, especially the Inunsah Slaughter Slab near the Neoplan Station, so that any outbreak of food poisoning could easily be traced back to the source.

3.2.2. Disadvantages

The Slaughter Slabs were not supervised and therefore neither the live animals nor the carcasses received any examinations. There was therefore the risk of unwholesome meat being sold to the public and the spread of disease.

3.2.3 Similarities

The following are similarities shared by both groups:-

- 1) The facilities lacked useful infrastructure like:
 - a) Chill rooms
 - b) Storage rooms
 - c) Singeing halls with safe and sound equipment
 - d) Sterilization units
 - e) Mechanical equipment for cutting up carcasses
 - f) Mechanical equipment for hoisting carcasses
 - g) Mechanical conveyor for animals
 - h) Incinerator for proper disposal of condemned meat and other solid waste.
 - i) Recreation rooms
 - j) Industrial Health Officers/First aid room.
 - l) Non-corrosive equipment
 - m) Proper water storage
 - n) Provision for isolation of diseased animals
 - o) Proper cleansing of drains
 - p) Easily cleaned material for walls and floors
 - q) Provision for collection of blood and other wastes
 - r) Provision for dressing of carcasses

- 2) Workers at both places had a fair knowledge of good hygiene practices. However, These were not being practiced because the right infrastructure had not been put in place by the owners (AMA as in the case of the Accra Slaughter House)
- 3) Workers had fair satisfaction in their jobs. From the questionnaire, all said they were content with the conditions at their work places though the salaries were not “normal” and without incentives. They had no intention of leaving the jobs soon and were eager for further training.

3.2.4 Differences

- 1) The religion of the people determined the kind of animals to be slaughtered at the slabs. Because they were predominantly Moslems, pigs were not allowed to be slaughtered there whereas in the Accra Slaughter House, any animal could be slaughtered there.

3.3 GENERAL CONDITIONS OF ACCRA ABATTOIRS

3.3.1 Facilities of Abattoirs

In both categories, the space for operation of the various levels of meat preparation was small in view of the number of users. A number of provisions were lacking such as laboratories, recreation rooms, health offices, chill rooms, storage rooms, singeing halls, (with sound and safe sources of fire), non-corrosive equipment, sterilization equipment mechanical equipment for lifting and moving carcasses, equipment for skinning and scalding animals. These undoubtedly contribute to enhance hygienic practices, they also lacked proper water storage facilities, isolation lairage for diseased animals, proper disposal facility for contaminated meat or animals (e.g. incinerator). The abattoirs did not have special provisions for dressing the animals, collecting blood, collecting manure and

other wastes like the contents of stomach and intestines and identification of organs with carcasses. None of the equipment available were labeled, the construction of the facilities were not of materials that could easily be cleaned. There were wooden tables, for instance, for the evisceration of the animals and cement tank for the collection of water. Ventilation of enclosed spaces was not good enough, possibly contributing to dehydration of the workers.

Cleaning equipment consisted only of hard brooms and water. Disposal facilities were also inadequate. The drains were constructed without traps for solids nor anticoagulants. Contaminated meat was disposed of by burying without prior treatment, nor the effluent being discharged from there.

The packaging of meat for transportation was poor. Meat was carried away in polythene bags or in open containers. They were also carried away from the premises in open car booths lined with brown paper or polythene.

Fire fighting equipment which was essential at the signing sights was non - existent

3.3.2 Personnel

In the case of the unauthorised slabs, workers were not screened for diseases prior to employment. Those at the Accra Slaughter House had to undergo pre-employment medical examination. However, they too like the unauthorised slabs, did not go for periodic check ups.

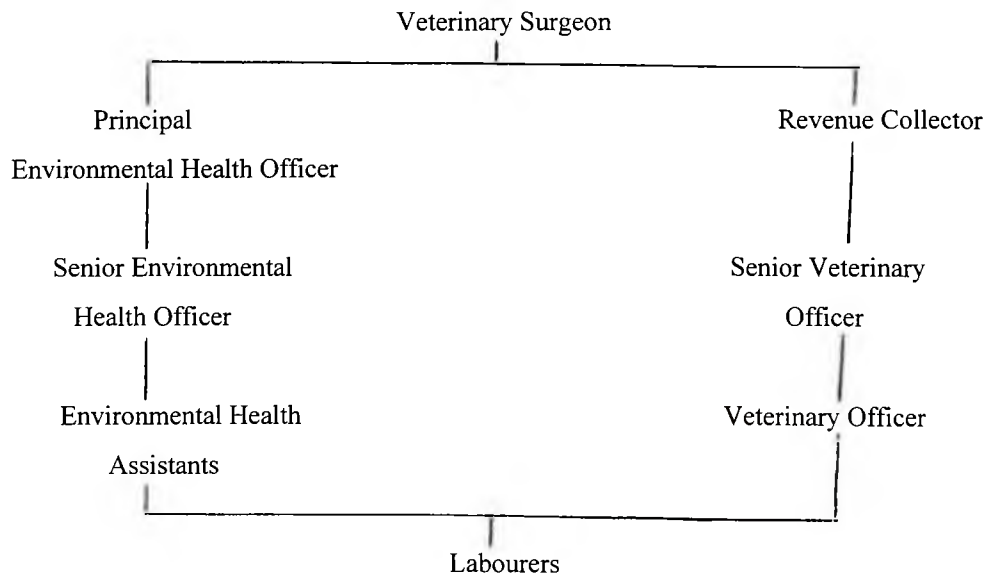
Workers were not provided with an appropriate Health Officer to care for them while on the job, but allowed to seek for their own medical help; neither did they have available first aid box (except at the Accra Slaughter House)

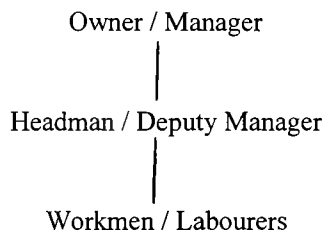
Also at the unauthorised slabs, workers were not provided with protective clothing of any sort.

Generally, workers at both categories of abattoirs had a fair knowledge of good abattoir practices. This could be supported by their zeal for further education in advanced meat preparation practices. Besides, despite the prevailing working conditions, risks, lack of incentives and low wages, they were committed to their jobs. Their attitude towards work was positive.

3.3.3 Management

- 1) At the Accra Slaughter House, workers knew their various duties by written job descriptions and job allocations. At the slabs duties were assigned to workers verbally and sometimes on day to day basis.
- 2) The organisational structures were verbally stated as shown in the following:-
 - a) Diagrammatic presentation of the Organisational structure at the Accra Slaughter House.



b) Flow Chart of the Organisational Structure at the Slaughter Slabs

3. At the Accra Slaughter House, both Veterinary and Environmental Health Officers carried out post-mortem examinations. The Veterinary Officers (VOs), being animal health officers, found it obligatory to follow the animals up to the end product.

Meanwhile the Environmental Health Officers (EHOs), being food inspectors, were concerned about the meat as raw material. However, where both existed, the veterinary Surgeon was to be head of the abattoir with all others assisting him.

It was not clear who was responsible for meat inspection. EHOs derived their authority from the Food Act and By-Laws while the VOs saw it as their academic right since they were trained and more qualified academically to carry out the inspection.

3.4 A COMPARISON OF IDEAL AND EXISTING SITUATIONS AT ABATTOIRSTable 1

<u>Requirements of an Ideal</u>	<u>Existing Situation</u>	<u>Comments</u>
<u>Abattoir</u>		
1. Lairage (walls and floors should be of impervious, non-slip material that is easily cleaned and up to about 6ft above the ground)	Only the Slaughter house had a lairage but the walls were not of the specified material for easy cleaning.	A proper lairage is needed at the Slaughter house.
2. Accommodation for isolation of suspected or ill animals.	This was lacking in both.	This is an essential requirement for

3.	Walkway leading from lairage to slaughter hall.	None of the facilities had a walkway.	disease control A walkway is needed to avoid accidents. e.g from charging cattle
4.	Slaughter hall and work rooms.	Exited only at the Accra Slaughter House. BJSS had only a work room	These are essential as almost all meat processing is carried out here
5.	Adequate space	The Accra Slaughter House was always overcrowded because of the enclosure	The thorough put of animals per day must be controlled. The place could also be expanded
6.	Adequate ventilation	For the enclosed halls ventilation was poor especially at the Slaughter House and at BJSS.	Adequate ventilation is needed for human comfort and for meat preservation
7.	Adequate lighting	Lighting was not adequate at the Slaughter House due to enclosure	Lighting is essential especially for meat inspection
8.	Electricity supply	Electricity was supplied only at the Slaughter House.	Desirable especially if chilling of carcass is being considered
9.	Ample and wholesome supply of water (4,500 litres per 450 kg dressed carcass weight at adequate pressure.)	Clean water was supplied at all facilities. However the pressure was low at the Slaughter House. Neither place used water liberally	For adequate cleansing and cleanliness. "Dry" Slaughtering has a lot of disadvantages

10.	Adequate waste disposal - efficient drainage system with traps for solids efficient waste and by-products recovery and clean-up in work rooms - proper and regular collection of manure	There were no traps in the drains for solids. Also collection of manure and other waste was not efficient.	Essential to avoid pollution due to blood, instestinal contents and dirty influent
11.	Facilities for scalding	Provided only at the Slaughter House	Fuel for the heating system must be efficient and non-polluting
12.	Facilities for skinning	Not provided at any of places	Help relieve strain from manual skinning
13.	Facilities for singeing	Not provided at any of places	Alternatives need to be developed to avoid health and environmental impact
14.	Equipment for hoisting carcass	Not provided at any of the places	Saves the strain of the manual lifting
15.	Non-corrosive equipment that can be sterilised	Not provided at any of the places	Ensures hygienic handling
16.	Sterilizing equipment	Not provided at any of the places	Ensures hygienic equipment
17.	Chill rooms or hanging rooms.	Not provided at any of the places	Essential for meat preservation
18.	Store (for hide, skin, gut, tripe)	Not provided at any of the places	May not be necessary if these are removed immediately

19.	Separate store under lock for condemned meat awaiting disposal.	Not provided at any of the places	Access to and contact with such meat must be avoided
20.	Laboratory	Not provided at any of the places	Necessary for quality control
21.	Offices	Provided only at the Slaughter House	For personnel convenience
22.	First Aid room	Not provided at any of the places	For personnel welfare
23.	Changing room for personnel	Provided only at the Slaughter House	For convenience and control of the spread of diseases
24.	Lavatories with showering facilities	Provided only at the Slaughter House	Necessary as part of personal hygiene practices
b)	<u>Management Practice</u>		
1.	Protective clothing (overalls, rubber boots)	Provided only at the Slaughter House.	For personnel welfare and disease control
2.	Trained Industrial Health Officer	Not provided at any of places	Necessary for personnel welfare
3.	Regular Full time slaughter men.	Not available at the Slaughter House	Lack of ownership results
4.	Regular maintenance of equipment	Irregular maintenance at the Slaughter House	Ensures efficient meat processing
5.	Prompt repair of equipment	A number of mal-functioning equipment observed	Ensures efficient and hygienic meat processing
6.	Thorough and regular cleansing of all walls and floors especially lairage	Inadequate at all places. The floors and walls were not clean	Necessary for hygienic environment

	and slaughter halls)		
7.	Labeling of equipment	Did not exist at any of the places	Helps to avoid meat contamination
8.	Reporting	Existed only at the Slaughter House	Helps disease control
C.	<u>Public Health Practice</u>		
1.	Ante-mortem Inspection	Provided only at the Slaughter House	Necessary to control the spread of diseases
2.	Post-mortem Inspection	Provided only at the Slaughter House	Necessary to control the spread of diseases and food poisoning
3.	Personal hygiene practice	Not adequately practiced	Necessary to control the spread of diseases

Findings

Most of the ideal requirements were not available at the slaughter slabs, and the Slaughter House had a few.

CHAPTER FOUR

DISCUSSION AND CONCLUSION

4.1 DISCUSSION

From the analyses the following discussions arise.

4.1.1 Definitions

At the beginning of the study, it was thought that the simple dictionary definition of “abattoir” could hold for all places where animals were killed for food. But at the end of it the word really is not-existent in the Metropolis. Considering the requirement of ideal abattoir facilities, practices, management and personnel, the word must have more health, wealth and dignity than was applied here. Until conditions at these places are rectified, the terms “slaughter house” and ‘slaughter slab’ should continue to be used to differentiate and categorise them.

There are certainly levels of slaughtering facilities based on infrastructure, equipment, provision of services and the kind of impact they contribute to society in general. A slaughter house would perhaps be one that would meet a fraction of the ideal requirements set out in Table 1 page 46 while a slaughter slab would meet another fraction. These fractions will have to be clearly defined. It was realised during the study that many more slaughtering were carried out in private houses and ‘chop bars’ especially. But the latter category could not be included in this study because they were not easily identifiable. However, since they offered meat to the general public at a price their operations would need a closer look at to safeguard the health of consumers. Another reason for checking them is that , the Food and Drugs Law 1992 (31, 4) has

made the sale of unwholesome meat by such institutions a punishable offense and this law should be enforced.

4.2.1. Infrastructure

The Accra Slaughter House had the capacity to slaughter 50 cattle per day. For a morning session of about two hours alone, the daily kill approximated 70. This indicated over load of the facility during working time and over utilisation of facilities provided there. Within the Metropolis, it was the only place identified that slaughtered cattle. Thus it served the whole Metropolitan Area, which had a population of about 2 million. As far away as the Nungua, Dansoman and Achimota markets, butchers obtained their supply of beef from the Accra Slaughter House. There were different sources of mutton as the slabs only slaughtered sheep and goats.

In order to ease the congestion at the Slaughter House, it was proposed that the task of cattle slaughtering be transferred to the newly built Accra Abattoir. The proposal was made in view of the fact that the big cattle markets were established at Ashaiman, near Lashibi, where the Abattoir was situated. But this was not accepted by the butchers using the Accra Slaughter House. Their reason was that many of their assistants were their dependants and using the Abattoir, which had its own permanent staff, would put them all out of employment and inflict harsh social hardships on them. For this reason, they had been persistent to resist any attempt to ban them from using the Accra Slaughter House. The problem now is to find a solution that addresses the issue of congestion at the Slaughter House without creating social problems, thereby avoiding confrontation of any sort.

As mentioned earlier on, the Accra Slaughter House and the Slabs lacked a number of structures that ideally should have been present. The Accra Slaughter House, built 70 years ago, was intended for a smaller population. It had since not seen any renovation at all. With regards to the slabs infrastructure was non-existent.

4.1.3 Equipment

Another reason for the proposal was lack of essential equipment and inadequate utilities for the production of quality meat under hygienic conditions. Considering the requirements of an ideal abattoir, appropriate equipment formed a greater part besides physical structures. The right type of equipment, the number available and their working conditions determine the sanitary conditions of the place, the kind of practices being employed by the workers, and ultimately the quality of meat produced. Appropriate equipment also removed some of the risk factors associated with meat production such as:-

- a) Pain in the back and strain resulting from lifting heavy carcass.
- b) Cuts sustained from skinning, eviscerating and cutting up carcass to pieces.
- c) Burns received from scalding and singeing

With essential equipment a lower level facility could be made comparable with an ideal abattoir. Thus it is hopeful that the slaughter houses and slabs could be upgraded by provision of appropriate equipment which were found lacking during the study. List all.

Utilities provided in a slaughter house or slaughter slab were as essential as the equipment since they determined the sanitary conditions, the kind of practices employed by the workers and the quality of meat produced. The low pressure of water was partly due to illegal connection of underground pipes by some residents, and partly due to old pipelines that had not been serviced or replaced for a long time (i.e. lack of repairs and maintenance) Because the pressure under which water flowed at the slaughter house was low, the place could not be cleansed adequately. The same containers of water were used

for washing entrails and singed animals. Thus stains not properly washed, remained and built up to appalling cover.

Lack of appropriate infrastructure and equipment had determined the breakdown of cleanliness and hygiene that should prevail at the slaughter house and slabs. The filth found almost every where could be attributed mainly to these. In addition the facilities needed utilities such as electricity for freezing and wholesome, adequate supply of water for cleansing. Personal hygiene was also paramount.

4.1.4 Management

A number of reasons attributed to lack of maintenance or repairs of structures or equipment at the slaughter house. They included the following:-

- 1) The funds had to be released from the Accra Metropolitan Authority and that involved a long process which in itself was discouraging. Therefore when the situation was not urgent managers easily overlooked the problem.
- 2) Government funds were usually limited and inadequate for all the work that had to be carried out.
- 3) People generally paid little attention to such problems until there was a total breakdown when nothing could be done to salvage the situation.

At the slabs there were hardly any repairs nor maintenance to be done because infrastructure and equipment were very few.

These were not the only management issues identified at the slaughter houses.

By virtue of their specific roles in meat production both Veterinary Officers (VOs) and Environmental Health Officers (EHOs) carried out inspection and reported to their

various principals. Efforts were therefore being duplicated and there seemed to be little collaboration between the sectors, except to operate on the same premises. The issue had had been persistent. The EHOs derived their authority from the Food Act while the VOs derived theirs from their academic qualifications. In a draft Ghana Food Law developed by the National Codex Committee, a food Control Authority was to be established to address all aspects of food control and food hygiene. When promulgated it would, among others, train its own inspectors to carry out both ante-mortem and post-mortem inspections which would be open to all EHOs and VOs. They would be trained to be conversant with all disease problems of animals live and dressed. It is envisaged that this would help solve the thorny issue since the right calibre of personnel would be produced.

Another issue of interest was the establishment of the slaughter slabs. There were no by-laws nor regulations controlling their establishment. Thus though AMA was aware of their existence, they had not been provided with inspection services as they were not registered with them. In view of the potential risk they posed to the health of the general public this anomaly must be corrected.

4.1.5 Knowledge and Morale of Workers

It was realised that, with or without any formal education, a worker would still know what hygienic practices were. The rationale behind these may not be known by them. However, they were eager to increase their knowledge on proper meat handling procedures and that was indicative of their willingness to change their attitudes for the better. It also indicated that they were satisfied with their jobs and wanted to stay on longer.

4.1.6 Public Health Issues

1. The general physical conditions of the slaughter slabs were very poor. There was filth all around.

2. Although the Big J slaughter slab did not slaughter cattle, a number were seen resting on the rubbish dump nearby. Such sights were common. It was therefore easy for the animals to get infected by micro organisms from the dump and. it was surprising that outbreaks of food poisoning were not heard of often. Could it be that they were occurring but were not being reported?

3. Singeing was almost always done at rubbish dumps to ensure that residents were not disturbed by the thick smoke and sickening odour of burning fur. It was also to avoid carrying the mass of waste generated in the process to the dump sites.

4. Automobile rubber tyres were used because burning was more efficient and saved time. They singed away the fur totally and in a short time. Small amounts of fuel (rubber tyre) were required and that made its use more economical. Besides, it offered an alternative to recycling.

But the choice to use rubber tyres, of course, did not take into consideration the impact it had on the environment by way of atmospheric pollution nor did it consider the health impact. Individuals working near the fires were constantly exposed to CO, CO₂ and other gaseous chemical compounds from the burning rubber. What effect was it having on their lungs? Moreover, how would it be ensured that the singed pieces were not chemically contaminated by the burning rubber? They were also exposed to intense heat.

At Maamobi, near a large rubbish dump, a lot of singeing was carried out there as a vocation. The parts were purchased from the Accra Slaughter House and singed into "wele". Unknown to them these people were at high risk because of the smoke. A lot of them worked at the same place day by day where the smoke was thick in the atmosphere. (Ref Pictures E1- E5)

5. It was revealed that at one time, when the Accra Slaughter House was temporarily closed down, operations were moved to an unused building close to the Cathedral Clinic. The experience and diligent investigation of an individual exposed that the smoke from the singeing affected the laboratory results of patients at the Clinic. The problem ceased when the slaughter house returned to James Town. There could be many more such impacts by abattoir operation yet unknown.
6. At the slaughter house, workers faced danger of being knocked down by angry cattle. This was because they viewed the slaughtering of others or got too tired from their movement into the lairage.
7. Besides these, both slaughter house and slabs received the same kind of injuries and infections e.g. falling due to slippery floors, cross infections, cuts.

4.1.7 Socio Economic Issue

Meat produced locally had not been able to enter the export market because the source, the preparation and packaging procedures were questionable. If the quality of meat was to be improved, these preparations and packaging would also need to be checked, certified and assured. It is then that income from the industry will be higher for the average butcher.

Accra shares several similarities with Dubai's abattoir history. What existed in the 1940s and 1950s there are akin to the slaughter slabs in operation in Accra, that is, the crude structures, unavailability of running water, slaughtering in the homes of individuals etc. As both progressed to slaughter houses they encountered the same kind of conditions i.e. self-employed slaughtermen, slaughtering and dressing carried out on bare floors, poor drainage, poor waste disposal, and unbearable stench.

In contravention to prescribed siting of abattoirs (i.e. away from dwellings, churches schools and public / commercial buildings) the Accra Slaughter House is located among

Much information would be required to determine the environmental and health impact of these singeing processes.

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In contravention to prescribed siting of abattoirs (i.e. away from dwellings, churches schools and public / commercial buildings) the Accra Slaughter House is located among residences, a prison, the Fire Service Training School and other public or commercial buildings. The congestion of human and vehicular traffic and noise during working hours of the slaughter house are alarming.

The advent of the Accra abattoir gives a new turn to the progress as it conforms significantly to hygienic standards required of meat production plants. The siting, infrastructure, equipment and services provided are as described in the WHO publication (VPH 83.56)

However, in view of the proximity of the Accra Abattoir, the modifications prescribed in the document are worth considering for adaptation to suit our local communities and markets and accommodating mix of stock.

4.2. CONCLUSION

- 1) The Metropolis lacked any decent abattoirs of acceptable standards.
The Accra Slaughter House was the only authorised institution which slaughtered cattle and served the whole Metropolitan Area. It slaughtered sheep, goats and pigs and well and its services were open to all who wished to slaughter animals for food. Other slaughter slabs were in operation as well, slaughtering only sheep and goats.
- 2) These institutions lacked infrastructural facilities, appropriate equipment and financial support. In the case of the slabs, they lacked in addition, supervision and qualified personnel to carry out ante-mortem and post-mortem examinations.

- 3) Some meat sellers and “chop bar” owners slaughtered animals privately. This was due to lack of adequate education in meat hygiene and lack of access to convenient facilities.
- 4) The right types of equipment which could be sterilised were not provided for at any of the abattoirs.
- 5) The pressure under which water flowed at the Accra slaughter house was low and did not allow for adequate cleansing of the walls and drains.
- 6) A number of practices associated with meat production were having effect on the environment as well as health. Notable among these was the singeing of animal hide for human consumption using automobile rubber tyres, which would need to be addressed.
- 7) Personal hygiene was not being practiced at the slaughter houses and slaughter slabs, thus contributing to low hygienic standards.

- 11) Workers had to seek medical help elsewhere because of the absence of a trained Industrial Health Officer to address health issues of workers.
- 12) Rules and regulations for meat inspection existed. They were simply not taken serious until there is an epidemic of zoonotic origin. The enforcement of by- laws could be used in disease control besides other measures. In this regard, ante-mortem and post-mortem examinations should form an important component of meat production, as evisceration, and should be performed by personnel conversant with animal diseases.
- 13) There was a problem of job distinction among the Environmental Health and Veterinary Officers that needed to be resolved.
- 14) Certification of wholesome meat had lapses. It was carried out by another person other than the VO or EHO and may not be immediately after inspection. Therefore sometimes the butchers made incisions in the carcasses themselves.
- 15) Uninspected meat got smuggled out of the slaughter house because of the many exits and this must be addressed.
- 16) Meat was not properly packaged for dispatch
- 17) Transportation of meat was not done under hygienic conditions. They were neither carried over by appropriate vehicles nor refrigerated to keep wholesomeness.
- 18) Finally, if meat sources, preparation and packaging processes were checked and quality assured and certified, extra income would be generated as locally prepared meat would be accepted into export market.

CHAPTER FIVERECOMMENDATIONS

<u>Short Term</u>	<u>Action By</u>
1) The pressure of water at the slaughter house should be rectified.	Ghana Water and Sewerage Corp. AMA.
2) A system should be worked out to ensure that meat is certified by qualified personnel alone and embossed immediately after inspection.	Management of Slaughter House
3) All meat leaving the slaughter house should be checked thoroughly to avoid smuggling.	Management of Slaughter House.
4) The current system of using private butchers at the Slaughter House works positively and it could be maintained. The butchers and their assistants could however be trained in hygienic ways of slaughtering and handling meat, as well as modern methods of slaughtering.	Management of AMA.
5) Butchers and their assistants could be trained on personal hygiene practices while at work, as well as occupational health and other health issues.	Management of AMA.

Medium Term

- | | |
|--|-----------------------------------|
| 1) The Slaughter slabs should be registered with the AMA for supervision and assistance. These could also be upgraded to slaughter house standards by providing extra infrastructure and equipment. If possible, every sub district should be provided with at least one such slaughter house for convenience and also to ease pressure at the Slaughter House in James Town. When implemented the latter could be used solely for cattle slaughter. | Management of AMA/Policy Markers. |
| 2) There should be by- laws or regulations banning private slaughtering and encouraging the use of the slaughter houses to ensure meat safety through proper inspection. | Management of AMA/Policy Markers. |
| 3) The slaughter houses should be provided with trained Industrial Hygiene Officers to attend to the health needs of personnel. | Management of AMA |
| 4) Effluents leaving the slaughter houses could be captured into septic tanks for collection and disposed of properly by the AMA. Alternatively they could be treated to remove all solid matter before discharging in the sea or main drains. | Management of AMA |

Long Term

- 1) The Accra Slaughter House should be upgraded and Markers renovated to appreciably high standards by providing the appropriate facilities and equipment that it lacked. An old unroofed building standing next to the Slaughter House and currently being used as a meat market could be renovated as well and included as well to allow for space. Renovation works should consider ventilation, lighting and the type of materials used for the walls and floors. These should be of the recommended standards for the production of meat under hygienic conditions.

The layout should be such that there would be only one exit point to avoid unchecked meat from being smuggled out, as happens there now. The slaughter house needs to stay at James Town in view of its proximity and the convenience to the users.

- 2) The proposed Food Control Authority in the Food and Drugs law 1992 should be established soon to take full control of its functions, especially in the training and employment of Meat Inspectors to carry out ante-mortem and post-mortem inspection at the various slaughter houses to be established.

AMA / Policy

Policy Making Body

- | | |
|---|---|
| 3) There should also be education and training on the use of gas for singeing. If possible some equipment could be designed for the purpose, to replace the current method being used which uses chemicalised rubber tyres. | AMA / MEST |
| 4) There should be further research work carried out in various areas of meat preparation to determine, for instance, the following:-

a) The environmental impact of abattoir practices

b) The health impact of abattoir practices

c) The social impact of abattoir practices. | Research Institutions
Management of AMA
Health Research Unit
Environmental Protection Agency |
| 5) The various institutions connected in one way or the other with Food Control should collaborate with one another and work out a system of information flow among themselves | Ghana Standards Board
Animal Health and
Production Department.
Ministry of Health
Public Health
Department - of AMA
Environmental Protection
Agency. |

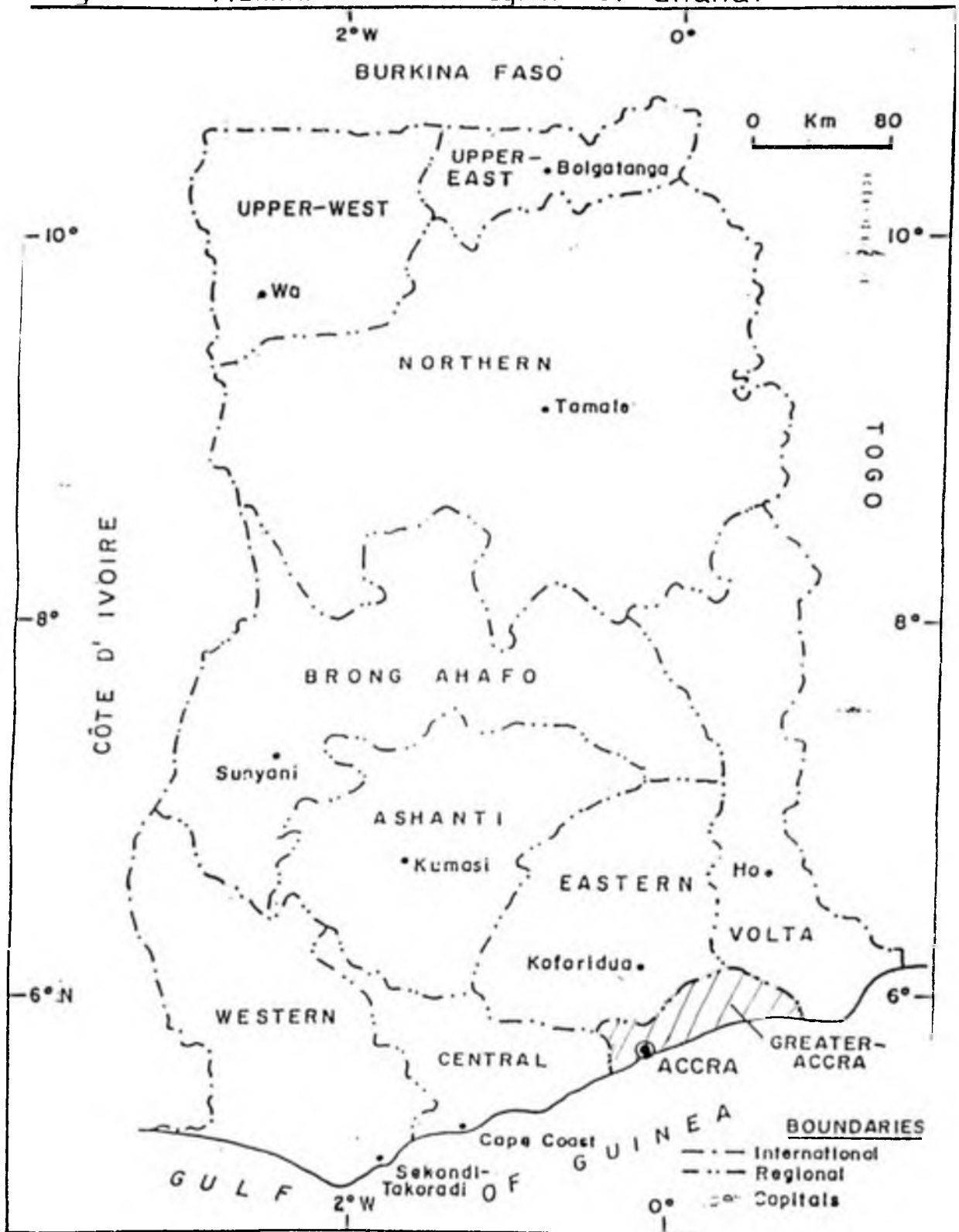
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Mr. J.A Laryea - Accra Metropolitan Public Health Department
Dr. Opoku-Pare - Veterinary Services Department

OPERATIONAL DEFINITIONS

1.	Abattoirs	-	Slaughter houses
2.	Quasi Abattoirs		Refers to the unauthorised slaughter slab They cannot exactly be classified as abattoirs
3.	Slaughter House	-	Place where animals are killed for food.
4.	Slaughter Slab	-	Flat piece of solid space used for slaughter
5.	Accra Metropolitan Area	-	Accra itself, not including its suburbs - from Nungua to Chemu Lagoon on the coast.
6.	Metropolis	-	Chief city of a region or country, capital.
7.	Lairage	-	Accommodation For Animals Awaiting Slaughter
8.	Slaughter Hall	-	Large room for slaughter
9.	Dressing Hall		Large room/ Workroom. for dressing carcass
10.	Chill Rooms		A refrigerated room
11.	Carcass		Dead body of an animal
12.	By-Products		Parts of the carcass isolated during the preparation of meat
13.	Offals		Internal parts of an animal used as food
14.	Condemned Meat		Meat that is declared unfit for consumption
15.	Evisceration		Removal of internal organs
16.	Hide	-	Animal's skin, especially when bought and sold
17.	Hygiene		Study and practice of cleanliness as a way of maintaining good health and preventing disease.
18.	Hygienic Practices		Act of cleanliness.
19.	Hygienic Conditions		State of cleanliness
20.	Wete	-	Treated hide used as food.

Fig.1 Administrative Regions of Ghana.



Residential areas of Accra (1989)

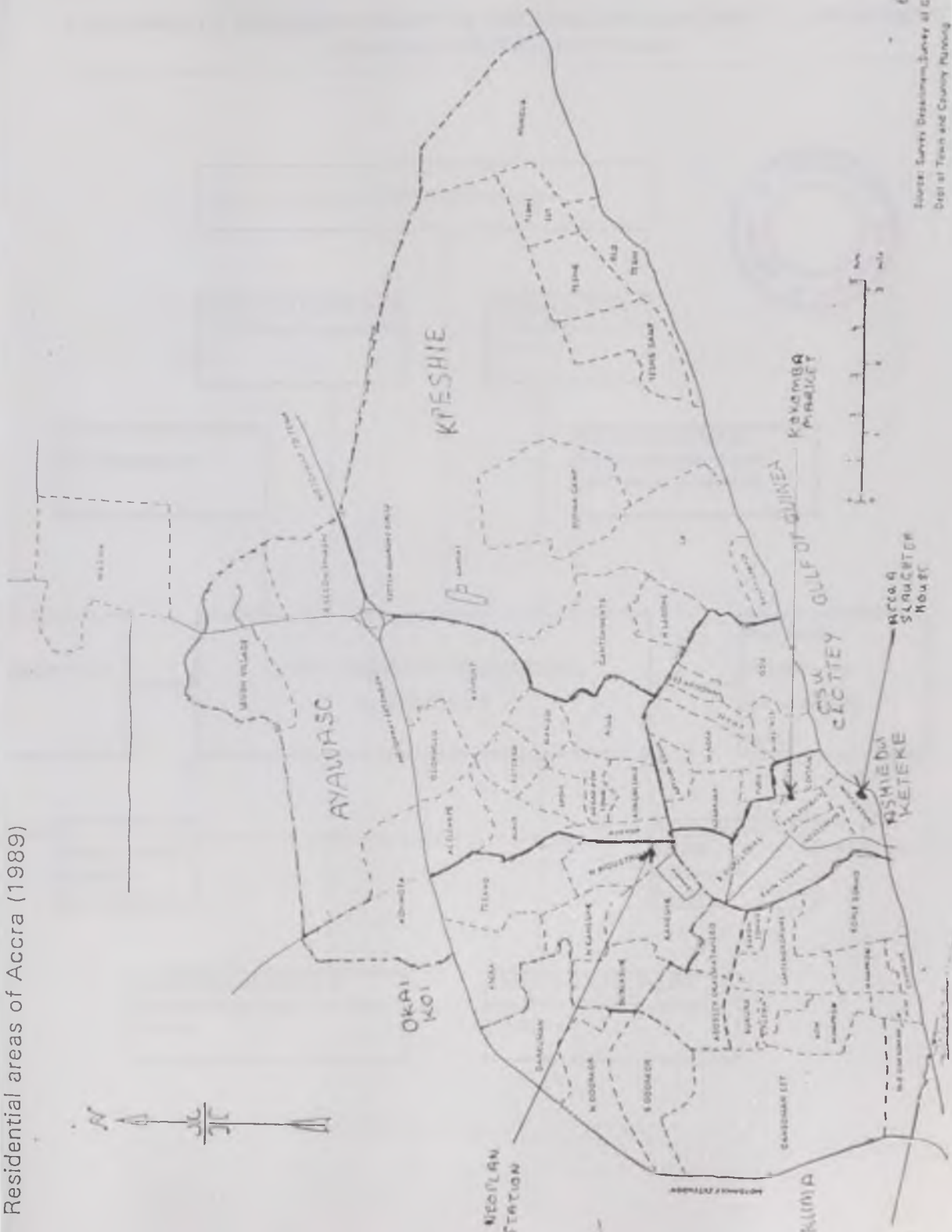
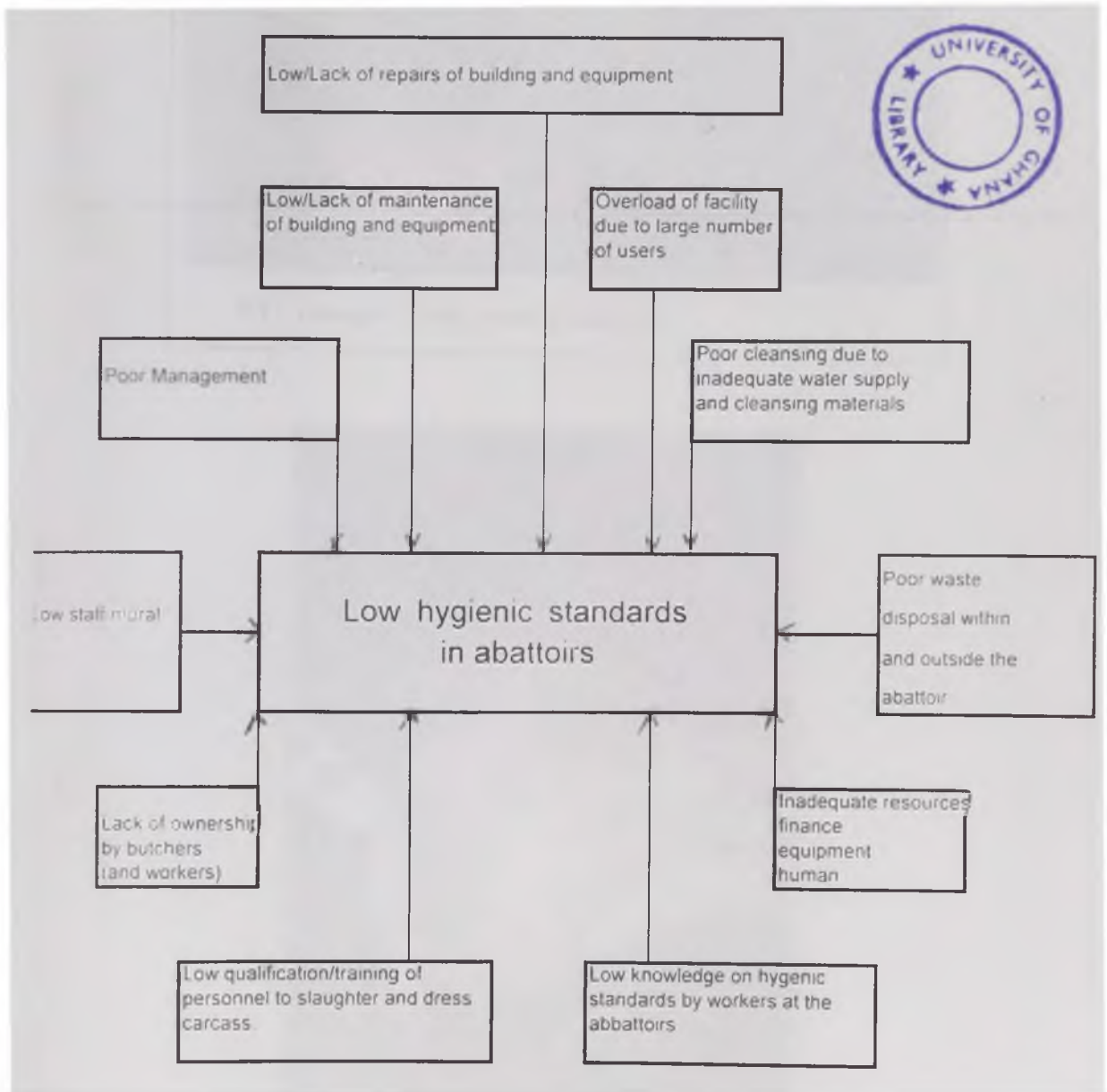


Fig. 3

FIG 3

A DIAGRAMATIC PRESENTATION OF THE FACTORS CONTRIBUTING TO LOW HYGIENIC STANDARDS WITHIN ABATTOIRS





A1 *Lairage - Cattle awaiting slaughter*



A2 *Cattle being slaughtered on the bare floor*



A3 *Cattle being slaughtered on the bare floor*



A4 *Cattle being skinned on the bare floor*



A5 *Carcasses hook on hanging rails ready for post-mortem inspection*



A6 *Waste from the stomach of the animals being emptied on the floor*



A7 *Singed Sheep being washed in a trough of water*



A8 *Washed sheep/goats being eviscerated on the bare floor*



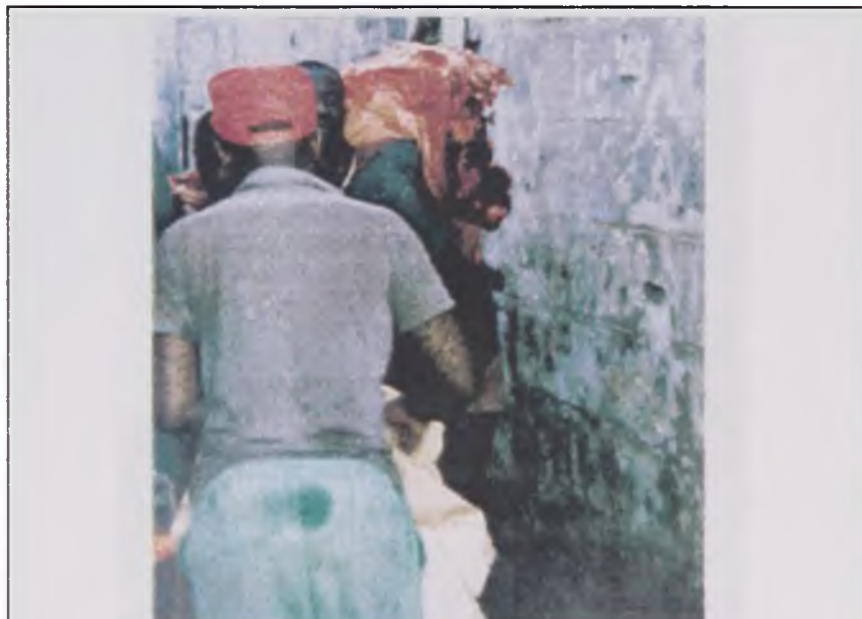
A9 *Post mortem inspection of sheep and goats*



A10 *Heads and hooves of cattle on the floor awaiting purchase*



A11 *A truck load of heads and hides being carted away for singeing*



A12 *Carcass being carried on the shoulder of a worker to a waiting vehicle*



A13 *The main effluent discharging into the sea*



A14 *The scalding tank for pigs*



A15 *Trough for storing water in the slaughter hall*



A16 *A work table in the slaughter hall*



B1 *Sheep being singed after slaughter on the bare ground close by*



B2 *Sheep being washed after singeing*







C3 *Carcasses being eviscerated on the floor after being washed*

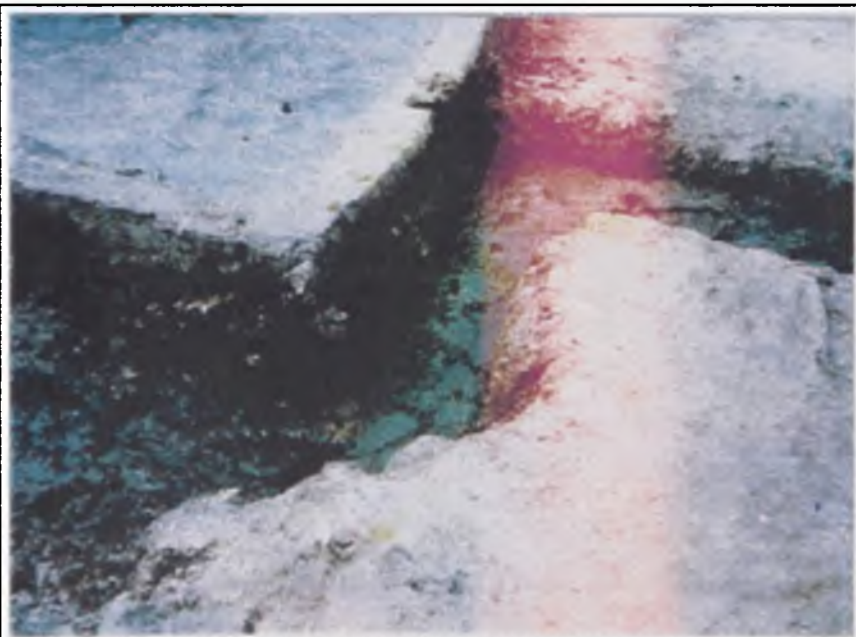


C4 *A container load of waste matter from evisceration*





D1 *Sheep/goats being washed and eviscerated at the slab*



D2 *Effluent from the slab emptying into a trench. It also carries waste from the stomach and intestines*



E1 A section of the "singeing industry"



E2 Another section of the "singeing industry showing the closeness of the refuse



E3 *Hooves from cattle awaiting singeing on the floor*



E4 *The kind of fires used for singeing*



E5 *Waste generated from burning rubber tyres used for singeing hide*

Annex 1

CHECKLIST FOR EVALUATION OF FACILITIES AND RESOURCES AT
ABATTOIRS

1. Date
2. Name of Abattoir
3. Location
4. Ownership
5. Respondent (Name, Rank)
6. Staff Strength

Rank	Number	Full time/Part time
Veterinary Officers		
Env. Health Officers		
Butchers		
Labourers		
Revenue Officers		
Others (specify)		

7. Water Supply
 - a) Availability Yes/No.....
 - b) Source
 - c) No of days of flow
 - d) Periods of flow in a day
 - e) Appearance of water Clear/Cloudy/Dirty

8) Electricity Supply:-

- a) Availability ----- Yes/No
- b) No of days of supply -----Days
- c) Periods of supply in a day -----

9) Lairage:-

- a) Type of Lairage: i) Tie-up, open pen
 ii) Pens with walls/ partitions
- b) Size/Capacity i) Up to 4 Cattle (iii) 8 - 12 Cattle
 ii) 5 - 7 Cattle (iv) Others(specify)
- c) Ventilation Adequate/ Inadequate
- d) Type of material for walls (state).....
- i) Impervious: Yes/No
- ii) Smooth: Yes/No
- iii) Easily Cleaned Yes/No
- e) Type of Material for floors (state).....
- i) Impervious Yes/No
- ii) Non-slip Yes/No
- iii) Easily Cleaned Yes/No
- f) Drainage
- i) Availability of gutters Yes/No
- ii) Sloping of Floor Yes/No

g) Accommodation for isolation of diseased animals:.

- i) Availability Yes/No
- ii) Type
- iii) Size
- iv) Ventilation Adequate/Inadequate
- v) Type of materials for walls (state)
- vi) Type of materials for floors (state)
- vii) Drainage

h) Resting/confinement period:-

- i) 12hrs ii) 12 24hrs iii) 24 48hrs
- v) 24hrs vi) Other

j) Provision of water for animals

- i) Availability Yes/No
- ii) Material for Trough Corrosive/Non corrosive
- iii) Contaminations Easy/Non Easily
- iv) Easily knocked over Yes/No
- v) Frequency of watering

k) Provision of food for animals

- i) Availability Yes/No
- ii) Material for Trough Corrosive/Non-Corrosive
- iii) Contamination Easy/Non Easy
- iv) Easily knocked over Yes/No

v) frequency of feeding

l) Provision for removal of manure

i) Availability Yes/No

ii) Container Type Corrosive/Non-Corrosive

m) Cleaning Equipment

Type of Equipment/Tool	Quantity

n) Provision of facility for ante-mortem examinations

i) Availability Yes/No

ii) Lightening Adequate/Inadequate

iii) Availability of records Yes/No

iv) Frequency Routinely/Randomly

10 Slaughter Hall and Dressing Areas

- a) Separate Provisions? Yes/No
- b) Type Number Open Air/Enclosed space
- c) Size/Capacity
- d) Ventilation Adequate/Inadequate
- f) Type of material for walls (state).....
- i) Impervious? Yes/No
- ii) Smooth Yes/No
- iii) Easily Cleaned Yes/No
- g) Type of material for floors (state).....
- i) Impervious Yes/No
- ii) Non-Slip Yes/No
- iii) Easily Cleaned Yes/No
- h) Drainage:
- i) Availability of gutters Yes/No
- ii) Siting Appropriate/inappropriate
- iii) Provision of traps for
solids Yes/No
- iv) Sloping of floor Yes/No
- j) Provision of working table/cutting board or blocks for dressing
- i) Availability Yes/No
- ii) Type of material(state)..... Corrosive/Non-Corrosive
..... Thoroughly/Not Thoroughly Clean

k) Equipment for hoisting animals:-

i) Availability Yes/No

ii) Type (state).....

i) Provision for collection of blood

i) Availability Yes/No

ii) Number

ii) Type of material (state).....

..... Corrosive/Non-Corrosive

..... Thoroughly/

Not Thoroughly Clean

..... Sterilisable/

Not Sterilisable

iii) Labelled? Yes/No

m) Provision for collection of waste

i) Number

ii) Type of Material (state)

..... Corrosive/Non-Corrosive

..... Thoroughly/

Not Thoroughly Clean

..... Sterilisable/

Not Sterilisable

iii) Labelled? Yes/No

- n) Provision of hot water scalding
- i) Availability Yes/No
 - ii) Means of heating
 - iii) Average Temperature
 - iv) Type of container (state)..... Corrosive/Non-Corrosive
 - v) Accessibility Easy/Not Easy
..... Safe/Not Safe to use
 - vi) Frequency of Changing Water
- o) Provision of equipment for Sterilisation:-
- i) Availability Yes/No
 - ii) Adequate Yes/No
 - iii) Frequency of Sterilisation
- p) Provision of facility for postmortem examination
- i) Availability Yes/No
 - ii) Lighting Adequate/Not Adequate
 - iii) Overhead Rails/Hooks Yes/No
 - iv) Frequency Routinely/Randomly
 - v) Availability of Records Yes/No
- q) Accommodation for slaughtering of diseased or suspected animals. Yes/No

r) Cleaning Equipment

Type of Equipment, Tools	Quantity
--------------------------	----------

s) Equipment/Tools for slaughtering/Dressing:-

Type	Quantity
------	----------

t) Provision for singing of parts

- i) Availability Yes/No
- ii) Siting In building, outside
building
- iii) Method
- iv) Source of fire

u) Store room/Chill room:-

- i) Availability Yes/No
- ii) Type
- iii) Number
- iv) Size/Capacity
- v) Ventilation Adequate/Inadequate
- vi) Temperature
- vii) Construction Material Corrosive/Non-Corrosive
..... Thoroughly/Not
Thoroughly Cleaned
- viii) Provision for storage of condemned meat Yes/No
- ix) Provision for storage of blood for human consumption
Yes/No
- x) Labelled ? Yes/No

- 11/ Laboratory:-
- a) Availability Yes/No
 - b) No of personnel
- 12/ Changing Rooms:-
- a) Availability Yes/No
- 13/ Laboratories:-
- a) Availability Yes/No
 - b) Siting
 - c) Showering Facilities Yes/No
 - d) Hand Towel Yes/No
 - e) Detergents Yes/No
 - f) Fingernail Brushes Yes/No
- 14/ Recreation Room:-
- a) Availability Yes/No
- 15/ Offices:-
- a) Availability Yes/No
- 16/ First Aid:-
- a) Availability Yes/No
 - b) Personnel (eg Industrial Health Officer) Yes/No

17/ Fire fighting equipment

- a) Availability Yes/No
- b) Siting
- c) Number

18/ Protective Clothing

Type	Number
Overall	
Apron	
Rubber Boots	
Rubber Cloves	
Head Cover	

19/ Sewerage/Disposal of waste

- a) Provision for by-product recovery Yes/No
- b) Provision for treatment of effluent Yes/No
- c) Provision for treatment of waste Yes/No

Annex 2
INTERVIEW GUIDE FOR MANAGEMENT OF AMA

1. Date
2. Respondent (Name, Rank)
3. Is AMA solely in charge of establishing abattoirs in Accra?
 Yes
 No
4. If yes, which unit in AMA is charged with the responsibility?
.....
.....
5. What are the terms of operation of the unit or its functions with respect to abattoirs
6. If no, what other institutions are associate?
7. How do these institutions collaborate with AMA in establishing abattoirs?
.....
.....
.....
8. What are the requirements for establishing abattoirs in Accra?
[i.e. Siting, Registration, Certification,] Staffing, Training, Assessment,
Supervision, Monitoring, Funding, code of ethics etc]
.....
.....
.....

9. Are there regulations or by laws governing the establishing and operations of abattoirs?
 Yes [ask for copies]
 No
10. Once the abattoirs are established, do they receive any kind of financial or logistic support from AMA?
 Yes
.....
 No.....
.....
11. Are they supervised or monitored or accessed by AMA?
 Yes
.....
 No
.....
12. Does AMA, have control over the recruiting, training and assessment of staff at the abattoirs?
 Yes
.....
 No
.....
13. Does AMA collaborate with other institutions in the operations of abattoirs? [eg WMD, Veterinary Services, MOH, IRS]
 Yes (list which).....
.....
 No.....

14. If yes, in what ways do they contribute;

.....

.....

.....

.....

15. Is the AMA aware of the existence of quasi abattoirs?

Yes

No

16. Are their numbers or locations known to AMA?

Yes

No

17. Are there regulations or by laws that control their establishment or operations?

Yes [ask for copies]

No.

18. How does AMA supervise or monitor the activities of the quasi abattoirs?
[staffing, slaughtering, dressing, transporting, examinations, waste management, etc:

.....

.....

.....

19. How does AMA ensure that meat from these place are wholesome?

.....

.....

20. What plans does AMA have to collaborate with the quasi abattoirs to ensure meat safety

Annex 3

INTERVIEW GUIDE FOR MANAGERS OF ABATTOIRS

1. Date
2. Name of Abattoirs
3. Location
4. Respondent (Name, Rank)
5. Who heads the abattoir?
6. What is the organisational structure that exists in the abattoir?
.....
[Request for copy]
7. Does each worker have a job description?
 Yes [Request for copies]
 No
8. If yes are the job descriptions known to the workers?
 Yes
 No
9. If no, state reasons
.....
10. How do the workers operate carry out their duties?
.....
11. Do you plan to provide them with job descriptions?
 Yes
 No
12. If yes, how soon?
.....

13. If no, state reasons.

.....

.....

14. What range of services are provided at the abattoir?

SERVICES	BY(Type of staff)

15. Which of the services overlap?

.....

16. How do these services overlap?

.....

17. What kind of solution is provided for the overlap?

.....

18. What kind of services are lacking?

.....

Lairage

19. What class of animals are slaughtered?

TYPE	NUMBER
Horse	
Cattle	
Sheep	
Goat	
Pig	
Others [Specify]	

20. What are the sources of the animals?
- Organised farms
 - Individual rearing
 - Middle men
 - Others [specify]
21. Is antemortem inspection carried out?
- Yes
 - No
22. If yes at what stage is animal inspection carried out?
-
23. How frequent is it done.?
- Every Month
 - Samples
 - Others [specify]
24. Who carries out animal inspection?
- Veterinary Officers
 - Environmental Health officers
 - Others [specify]
25. What procedures are followed during inspection? (process to look out for then what?)
-
-
-
26. Are records available on animal inspection?
- Yes [request evidence]
 - No.
27. How are the records kept?
-
28. How /What are the records use?
-

29. What kinds of diseases are usually identified if any?
.....
30. What happens to diseased or suspected animals?
.....
31. Are animals in confinement provided with water?
- Yes
- No
32. How often are they watered?
- At all times
- Other [specify]
33. How are the water troughs placed? [for comfort to avoid being fouled]
.....
34. Are the animals provided with food?
- Yes
- No.
35. If yes, how often are they fed?
- Twice daily
- Once daily
- Others [specify]
36. With what are they fed?
.....
37. How long are the animals kept in confinement?
- 12 24hrs
- 24 48hrs
- Other [specify]

38. How is manure from the lair collected?
.....
39. How is the lair cleaned?
.....
.....
40. How frequent is the lair cleaned?
.....
41. How are the animals watered and the lair cleaned when there is no supply of water from the taps?
.....
.....
42. When an animal falls ill during confinement, what is the procedure followed? (isolated treated)
.....

Slaughter Halls

43. When an animal is brought in pregnant, do you still slaughter it?
 Yes
 No
44. Are the animals stunned before slaughter?
 Yes
 No
45. If yes how are they stunned?
 Mechanical
- Electrical
- Anaesthetization by CO₂

46. Are the animals allowed to view the slaughtering of others?

Yes

No

47. Can you describe the process or methods of slaughtering (after stunning) being use, (sticking, slashing, tools, place, bleeding)

.....

48. Is the blood allowed to flow freely into gullies?

Yes

No.

49. If yes, how is blood prevented from dogging the drains

.....

50. If no, how is the blood collected? [the process containers labelling]

.....

51. Where is the animal dressed [skinning evisceration]

On the floor

On benches/cables

Other [specify]

52. How is the skin removed?

Activity	By (method, process)
<input type="checkbox"/> Mechanical skinning — separation	
<input type="checkbox"/> Scalding [how is hot water provided]	

Singeing

53. How is the carcass eviscerated?

Mechanically

Others [specify]

54. During the emptying of stomach and intestines how are the contents disposed of?

.....

55. How are the stomach and intestines washed?

.....

56. What procedure is followed for the disposed of other solid waste in the slaughter halls?

57. What procedure is followed for the identification of offal parts with carcass?

.....

58. How is the carcass washed?

.....

59. How are carcass lifted within the abattoirs?

.....

60. How is meat transported about within the abattoir?

.....

61. Is postmortem inspection carried out?

Yes

No

62. If yes at what stage is meat inspection carried out?

.....

63. How frequent is it done?

- Every animal
- Samples
- Other [specify]

64. Which parts are subjected to meat inspection?

.....

.....

65. What procedures are followed during inspection? (process, what to look out for)

.....

.....

66. Who carried out meat inspection?

- Veterinary Officers
- Environmental Health Officer
- Others [specify]

67. How is in certified? (stage, what with , by whom, coordination with inspection)

.....

.....

68. Are records available on animal inspection?

- Yes (Request evidence).....
- No

69. How are the records kept?

.....

70. What are the records used for?

.....

71. What kinds of diseases are usually identified, if any?

.....

72. What happens to contaminated meat?

73. How are the slaughter halls cleaned?

.....

74. How frequent are the halls cleaned?

.....

75. How are the halls cleaned when there is no supply of water from the taps?

.....

.....

76. Are any of the equipment sterilised?

Yes

No

77. If yes, which of them?

.....

.....

78. By what means are they sterilised?

.....

.....

79. If no, how else is ensured?

.....

Chill rooms/ Storage

80. What type of meat are stored in the chill rooms?

.....
81. Are these labelled or identifiable?

- Yes (how)

No

82. Is condemned meat stored in the same place?

Yes

No

83. If no, what other provision is available?

.....

84. Are these locked away?

Yes

No

85. How long do they stay there?

.....

86. What happens to the meat from there? (Describe disposal method)

.....

87. How are the chill rooms cleaned?

.....

88. How frequent are they cleaned?

.....

Laboratory

89. What Kinds of samples are sent to the Laboratory?

.....

90. What kind of tests/investigations are carried out there?
.....
91. Are there records on findings?
 Yes [request evidence]
 No
92. What are findings used for?
.....
93. What procedure is used for the disposal of solid waste and condemned meat form the abattoir?
.....
.....
.....
.....
94. How frequent is the disposal?
 Once a day
 As and when the need arises
 Other [specify]
95. Who supervises disposal?
96. Are animals pre treated before disposal?
 Yes
 No
97. If yes, how is pre-treatment carried out?
.....

98. Are the disposal sites monitored?

- Yes
 No

99. If yes, how is monitoring done?

.....

100. Who does the monitoring?

.....

101. How often is monitoring done?

.....

102. Are records kept of monitoring?

- Yes (Request evidence)
 No

103. How is the effluent from the abattoirs discharged?

.....

104. Where does it discharge to?

105. Is it pre-treated before discharged

- Yes
 No

106. If yes, how is pre-treatment carried out

.....

.....

107. What stage is pre-treatment carried out

.....

108. Where is pre-treatment carried out?

.....

109. If no, is monitoring of the discharge point carried out?

Yes

No

110. How is monitoring done?

.....

111. Who does the monitoring?

.....

112. How often is monitoring done?

.....

113. Are records kept of monitoring?

Yes [request evidence]

No.

114. Are rodents in existence at the abattoirs?

Yes

No

115. What other animals come to feed on wastes, etc at the abattoir?

.....

.....

116. How are these animals controlled?

.....

.....

117. How is meat packaged for dispatch from the abattoirs?

.....

118. How is meat transported out of the abattoir?

.....

Singeing

119. Where is singeing of animals and other parts carried out?

.....

120. What sources of fire are used?

.....

121. What are the processes carried out?

.....

122. How are singed animals washed?

.....

123. Where are singed animals dressed?

.....

124. How are they eviscerated?

.....

125. How are the contents disposed of?

.....

126. How are the stomach and intestines washed?

.....

127. How are the parts identified with the carcass?

.....

128. Is post-mortem carried out on them?

Yes

No

129. (If yes,) who carries out the post-mortem?

.....

130. Where is it carried out?

.....

131. Do they follow the same procedure as in 64 -72?

Yes

No

132. (If no,) what are the differences?

.....

.....

Personnel

133. Who recruits workers?

.....

134. What qualifications are required?

135. Are employers screened for diseases before appointment?

Yes

No

136. Is there periodic check for diseases during.

Yes

No

137. If yes, how often are they checked? [Request evidence]

.....

138. What kind of diseases are checked?

.....

139. Who carries out the check-up?

.....

140. What happen when someone falls sick?

.....

141. What happens when someone is injured on the job?

.....

142. What type of injuries are experienced?

.....

143. Are workers provided with protective clothing?

Yes

No [reasons]

144. What type of clothing? [list]

.....

.....

145. Are the clothing used by employees?

Yes

No [reasons]

146. What is the source of salaries for employees?

.....

147. In which income bracket are abattoir staff placed? (Low, medium, high)

.....

148. Does the abattoir derive any other revenue?

Yes

No

149. If yes, from what source?

.....

150. What is the revenue used for?

.....

151. Who takes responsibility for supply of equipment and other logistics?

.....

152. Who takes responsibility for repairs of equipment and infrastructure?

.....

153. Who takes responsibility for maintenance of equipment and infrastructure?

.....

154. How frequent are maintenance activities carried out?

.....

155. How are maintenance and repairs funded?

.....

156. Who takes responsibility for payment of rates and other bills?
[electricity, water, etc.]

.....

157. How does the AMA coordinate activities of the established abattoirs?
[supervision]

.....

.....

.....

158. What linkage on communications does the abattoir have with the farms or sources of animals for slaughter? Explain.

.....

.....

159. Do personnel from abattoirs follow meat up in the markets by way of monitoring?

Yes

No

160. If yes, what is the procedure?

.....

161. If no, who monitors the meat in the market?

.....

162. Specifically, is there a problem of job distinctions?

Yes

No

163. If yes, what attempt has been made to solve the problem?

.....

164. What other problems exist in the abattoirs?

.....

.....

.....

165. Can you suggest ways of solving the problem?

**QUESTIONNAIRE ON KNOWLEDGE AND MORALE OF
WORKERS AT ABATTOIRS**

INTERVIEWER: Good day! My name is..... I am part of a team carrying out a study on the state of slaughter houses and the working conditions of the workers at these places. The study will help to suggest ways of improving slaughter house facilities. I would like to ask you a few questions that would aid this study.

[Settle down. Ask questions and fill in the form yourself. Where there are boxes, tick the respondent's answer. Where there are spaces, fill in the words of the respondent. Make a note and continue on back sheet if necessary]

SECTION 1

1. Date
2. Sub district
3. Name of abattoir
4. Name of Respondent
5. Rank of Respondent
6. Age 7. Sex: Male Female.
 Never married. Married. Co-habitated.
 Separated. Divorced. Widowed.
9. No of children
10. Religion:
 Christian Moslem Other (specify).....
11. Date of first employment at abattoir.....
12. Total No. of years worked at abattoir

SECTION 2

Highest level of education attained:

- None Primary Middle
- Secondary Tertiary

14. Training obtained for job at abattoir:

- None On the job Formal, certified
- Other (specify)

15. Have you received further education / training since employment?

- Yes No

16. (If yes) Give the name of the training / course, the content, duration and the place of study.

.....

.....

.....

.....

17. How relevant / applicable has the course been to your present job? Explain.

.....

.....

.....

18. How has the course affected your work output? Explain.

.....

.....

.....

SECTION 3

19. In your opinion, what should be the ideal, practices at abattoirs? List them. (Tick those of the following that respondent includes in his response).

- a/ Inspection of animals before slaughter.
- b/ Inspection of meat after slaughter
- d/ Thorough cleansing of walls and floors
- c/ Effective drainage system
- d/ Thorough cleansing of drains
- e/ Proper collection of wastes
- f/ Proper disposal of all kinds of wastes
- g/ Proper disposal of condemned meat, especially
- h/ Sufficient washing of carcass and offals
- i/ Good supply of water
- j/ Good lighting system in the halls
- k/ Avoidance of insects and other animals around the carcass.
- l/ Avoidance of contamination of any form.
- m/ The use of protective clothing
- n/ Provision of lavatory facilities
- o/ Washing of hands and practices of other personal hygiene
- p/ Others
-

20. Which one of the words below is the most important and best completes this sentence:- “The general rule at abattoirs is that all operations may be carried out under conditions”

Spacious

Cool

Clean

21. Do you know why the above practices are ideal at abattoirs? You can give me the rationale by providing short reasons for the following practices at abattoirs. (The answers must reflect hygienic implications.

Tick box if respondent knows the rationale Put a cross if respondent does not know)

a/ Lairaging of animals for a period

.....

b/ Placing water troughs in front of animals.

.....

c/ Not feeding animals that are ready for slaughter []

.....

d/ Animals inspection prior to slaughter []

.....

e/ Carcass inspection after slaughter []

.....

f/ Isolation of suspected animals or meat. []

.....

g/ Identification of offal parts and blood with carcass. []

.....

h/ Collection of blood and solids in containers for disposal []

.....

I/ Use of protective clothing []

.....

j/ No smoking within abattoir []

.....

k/ No eating within abattoir []

.....

l/ No spitting around abattoir []

.....

m/ Washing hands after use of lavatory []

.....

n/ Keeping finger nails short []

.....

o/ Keeping sores covered []

.....

p/ Sloping floors of lairage and slaughter halls []

.....

q/ Providing smooth walls at lair and slaughter halls []

.....

r/ Sterilization of equipment / tools []

.....

s/ Treatment of effluent before discharge []

.....

t/ Proper disposal of all wastes []

.....

u/ Thorough cleaning of floors and walls []

.....

v/ Provision of large quantities of, wholesome water []

.....

SECTION 4

22. Did you have to undergo medical tests prior to employment?

[] Yes [] No

23. (If yes) what kind of medical tests did you have to take?

List:

.....

24. Have you had any further checks since employment?

Yes No.

25. (If yes) how often have you had the checks?

Routinely (state)

Randomly (state)

Others (specify)

26. Do you think such - medical check ups are relevant?

Yes No

Explain

27. Do you think there are some diseases that workers of abattoir should not go to the work place with? Yes No

28. What kind of diseases are they?

List

.....

.....

.....

None

Don't know.

29. Do you find your duties at the abattoir satisfying ?

Yes No

Explain

.....

30. How long do you plan to stay further on the job?
- Not yet planned
- Soon (between 0 - 2 years)
- More than 2 years
- Other (specify)
31. (If soon) what are your reasons?
- Pension
- Retirement
- New job elsewhere
- Other (specify)
32. Do you need or desire further training?
- Yes No
33. (If yes) what kind of training?
-
34. What do you need / desire it for?
-
35. Are there such opportunities available to workers here?
-
36. If yes) why have you made use of the opportunity?
-
37. (If no) what do you think should be done to put in place such an opportunity?
-
-

38. Are promotion opportunities available to you?
- Yes No
- Explain
-
39. What is the criteria used for promotion?
- Qualification Experience
- Number of years worked
40. If promotion opportunities are available, how often have you been promoted since employment?
- Nil Once
- Other (specify)
41. How do you view your earning?
- Low Normal Good
42. Will that be a factor to leave the job?
- Yes No
- Explain ?
-
43. Are there other benefits available to you?
- Yes No
- List
44. If Yes, do these provide adequate incentives to you?
- Yes No
- Explain
-

45. Are there risks involved in the job?
 Yes No
46. (If yes) What kind of risks are you exposed to ?
Describe them
47. Do these risks pose threats to your job security?
 Yes No
Explain
48. What has been put in place to reduce the risks?
 Nothing Other (specify)
49. What do you do to help reduce these risks?
 Nothing Other (specify)
50. How do you relate to those above you?
 Not so well
 Averagely
 Very well
Other (specify)
51. How do your subordinates relate to you?
 Not so well
 Averagely
 Very well
 Other (specify)

52. How do you relate with your colleagues?

Not so well

Averagely

Very well

Other (specify)

Thank you for your attention.