

DRAFT UGANDA STANDARD

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Design and operation of abattoirs and slaughterhouses — Requirements



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PUBLIC REVIEW DRAFT

Foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to coordinate the elaboration of standards and is

- (a) a member of International Organisation for Standardisation (ISO) and
- (b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and
- (c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of key stakeholders including government, academia, consumer groups, private sector and other interested parties.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

The committee responsible for this document is Technical Committee UNBS/TC 2, Food and Agriculture, Subcommittee SC 12, Meat, poultry and processed product

This second edition cancels and replaces the first edition (US 734:2007), which has been technically revised.

Introduction

All animals, wherever they have been reared, should be managed to ensure that their transport, lairaging, restraint and slaughter is carried out without causing undue stress to the animals. This standard addresses the need to ensure the welfare of food animals during pre-slaughter and slaughter processes, until they are dead.

Abattoirs may be one of the most stressful places that an animal stays in and can cause a number of behavioural changes in the animals thus leading to physiological and biochemical changes in the meat quality intended for human consumption.

The main issues addressed by this standard are: general principles for slaughter, as related to personnel, animal behaviour, and the removal of distractions which can cause animals to stop or turn back; moving and handling animals following their arrival at the slaughterhouse; lairage design and construction; care of animals in lairages; and animal welfare issues associated with acceptable handling, restraining, stunning and slaughter methods applicable to various relevant species.

The standard acknowledges the significance of religious requirements as well as the cultural and ethnic factors associated with slaughter, and appropriate proposals are considered. Important but less frequently occurring issues such as the management of fetuses during the slaughter of pregnant animals are also included in this standard.

Design and operation of abattoirs and slaughterhouses — Requirements

1 Scope

This Draft Uganda Standard specifies the requirements applying to domestic animals commonly slaughtered in slaughterhouses, that is, cattle, buffalo, sheep, goats, deer, horses, pigs, ratites, camelids and poultry.

2 Normative references

The following referenced documents referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

US CAC/RCP 58, Code of hygienic practice for meat

DUS 733, Handling and transportation of slaughter animals — Requirements

DUS 736, Hygienic requirements for butcheries

DUS 737, Production of packaged meat products (processed) —Hygienic requirements

US EAS 12, Potable water — Specification

US 1662, Waste management — Requirements

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

abattoir, slaughterhouse

any establishment where specified animals are slaughtered and dressed for human consumption and that is approved, registered and/or listed by the competent authority

3.2

death

cessation of the vital functions of an animal characterized by irreversible loss of brain activity as demonstrated by loss of brain stem reflexes

3.3

halal slaughter

slaughter of a religiously acceptable species, by a trained Muslim slaughter-man, with or without prior stunning, by cutting the neck in order to sever the jugular veins and carotid arteries, oesophagus and trachea, without severing the spinal cord, while the animal is alive

3.4

jhatka slaughter

slaughter of an acceptable species by decapitation according to the Sikh religion

3.5

killing

any procedure which causes the death of an animal

3.6

kosher slaughter

slaughter, of a religiously acceptable species, by a trained and accredited Jewish slaughter man, by cutting the neck in order to sever the jugular veins and carotid arteries, oesophagus and trachea of a conscious animal, without severing the spinal cord

3.7

lairage

pens, yards and other holding areas used for accommodating animals in order to give them necessary attention (including water, fodder, rest) before they are moved on, used for specific purposes, or slaughtered

3.8

restraint

the application to an animal of any procedure designed to restrict its movements in order to facilitate effective management

3.9

slaughter

any procedure which causes the death of an animal by bleeding with minimum pain

3.10

stunning

any approved mechanical, electrical, chemical or other procedure which causes immediate loss of consciousness which lasts until either the animal is killed or it recovers

4 General principles of humane slaughter

The general principles of humane slaughter shall ensure:

- a) freedom from hunger and thirst, by ready access to fresh water and a diet to maintain full health and vigour;
- b) freedom from discomfort, by providing an appropriate environment including shelter and a comfortable resting area;
- c) freedom from pain, injury and disease, by prevention or rapid diagnosis and treatment;
- d) freedom to express normal behaviour, by providing sufficient space, proper facilities and company of the animal's own kind;
- e) freedom from fear and distress, by ensuring conditions and treatment which avoid mental suffering

5 Presentation of animals for slaughter

5.1 Conditions for slaughter

5.1.1 Animals intended for slaughter shall not be kept for a longer period than 48 hours in or around a slaughter house unless specifically needed for purposes of police cases or when there are no meat buyers.

5.1.2 Animal found by a competent person in a state unfit to be slaughtered for the purpose of selling its meat for human food, or in a diseased condition shall not be slaughtered for the purpose of selling its meat for human food.

5.1.3 The following categories of animals shall not be slaughtered for the purpose of providing meat for human consumption:

- a) a calf less than three weeks old,
- b) a lamb less than eight weeks old,
- c) a piglet less than five weeks old, or
- d) an emaciated or wasted animal.

5.2 Transportation for slaughter

Animals for slaughter shall be transported in accordance with US 733.

5.3 Arrival at slaughter house

- a) Animals shall be unloaded immediately after a vehicle arrives at a slaughterhouse in order to avoid a build-up of heat and humidity that may compromise their wellbeing.
- b) Slaughterhouse operators shall implement efficient scheduling procedures so that animals do not have to wait to be unloaded.
- c) Animals shall be inspected by a competent person at offloading for signs of disease, injury and poor welfare.
- d) Following the offloading of animals, the vehicle shall be immediately cleaned and disinfected prior to leaving the slaughterhouse.
- e) Mammals and ratites which are not taken directly upon arrival to the place of slaughter shall have drinking water available to them from appropriate facilities at all times.
- f) Delivery of poultry for slaughter shall be scheduled such that they are not deprived of water at the slaughterhouse/abattoir premises for longer than 12 h.
- g) Animals that have not been slaughtered within 12 h of their arrival shall be fed, and shall subsequently be given moderate amounts of food at appropriate intervals.

5.4 Moving and handling animals

- a) The use of force on animals that have little or no room to move shall not occur
- b) Instruments that administer electric shocks (for example, goads and prods) to assist the movement of animals shall only be used when absolutely necessary. If such use is necessary, it shall be limited to the hindquarters of pigs and large ruminants, and never on sensitive areas such as the eyes, mouth, ears, anogenital region or belly. Such instruments shall not be used on horses, sheep and goats of any age, or on calves or piglets, nor on animals that have little or no room to move.
- c) Acceptable aids for moving animals shall include panels, flags, plastic paddles, flappers (a length of cane with a short strap of leather or canvas attached), plastic bags and metallic rattles shall be used in a manner sufficient to encourage and direct movement of the animals but without physical contact with them.

- d) Shouting or yelling at animals to encourage them to move shall not occur as such actions may make the animals agitated, leading to crowding or falling.
- e) Implements that cause pain and suffering such as sticks, metal piping, fencing wire or heavy leather belts shall not be used to move animals.
- f) Animals shall be grasped or lifted in a manner which avoids pain or suffering and physical damage (for example, bruising, fractures, dislocations). In the case of quadrupeds, manual lifting by a person shall only be used with young animals or small species, and in a manner appropriate to the species; grasping or lifting such animals only by their wool, hair, feet, neck, ears or tails causes pain and suffering and not be used, except in an emergency where animal welfare or human safety may otherwise be compromised.
- g) Conscious animals shall not be thrown or dragged.
- h) Animals shall not be forced to move at a speed greater than their normal walking pace, in order to minimize injury through falling or slipping.
- i) Animal handlers shall not force an animal to walk over the top of other animals.
- j) Under no circumstances should animal handlers resort to violent acts to move animals, such as crushing or breaking animals' tails, grasping animals' eyes or pulling them by their ears.
- k) Animal handlers shall never apply an injurious object or irritant substance to sensitive areas such as eyes, mouth, ears, the anogenital region or the belly.

5.5 Handling sick, injured and/or suspect animals

- a) Injured animals requiring immediate slaughter shall be attended to immediately in line with procedures of emergency slaughter, disposal and/or treatment.
- b) Sick animals shall be attended to appropriately in line with established procedures
- c) Isolation pens, procedures for casualty animals and emergency slaughter shall be provided for sick, injured and/or suspect animals.
- d) Every slaughterhouse shall have available an appropriate number of isolation pens situated near the unloading point where casualty or suspect animals can be held.
- e) The slaughterhouse operator shall ensure that procedures for emergency slaughter, and the telephone number of an out of hours duty slaughter-person and other emergency contacts, are clearly displayed at the unloading point so that any animal in obvious pain or distress on arrival at the slaughterhouse can be slaughtered or killed immediately.

5.6 Provisions relevant to restraining and containing animals

5.6.1 The following provisions relevant to restraining animals for stunning or slaughter without stunning, to help maintain animal welfare shall be implemented:

- a) provision of a non-slip floor;
- b) ensuring that the restraining equipment does not exert excessive pressure, thus causing the animal to struggle or vocalize;
- c) engineering equipment to reduce the noise of hissing air and clanging metal;
- d) restraining equipment shall have no sharp edges that would harm animals;

- e) restraining devices shall be used appropriately to avoid jerking and making other sudden movements and.
- f) all provisions shall conform to approved standards of construction and restraint.

5.6.2 Methods of restraint causing avoidable suffering, such as the following, shall not be used with conscious animals because they cause severe pain and stress:

- a) suspending or hoisting large animals (other than poultry) by the feet or legs;
- b) indiscriminate and inappropriate use of stunning equipment;
- c) mechanical clamping of an animal's legs or feet (other than shackles used for poultry and ostriches) as the sole method of restraint;
- d) breaking legs, cutting leg tendons or blinding animals in order to immobilise them;
- e) immobilising animals by severing the spinal cord, for example, by using a dagger such as a 'puntilla'; and
- f) using electric currents to immobilise animals, except for proper stunning.

5.7 Welfare of animals at slaughter and killing

5.7.1 Principles of animal welfare

When specifically addressing the welfare of animals at slaughter and killing, the basic principles that shall be observed are:

- a) pre-slaughter handling facilities which minimise stress;
- b) use of competent well trained, caring personnel;
- c) appropriate equipment which is fit for the purpose;
- d) an effective process which induces immediate unconsciousness and insensibility;
- e) an induction to a period of unconsciousness without distress; and
- f) guarantee of non-recovery from that process until death ensues.

5.7.2 Personnel

Personnel engaged in the unloading, moving, lairaging, care, restraining, stunning, slaughter and bleeding of animals play an important role in the welfare of those animals;

- a) there shall be a sufficient number of personnel, who shall be patient, considerate, competent and familiar with the guidelines in this document and their application within the national context.
- b) at every premise, there shall be a member of staff who has been trained in animal welfare and who is responsible for safeguarding animal welfare.
- c) the management of the slaughterhouse and the Veterinary Services shall ensure that slaughterhouse staff perform their tasks in accordance with the principles of animal welfare.
- d) personnel engaged in the slaughter of animals shall be medically fit, with good personal hygiene, trained and provided with appropriate protective gear.

- e) only approved personnel shall be allowed access to the slaughterhouse/abattoir.

5.7.3 Animal behaviour

Animal handlers shall understand the behavioural patterns of animals and the underlying principles of good animal handling.

- a) animals that are likely to be hostile to each other in a group situation shall not be mixed at slaughterhouses.
- b) the desire of some animals to control their individual space shall be taken into account in designing facilities.
- c) animal handlers shall avoid sudden penetration of the flight zone as this may cause a panic reaction which could lead to aggressive behaviour or attempted escape.
- d) animal handlers shall use the point of balance at an animal's shoulder to move animals, adopting a position behind the point of balance to move an animal forward and in front of the point of balance to move it backward.
- e) Constant loud noise and sudden noises shall be avoided as they may cause animals to panic.

Note: The behaviour of individual animals or groups of animals will vary, depending on their breed, sex, temperament and age and the way in which they have been reared and handled. Despite these differences, the following behaviour patterns, which are always present to some degree in domestic animals, shall be taken into consideration in handling and moving animals

5.7.4 Stunning, hoisting and bleeding

5.7.4.1 General requirements

Persons carrying out stunning shall be properly trained and competent, and shall ensure that:

- a) the animal is adequately restrained;
- b) animals in restraints are stunned as soon as possible;
- c) the equipment used for stunning shall be maintained and operated properly in accordance with the manufacturer's recommendations, in particular with regard to the species and size of the animal;
- d) the instrument shall be applied correctly;
- e) stunned animals shall be bled out (slaughtered) immediately;
- f) animals shall not be stunned when slaughter is likely to be delayed;
- g) when an animal is not properly stunned, a back-up procedure shall be used immediately; and
- h) animals that are not yet stunned shall not be able to see the ones being stunned.

5.7.4.2 Other requirements

- a) the operational parameters for stunning shall be displayed on the stunning apparatus or in the stunning area.
- b) equipment shall be provided to shackle and hoist stunned animals into position, for bleeding.

- c) facilities for collecting and storing of blood in closed containers prior to removal and disposal shall be provided

For restraining all species immediately prior to stunning shall be provided with;

1. a stunning box, approved by the national executive officer, to restrain cattle and horses, and
2. a restraining pen of 2 m x 2 m or if larger, provided with separation gates, for sheep, goats and pigs.

For stunning of animals, there shall be provided

1. a captive bolt stunner,
2. an electrical stunning apparatus, or
3. any other stunning apparatus approved by the competent authority.

5.7.4.3 Stunning methods

Stunning of animals shall be done using any one of the methods below.

- a) mechanical device shall be applied, usually to the front of the head and perpendicular to the bone surface.
- b) B) electrical stunning shall be by direct contact where an electrical device is be applied to the animal or using a water bath.
- c) gas stunning for pigs and poultry through exposure to an appropriate concentration of carbon dioxide shall be done following these below;
 - the chamber in which animals are exposed to carbon dioxide or inert gas and the equipment used for conveying them through it shall be designed, constructed and maintained in such a way as to avoid injury or unnecessary stress to the animals.
 - the animal density within the chamber shall be such that it is unnecessary to stack animals on top of each other.

5.7.4.4 Bleeding

- a) all animals shall be bled by incising both carotid arteries, or the vessels from which they arise. When the stunning method used causes cardiac arrest, the incision of all of these vessels is not necessary.
- b) abattoir staff shall observe, inspect and access the animals throughout the bleeding period. Any animal showing signs of recovering consciousness shall be re-stunned.
- c) after incision of the blood vessels, no scalding carcass treatment or dressing procedures shall be performed on the animals for at least 30 s, and definitely not before all brain-stem reflexes have ceased.

5.7.5 Management of fetuses during the slaughter of pregnant animals

5.7.5.1 Foetal welfare

The welfare of fetuses during the slaughter of pregnant animals shall be safeguarded by the following actions;

- a) The foetus shall be unconscious before being removed from the uterus; not more than 5 min after the maternal neck or chest cut

- b) If a live mature foetus is removed from the uterus, it shall be prevented from inflating its lungs and breathing air (for example, by clamping the trachea)
- c) When uterine, placental or foetal tissues, including foetal blood, are not to be collected as part of the post slaughter processing of pregnant animals, all fetuses shall be left inside the unopened uterus until they are dead.
- d) When uterine, placental or foetal tissues are to be collected, where practical, fetuses shall not be removed from the uterus until at least 15 min to 20 min after the maternal neck or chest cut
- e) If there is any doubt about consciousness, the foetus shall be killed with a captive bolt or a blow to the head with a suitable blunt instrument.

Note 1: A foetal heartbeat will usually still be present and foetal movements may occur at this stage, but these are only a cause for concern if the exposed foetus successfully breathes air.

Note 2: The above guidelines do not refer to foetal rescue. The practice of attempting to revive fetuses found alive at evisceration of the dam may not be attempted during normal commercial slaughter as it may lead to serious welfare complications in the new-born animal.

6 Establishment design and construction

6.1 General

Premises shall be of such design, construction and finish and shall be so equipped, in such condition and so located that they can be used at all times for the purpose for which they were designed, equipped and appointed:

- a) without creating a health hazard; and
- b) in such a manner that meat;
 - can be handled hygienically on these premises or with equipment on the premises; and
 - can be protected by the best available method against contamination or spoilage by poisons, offensive gasses, vapours, odours, smoke, soot deposits, dust, moisture, insects or other vectors or by other physical, chemical or biological contamination or pollution.

6.2 Premises

- a) all areas on the premises shall be rendered dust and mud free.
- b) provision shall be made for storm water drainage.
- c) the abattoir shall be equipped with an enclosed drainage system for the disposal of effluent and sewerage.
- d) truck loading and offloading areas for dispatching and receiving of meat shall be curbed, paved, drained and roofed.

6.3 Requirements for lairages

6.3.1 Design of lairages

6.3.1.1 The lairage shall be designed and constructed to hold an appropriate number of animals in relation to the throughput rate of the slaughterhouse without compromising the welfare of the animals.

- 6.3.1.2** The lairage areas shall be designed and constructed so as to allow the animals to move freely in the required direction.
- 6.3.1.3** The lairage shall be designed to allow a one-way flow of animals from unloading to the point of slaughter, with a minimum of sharp corners to negotiate.
- 6.3.1.4** In red meat slaughterhouses, pens, passageways and races shall be arranged in such a way as to permit inspection of animals at any time, and to permit the removal of sick or injured animals when considered appropriate.
- 6.3.1.5** Separate appropriate accommodation shall be provided for sick or injured animals.
- 6.3.1.6** Each animal shall have room to stand up and lie down and, when confined in a pen, to turn around.
- 6.3.1.7** The lairage shall have sufficient accommodation for the number of animals intended to be held.
- 6.3.1.8** Drinking water shall always be available to the animals, and the method of delivery shall be appropriate to the type of animal held.
- 6.3.1.9** Troughs shall be designed and installed in such a way as to minimise the risk of them becoming soiled by faeces, but without introducing the risk of bruising and injury plus hindering their movement of the animals.
- 6.3.1.10** Holding pens shall be rectangular rather than square, to allow as many animals as possible to stand or lie down against a wall.
- 6.3.1.11** Where feed troughs are provided, they shall be sufficient in number and feeding space to allow all animals adequate access to feed. The feed trough shall not hinder the movement of animals.
- 6.3.1.12** Where tethers, ties or individual stalls are used, these shall be designed so as not to cause injury or distress, especially when the animals are lying down, standing up, drinking and feeding.
- 6.3.1.13** Passageways and races shall be either straight or slightly curved, as appropriate to the animal species.
- 6.3.1.14** Passageways and races shall have solid sides, but when there is a double race the shared partition shall allow adjacent animals to see each other.
- 6.3.1.15** For pigs and sheep, passageways shall be wide enough to enable two or more animals to walk side by side for as long as possible. At the point where passageways are reduced in width, this shall be done by means that prevents excessive bunching of the animals.
- 6.3.1.16** Animal handlers shall be positioned alongside races and passageways on the inside radius of any curve, to take advantage of the natural tendency of animals to circle an intruder.
- 6.3.1.17** Where one-way gates are used, they shall be of a design that avoids bruising.
- 6.3.1.18** Races shall be horizontal, but where there is a slope, they shall be constructed to allow the free movement of animals without injury.
- 6.3.1.19** There shall be a waiting pen, with a level floor and solid sides, between the holding pens and the race leading to the point of stunning or slaughter, to ensure a steady supply of animals for stunning or slaughter and to avoid having animal handlers trying to rush animals from the holding pens.
- 6.3.1.20** The waiting pen shall be designed so that animals cannot be trapped or trampled (ideally waiting pens should be circular).

6.3.2 Construction of lairages and holding pens

6.3.2.1 Lairages shall be constructed and maintained so as to provide protection from unfavourable climatic conditions, using strong and resistant materials, such as concrete and metal that have been treated to prevent corrosion.

6.3.2.2 Surfaces shall be made of permanent materials and easy to clean

6.3.2.3 There shall be no sharp edges or protuberances that may injure the animals.

6.3.2.4 Floors shall be well drained and not slippery; they shall not cause injury to the feet of the animals. Where necessary floors shall be insulated or covered with appropriate bedding.

6.3.2.5 Drainage grids shall be placed at the sides of pens and passageways and not where animals would have to cross them.

6.3.2.6 Discontinuities or changes in floor patterns or texture that could cause baulking in the movement of animals shall be avoided.

6.3.2.7 Lairages shall be provided with adequate lighting, lighting shall be preferably positioned above the animals to prevent blinding and shadows which frighten the animals or affect their movement.

Note: Harsh lights should be avoided

6.3.2.8 Lairages shall be well ventilated, and the air flow shall be arranged so that odours and draughts do not adversely affect the health and welfare of the animals.

6.3.2.9 Care shall be taken to protect the animals from potentially disturbing noises, for example by avoiding the use of noisy hydraulic or pneumatic equipment, and muffling noisy metal equipment by the use of suitable padding, or by minimising the transmission of such noise to the areas where animals are held and slaughtered.

6.3.2.10 Lairages shall conform to the following requirements:

- a) not be closer than six meters from, and not be situated higher than, the abattoir;
- b) be constructed of cleanable, non-absorbent and durable material;
- c) have sides not less than 1.8 m in height for cattle and horses and 1.0m for sheep, goats and pigs;
- d) have permanent floors that are curbed and drained;
- e) be so constructed to render it non-slippery;
- f) be fitted with gates which are a minimum of 0.8m wide for sheep, goats and pigs and 1.8m mm for cattle and horses;
- g) be roofed where pigs and sheep or goats are kept;
- h) be equipped with cold water sprayers for pigs;
- i) be fitted with water troughs at a height of 0.9m for cattle and horses and 0.3m for sheep, goats or pigs or water nipples for pigs;
- j) have well drained manure slabs for kraal manure prior to removal except if manure is removed directly into a vehicle; and
- k) be provided with wash points, hoses and reels.

6.3.3 Provisions for feeding animals

Where animals are fed in a lairage or pen

- a) a hay rack or food trough which may be removable shall be provided,
- b) hay racks shall be free from the floor, and
- c) feed shall be kept in a storeroom that is vermin proof, specifically provided for this purpose if food is to be stored on the premises.

6.3.4 Lairage capacity

The number of animals per lairage or pen shall be limited so as to allow a minimum floor space of;

- a) 1.75 m² per head of cattle or horse;
- b) 0.75 m² per big sized pig or calf; and
- c) 0.50 m² per small sized pig, sheep or goat.

Lairages shall be provided with permanent notices indicating the capacity per species of each pen.

6.3.5 Crushes or races

Crushes for herding animals between lairages and the stunning area shall have an inner width of not more than 0.9 m. Crushes shall be designed so that the stunning pen is not visible from the crush or lairages.

Note: The handling and restraint methods used shall take into consideration the type, densities and numbers of animals to be restrained in order to avoid causing undue stress, suffering, animal slipping, size mismatch between the restrainer and the animal, injury, change in animal temperament.

6.3.6 Care of animals in lairages

As far as possible, established groups of animals shall be kept together.

Animals in lairages shall be cared for in accordance with the following:

- a) each animal shall have enough space to stand up, lie down and turn around;
- b) animals hostile to each other shall be separated;
- c) where tethers, ties or individual stalls are used they shall allow animals to stand up and lie down without causing injury or distress;
- d) where bedding is provided, it shall be maintained in a condition that minimises risks to the health and safety of the animals, and sufficient quantity shall be used so that animals do not become soiled;
- e) animals shall be kept securely in the lairage and care shall be taken to prevent them from escaping and from predators
- f) potable drinking water in accordance with US EAS 12 shall be available to the animals on their arrival and throughout the time they remain in lairages, unless they are to be slaughtered without delay;
- g) if animals are not to be slaughtered as soon as possible, suitable feed shall be available to the animals on arrival and at intervals appropriate to the species;
- h) unweaned animals shall be slaughtered as soon as possible;

- i) to prevent heat stress, when animals are exposed to high temperatures, particularly pigs and poultry, shall be cooled by the use of water sprays, fans or other suitable means;
- j) lairage area shall be well lit in order to enable the animals to see clearly without being dazzled. During the night, the lights shall be dimmed;
- k) the condition and health status of the animals in a lairage shall be inspected at least every morning and evening by a veterinarian or, under the latter's responsibility, by another competent person;
- l) animals that are sick, weak, injured or showing visible signs of distress shall be treated or slaughtered immediately;
- m) lactating animals shall be slaughtered as soon as possible;
- n) dairy animals with obvious udder distension (other than due to disease) shall be milked to minimise udder discomfort;
- o) pregnant animals giving birth during the journey or in the lairage shall be slaughtered as soon as possible or provided with conditions that are appropriate for suckling and the welfare of the newborn.
- p) Calves born on transit shall be saved but calves born in lairage shall be destroyed; and
- q) animals with horns or tusks capable of injuring other animals, if aggressive, shall be penned separately.

6.4 Design and construction of slaughter areas

6.4.1 Stunning and bleeding areas shall be separated from dressing areas (either physically or by distance), so that cross-contamination of animals is minimised.

6.4.2 Areas for scalding, dehairing, defeathering, scraping and singeing (or similar operations) shall also be appropriately separated from dressing areas.

6.4.3 Where slaughter is carried out the processing line shall be designed so that there is constant progress of animals in a manner that does not cause cross-contamination.

6.4.4 Special facilities may be required to slaughter and dress "suspect" or injured animals.

6.4.5 Where these facilities exist they shall be;

- a) easily accessed from pens containing "suspect" or injured animals;
- b) constructed with suitable facilities for hygienic storage of parts derived from "suspect" or injured animals; and
- c) constructed and equipped so as to facilitate effective cleaning and sanitising

6.5 Dressing and evisceration areas

6.5.1 Separate bleeding and dressing areas shall be provided in an abattoir if more than one species of animal is slaughtered at the same time.

6.5.2 Dehairing of pigs, including finishing and pre-evisceration wash shall only be done in the pig dehairing area.

6.5.3 Separate rooms shall be used for;

- a) emptying and cleansing of alimentary tracts, and further preparation of clean alimentary tracts,
- b) unless such separation is deemed unnecessary;
- c) handling of meat and inedible parts of animals after they have been so designated, unless these products are otherwise separated by time or distance;
- d) storage of inedible animal parts such as hides, horns, hooves, feathers and inedible fats;

6.5.4 The clearance between equipment and dressing rails shall in all cases be such that carcasses do not touch equipment and at least 1000 mm from walls.

6.5.5 Rails with hooks fixed to a wall shall be 400 mm from the wall, and meat hanging from such hooks shall not touch the floor or wall.

6.5.6 Rails shall be at least 700 mm from columns, pillars or the side of a doorway through which carcasses shall pass.

6.5.7 The minimum clearance for rails and equipment in dressing areas

- a) for cattle dressing, from rail to floor is 3.4 m; and
- b) for sheep dressing, from rail to floor is 2.2 m.

6.5.8 The minimum clearance for rails and equipment in bleeding areas shall be;

- a) for cattle bleeding, from rail to floor in the case of a crawl beam is 4.8 m and a fixed rail is 4.4 m; and
- b) for sheep bleeding, from rail to floor is 2.3 m.

6.6 Meat inspection facilities

- a) Containers, racks and platforms or any other equipment required for meat inspection shall be provided in an abattoir.
- b) Marked, leak proof and lockable containers or other means to handle and hold condemned inedible material prior to removal shall be provided.

6.7 Temperature control

6.7.1 Facilities and equipment shall be adequate for:

- a) Cooling, chilling and/or freezing of meat according to written specifications;
- b) Storage of meat at temperatures that achieve the safety and suitability requirements; and
- c) Monitoring of temperature, humidity, air flow and other environmental factors so as to declare that process control regimes are achieved.

6.7.2 Chillers shall be provided to hold at least the daily slaughter throughput.

6.7.3 The minimum clearance for rails in chillers and freezers shall be;

- a) for cattle and horses or sheep or goats on cradles with extension rods, 1000 mm from the wall and 900 mm between overhead carcass rails; and
- b) for sheep, goats and pigs, if hung separately, 330 mm from the wall and between overhead carcass rails.

6.7.4 Spacing of units on the line shall be such as to ensure airflow between carcasses or sides.

6.8 Dispatch areas

Dispatch areas shall be equipped for

- a) quartering, marshalling and loading of carcasses,
- b) collection and transport of used roller-hooks to the sanitation facility, and
- c) sterilization of saws and other cutting utensils.

6.9 Cross flow

The premises and buildings shall be designed to ensure that;

- a) clean and dirty areas and functions are separated;
- b) no cross flow between clean and dirty areas and functions occurs;
- c) inedible or condemned material can easily be removed on a continuous basis from areas where edible material is handled; and
- d) detained meat shall be examined without contaminating non-detained meat.

6.10 Requirements for interior of building and rooms

In the abattoir where meat and animal products are handled, change rooms and dining facilities and in toilets

- a) all rooms shall be of such sizes as not to compromise hygiene;
- b) floors and stairways shall be;
 - smooth, impervious, resistant to wear and corrosion and not slippery, and
 - free of cracks and open joints;
- c) floor drainage design and construction shall;
 - ensure that floors are sloped at a gradient of not less than 1:60 towards drainage points or channels,
 - ensure that channels drain from clean to dirty areas,
 - be such that drainage channels are smooth, impervious, washable and provided with grates or covers, and
 - provide all drain inlets with solid traps as well as mechanisms to prevent access of vermin and obnoxious odors into the abattoir;
- d) interior wall surfaces, partitions and pillars shall be;
 - smooth, impervious, washable and light coloured,
 - rounded at floor to wall, as well as wall to wall, junctions with a minimum radius of 0.05m, and
 - rounded on top in case of walls and partitions which are not ceiling height;
- e) interior roof structures or ceilings, shall be smooth, impervious, light coloured and washable;

- f) doors and doorframes shall be smooth, impervious, vermin proof, light coloured and corrosion resistant;
- g) personnel entrances shall have self-closing doors and be provided with hand washbasins, boot wash and apron wash facilities and apron hooks;
- h) hatches, where provided, shall have an inclined bottom edge sloping towards the dirtier side, and self-closing flaps shall be provided when applicable
- i) chutes shall
- be smooth, light coloured and corrosion resistant,
 - have an entrance at least 0.3m above the floor,
 - be sanitizable along its entire length, and
 - be separate for meat, inedible material and condemned material, respectively;
- j) windows
- shall have light coloured, corrosion resistant frames and shall be glazed;
 - shall be fitted with fly screens when used for ventilation;
 - shall have window sills that slope at 45°; and
 - may not be opened if it interconnects clean and dirty areas;
- k) all working areas shall
- be well ventilated; and
 - have artificial or natural lighting at an intensity of at least
 - 540 lux where meat is inspected; and
 - 220 lux in work areas;
- l) all light fittings shall be equipped with covers or splinter protectors;
- m) all electrical fittings shall be waterproof; and
- n) all wall mounted equipment, structures and fittings shall have a clearance of at least 0.05m from the wall.

7 Handling of meat and meat products

All the meat and meat products generated within the abattoir and/or slaughterhouse shall be handled in accordance with US 736 and US 737.

8 Requirements for equipment

8.1 General requirements

Equipment for use in the abattoir shall:

- a) be corrosion resistant and non-toxic and shall not taint or stain meat;

- b) have surfaces which are smooth, impervious and free of holes, cracks and sharp corners, and shall be sterilisable; and
- c) not contaminate meat with lubricants.

8.2 Containers

Containers used to hold meat shall comply with provision 9.1 and if the sides and bottoms are constructed with openings they shall be designed so that meat cannot protrude through the openings or make contact with the floor.

8.3 Equipment sterilization

Sterilizers shall be readily accessible and shall be placed on dressing platforms and within 3 m of workstations, adjacent to hand wash-basins in rooms and areas where

- a) animals are slaughtered,
- b) carcasses, meat and offal are detained,
- c) condemned material is handled, or
- d) meat is otherwise handled.

Sterilizers shall;

- a) be corrosion resistant and capable of sterilizing hand utensils and equipment, such as cutters and saws, at a minimum water temperature of 82 °C during slaughter; and
- b) have an inlet, overflow and outlet and shall drain through a down pipe directly into a closed drainage system or into an open channel, but such drainage water shall not flow over the floor across areas where traffic occurs.

9 Waste management and disposal

9.1 Waste disposal means

Abattoirs and slaughter houses shall have efficient and effective means of disposal of all the liquid and solid waste generated therein in order to keep the environment within and outside clean and hygienic. This shall be done in accordance with FDUS 1662.

9.2 Vegetable matter and agriculture residues

Vegetable matter such as rumen, stomach and intestinal contents, dung and agriculture residues shall be disposed off using biomethanation or compositing depending on the size of the abattoir or slaughter house. In large units, biomethanation shall be used.

9.3 Animal matter and condemned meat and bones

- a) Animal matter such as inedible offals, tissues, meat trimmings, waste and condemned meat and bones shall be disposed by way of rendering or compositing with the waste in 9.2 above.
- b) In small slaughterhouses and abattoirs, burying of this type of waste shall be used provisionally to dispose of waste.

- c) Such waste shall be disposed of in line with the Veterinary Regulations on disposal of waste as spelt out under the Animal Disease Act as well as NEMA Regulations on Waste Management and Disposal and National Environment Act 1995

9.4 Offensive odours

- a) Blood from slaughtered animals shall, while still fresh, be treated so as not to become offensive.
- b) All offensive odours arising from the handling of meat and the treating and caring for offal, blood or any other material stored or manufactured shall be immediately extinguished and not allowed to escape into the outside air.

9.5 Pits and wells in slaughter house

No blood pit, dung pit or privy well shall remain or be constructed within any slaughterhouse, and no accumulation of any refuse whatever, when tainted or emitting a noxious odour, shall be permitted to remain in or around a slaughterhouse.

9.6 Removal of manure

The contents of any manure pit or manure pile on the premises shall be removed as often as necessary to prevent a health hazard arising. The manure pit shall be covered with a material that shall deter birds and or any other vermin from accessing it

9.7 Containers for inedible, condemned and refuse material

- a) sufficient theft and leak proof containers with tight fitting lids, shall be provided to keep and transport condemned material and they shall be clearly marked "CONDEMNED".
- b) containers shall be provided to collect and hold inedible material until disposal.
- c) facilities to collect and hold blood prior to disposal shall be provided.
- d) refuse containers shall be provided for the collection of general refuse at various points on the premises.
- e) areas where waste or refuse containers are kept prior to removal shall be impervious, curbed and drained and the containers shall be enclosed or fitted with tight fitting lids.

10 Requirements for facilities and equipment for personal hygiene

10.1 Toilets and change rooms

- a) all slaughter houses/abattoirs shall provide an adequate number of toilets (for both sexes) and changing rooms for use by the employees.
- b) toilets and urinals shall be situated in a separate room with separate entrances from the change rooms.
- c) all toilets shall be provided with toilet paper holders and toilet paper, hand wash-basins, soap dispensers with non-perfumed germicidal liquid soap or liquid soap with a disinfectant and disposable towels or air hand dryers.
- d) change rooms and toilets shall not have direct access into an area or room where meat is handled.

- e) workers shall be provided with clothing lockers in which to store private clothes separately from protective clothing, ensuring that private clothes and clean protective work clothes do not make contact with each other

10.2 Hand wash-basins

Hand wash-basins shall be readily accessible and be::

a) placed on dressing platforms and within 3 m of workstations in rooms and areas where:

- animals are slaughtered;
- carcasses, meat and offals are detained;
- condemned material is handled; or
- meat is otherwise handled.

- a) corrosion resistant;
- b) provided with taps that are not hand or elbow operated; foot operated taps are acceptable;
- c) supplied with warm running water at not less than 40 °C;
- d) provided with an inlet, overflow and outlet and shall drain through a down pipe directly into a closed drainage system or into an open channel, but such drainage water shall not flow over the floor across areas where traffic occurs; and
- e) fitted with a dispenser for non-perfumed liquid germicidal soap, liquid soap with a disinfectant as well as disposable paper towels and waste bin or air dryer, unless the drying of hands is not necessary in the area where the basin is situated.

10.3 Apron-on wash-cabinets

Apron-on wash-cabinets, required in low and high throughput abattoirs, shall be installed near work stations and be constructed so as to contain splashing from personnel washing their aprons while wearing it and shall drain directly into a drainage system.

11 Water supply

Water shall be under pressure, and shall conform to US EAS 12

Water points shall be provided with:

- a) cold water;
- b) water at 40 °C and equipped with hose pipes for sanitizing all areas of the abattoir; and
- c) hose reels to store hoses away from the floor unless vertical (drop) hoses are provided.

Bibliography

- [1] Animal Disease Act
- [2] The National Environment (Waste Management) Regulations, S.I.No 52/1999
- [3] National Environment Act 1995
- [4] US 734:2007, Requirements and operations for abattoirs and slaughterhouses

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