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DRAFT EAST AFRICAN STANDARD

Handling, storage and transport of slaughterhouse by-products —
Guidelines

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 004, *Meat, poultry, game, eggs and related products*.

This **second/third/...** edition cancels and replaces the **first/second/...** edition (US **nnn-n:yyyy**), which has been technically revised.

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Handling, storage and transport of slaughterhouse by-products — Guidelines

1 Scope

This draft East African Standard provides guidelines for proper handling, storage and transport of by-products of slaughterhouses and meat processing factories.

2 Normative references

The following documents are 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.

CXC/RCP 58 code of hygienic practice for meat

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

slaughterhouse/meat processing plant/abattoir

establishment licensed by competent authority for slaughter of animals and/or processing into meat products intended for human consumption

3.2

Slaughterhouse by-products

secondary products obtained during the slaughtering of food animal

3.3

rendering

process involving application of heat for separation of fat and protein residue.

3.4

incineration

process for burning waste material at high temperature until it is reduced to ash

4 Ante-mortem and post mortem inspection

The by-products should be obtained from animals subjected to proper ante-mortem and post-mortem inspection as per *CXC/RCP 58*

5 Slaughterhouse by-products

5.1 Classification of slaughterhouse by-products

Slaughterhouse by-products may fall into one of the following three categories:

- a) Category 1 — These materials carry highest risk, and consist principally of material that is considered a transmissible spongiform encephalopathies (TSEs) risk, such as specified risk material [those parts of an animal considered most likely to harbour a disease such as avian influenza, Bovine spongiform encephalopathy (BSE), for example bovine spinal cord]. Pet animals, zoo and circus animals and experimental animals are also classified as Category 1 material due to the level of veterinary drugs and residues they are likely to contain and due to the fact that adequate diagnosis of the exact cause of death of exotic animals may be difficult to achieve.
- b) Category 2 — These materials are also high-risk material and include fallen stock, manure and digestive content. Category 2 is also the default status of any slaughterhouse by-product not defined in either Category 1 or Category 3.
- c) Category 3 — These are low risk materials and include parts of animals that have been passed fit for human consumption in a slaughterhouse but which are not intended for consumption, either because they are not parts of animals that we normally eat (hides, hair, feathers, bones, etc) or for commercial reasons.

5.2 General requirements for collection and identification of slaughterhouse by-products

5.2.1 Slaughterhouse by-products should be collected, identified and disposed off without undue delay, in order to prevent risks arising to public and animal health. 'Undue delay' will depend on a case-by-case assessment depending on the type of slaughterhouse by-products involved.

5.2.2 Slaughterhouse by-products should be collected and identified by category. Mixtures of different categories of slaughterhouse by-products should be treated as the higher or highest risk of the mixed materials, for example if Category 3 material is mixed with Category 2 material, all the material should be disposed of as Category 2 material.

5.2.3 Category 3 material should be labelled 'not for human consumption'. Category 2 material should be labelled 'not for human/animal consumption'. Category 1 material should be labelled as 'for disposal only'. Specific types of animal by-products such as collagen, blood products may require further labelling.

6 Handling, storage and transport of food slaughterhouse by-products

6.1 Transport vehicle for condemned material/rendering material

6.1.1 The condemned slaughterhouse by products should be transported in customized, water-tight vehicles to prevent spillage of material on the highway and may be subjected to temporary storage at the rendering plant.

6.1.2 Slaughterhouse by-products should be transported in sealed new packaging or covered leak-proof containers or vehicles. Containers should be dedicated to the use of specific categories of slaughterhouse by-products and where they should be cleaned and disinfected after each use in order to prevent cross contamination.

6.1.3 A vehicle used for the transport of condemned material may not be used for any other purpose. However, after cleaning and disinfection the vehicle may be used for the transport of inedible material.

6.1.4 A vehicle may only be used for the transport of condemned material if,

- a) the load space is lockable, theft proof and sealable;
- b) the internal surface is leak-proof and constructed of durable material; and
- c) floor is provided at its lowest point with a drain pipe capable of being securely closed by a screw valve.

6.1.5 The load space of the vehicle used for transporting material to a sterilizing plant should be cleaned and disinfected to the satisfaction of an inspector at the end of each delivery, at a place specially constructed for the purpose.

6.1.6 During transportation, a commercial document or in certain circumstances, a veterinary certificate should accompany the slaughterhouse by-products.

6.1.7 The commercial document should record the date on which the material is taken from the premises; a description of the material; the quantity of the material, in weight or volume; the place of origin of the material; the name and address of the transporter; the name and address of the receiver and its approval or registration number, if appropriate; and the approval or registration number of the plant of origin, if appropriate.

6.1.8 Records and related commercial documents or veterinary certificates should be retained for at least two years.

6.2 Disposal and use of slaughterhouse by-products

6.2.1 Disposal of Category 1

Material As the highest risk material, this material should be destroyed by incineration, or by rendering followed by incineration. These are the only options for transmissible spongiform encephalopathies (TSEs) suspects. Other Category 1 material is also permitted to be pressure-rendered and disposed of in an authorized landfill site.

6.2.2 Disposal and Use of Category 2 Material

6.2.2.1 The basic options of incineration and rendering followed by incineration are permitted, as with Category 1 material. All Category 2 material may also be rendered and disposed of in an authorized landfill site, or used as fuel for combustion. Category 2 material may also be used for the manufacture of derived products.

6.2.2.2 Category 2 material may be rendered and then used for the production of organic fertilizers. It may also be rendered and used in an approved composting or anaerobic digestion plant. A very limited number of Category 2 materials (manure, digestive tract content) may be applied directly to land without processing provided there is no risk of transmitting a disease.

6.2.3 Disposal and use of category 3 material

6.2.3.1 As low-risk material, there are a much wider range of options for use and disposal of Category 3 material compared to higher risk material. Category 3 material may like Category 1 and Category 2 material be incinerated, or rendered followed by incineration. Category 3 material may also be rendered followed by disposal in an authorized landfill (unlike higher category material this does not have to be pressure rendering) or used as fuel for combustion and for manufacture of derived products.

6.2.3.2 Category 3 material may be rendered for the production of pet food and organic fertilizers. Rendered Category 3 material may also be used in the production of animal feeding stuffs, though transmissible spongiform encephalopathies (TSEs) related restrictions on the feeding of processed animal protein severely restrict this. Category 3 material may be used directly in approved composting or anaerobic digestion plants.

Table 1 — Requirements for handling, storage and transport of slaughter-house by-products

S/No.	Name of byproducts	Utilization	Handling, storage and transport
1.	Blood	Human food and pharmaceuticals, such as plasma, albumin and fibrin	In case of utilization as human food, slaughtering should preferably be done on bleeding rails and the blood should be collected in clean receptacles. Where blood plasma is required, collection should be done in an anticoagulant immediately after slaughter of animals. Where fibrin is required, the blood should be stored at chilling temperatures (2 to 6°C) in a stainless-steel container
		Livestock feed	In case it is intended for livestock feed, the blood should be collected in storage bins under conditions that prevent soiling with any extraneous materials. The bins should then be covered and transported immediately (within 3-6 h) to processing units. Lime or any other permitted preservative may be added at the time of collection
		Fertilizer and other commercial uses	Blood for processing into fertilizer may be collected by any of the above procedures and blood that has been soiled by regurgitated ingesta, floor and spilt blood may also be collected. Blood collected for food, pharmaceuticals or livestock feed if found unsuitable for any reason may also be included for processing into fertilizer stock. Blood should be collected and transported within 4-6 h to the processing unit in closed containers. Addition of preservatives such as formalin or Lysol may be done but these should be added only at locations where their use is permitted in the slaughterhouse premises. For prolonged storage of blood, it should be stored at 4 to 10 °C
2.	Pancreas	Trypsin, insulin, pancreatin and chymotrypsin	Pancreas should be removed expeditiously, preferably within 30 min after slaughter of the animal to prevent autolysis. The glands should be collected into a stainless steel or aluminium vessel and chilled (at 4 °C) or frozen immediately. Direct contact of ice or freezing mixtures with the tissues should be avoided. After the tissue is chilled or frozen, it should be packaged in strong fibre boxes lined with thermocolor several layers of wax paper to protect the glands from thawing. Each container should be tightly filled to the top to give minimum air space. The glands should be transported and stored under refrigerated conditions
3.	Endocrine glands	Hormones like pituitrin, thyroxine and adrenalin	The endocrine glands should be collected immediately after slaughter and preserved under frozen conditions, similar to the pancreas
4.	Liver	Liver extract, glycogen, vitamin B12, etc	The livers should be removed without soiling and collected into stainless steel or aluminium containers provided with lids. These should be transported within 1 to 2 h to processing unit and stored at cold storage temperature (4 °C)
5.	Intestines	Casings, surgical sutures, etc	Primary cleaning which involves separation of intestines from mesentery and, removal of intestinal contents should be done in the slaughter-house. Further cleaning should be done within 1 to 2 h at the processing unit. These should be transported to the place of processing preferably in any closed container like stainless steel tins, polyethylene containers, or bags or closely woven

			baskets
6.	Bile secretions	Bile salts	The gallbladder should be removed from the liver as soon as possible and the bile contents emptied immediately into a clean vessel through a fine screen to prevent any stones, parasites, etc, from passing through. Bile if stored for long periods should be preserved by addition of permitted anti-microbial agents depending on the end-product or frozen until use. Bile should be transported in closed containers preferably polyethylene or similar nonreactive materials and stored as above. Another method of preservation is by concentration of bile to change it to a syrup
7.	Lungs	Heparin	Lungs are liable to rapid putrefaction. This should be prevented by addition of a suitable permitted anti-microbial agents. The tissue should then be stored for limited period at room temperature (25 to 35 °C)
8.	Testes	Hyaluronidase	The testes should be immediately collected in containers chilled in ice to protect the activity of hyaluronidase
9.	Trimmings and stomach	Protease, peptone	The trimmings and stomach should, as far as possible, be collected from slaughter-house or meat processing factories immediately after the slaughtering and processing operations. Stomachs should be collected after emptying the ingesta in the offal washing area provided for the purpose, washed in water free of any adhering ingesta and transported at the earliest in closed containers to the processing units
10.	Pig stomachs	Renin and pepsin	The pig stomach lining should be peeled off, cut into four pieces and frozen in trays. The lining should be preserved by covering with one percent solution of sulphuric acid (30 mL of commercial sulphuric acid added into one litre of water) in a large glass jar or enamelled containers. The lining should be transported to the pharmaceutical industry while still submerged in the original acid
11.	Hides and skins	Leather	Hides and skins should be collected and transported to place of storage within 8 hours. Hides should preferably be salted before storage
12.	Tail hair, bristles and body hair	Brushes	Generally, tail hair bristles and body hair should be separated and transported within 8 to 10 h
13.	Bones	Gelatin, glue	The bones should be freed of adhering flesh and dried. Green bones should be broken, cooked and dried. In case of desert bones, they should be neatly laid out on a sloping cement platform in the collection centres. During dry weather, the bones should be sprayed with water to encourage bacterial and insect action and to wash off unwanted material. Care should be taken not to dry bones in direct contact with earth. Further cooking and processing is similar to green bones
14.	Hooves and horns	Buttons, handles, combs, horn meal, foam compound, etc	Hooves and horns freed of pith should be collected and transported to be stored in cool sheds. These should not be exposed to undue heat and desiccation during collection, transport and storage as these may crack or become brittle
15.	Horn pith	Gelatin	Horns should be placed in boiling water for a short period to remove any blood, fat or adhering tissue and pith removed by a gentle tap. The pith should then be cleaned free and stored in mesh-like containers for transport

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Bibliography

IS 8895: 2015, *Handling, storage and transport of slaughterhouse by-products — Guidelines*

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