（6） モンゴル食肉及び食肉加工食品関連規格基準翻訳（英文）

A．モンゴル食肉関連規格（英文）

1) モンゴル規格＜牛内臓の加工ケーシング＞
MNS 502-73 /approved in 1987/
2) モンゴル規格＜調理・くん製ソーセージ＞
MNS 108-95 (approved in 1995)
3) モンゴル規格＜家禽肉＞ MNS 703-87 (approved in 1988)
4) モンゴル規格＜牛、羊およびヤギ半丸・１／４丸枝肉＞
MNS 129-83 (approved in 1983)
5) モンゴル規格＜馬肉＞ MNS 0406-82 /approved in 07 April, 1982/
6) モンゴル規格＜輸出用カット馬・牛肉＞
MNS 3514-83 /approved in 1983/
7) モンゴル規格＜食肉および食肉加工食品の衛生管理のための一般要求事項＞ MNS 5023:2001 /approved in 2001/
8) モンゴル規格＜と殺豚の半丸枝肉＞
MNS 167-92 (approved in 1992)
9) モンゴル規格＜羊・ヤギの生ケーシング＞
MNS 0061-98 /approved in October, 1998/
10) モンゴル規格＜細口および太口血液入りソーセージ＞
MNS 110-81 (approved in 1981)

注：MNSは、モンゴル国規格

B．モンゴル食肉関連参考資料（英文）

11) モンゴル食肉産業における環境問題の現状
12) モンゴル国の畜産業
13) モンゴル国の原料肉供給
14) モンゴル国の食肉生産
15) 畜産物生産チェーンにおける輸出向け食肉の付加価値化
16) 各種食肉、食用および非食用の脂肪と油、ならびにソーセージ用ケーシングの製造とマーケット

A．モンゴル食肉関連規格（英文）

1）モンゴル食肉規格<牛内臓の加工ケーシング>

Standard of Mongolia

Casing.

Processed beef intestine **MNS 502-73 /approved in 1987/**

This standard will be used when processing and checking for receipt of beef intestine.

1. Classification

1.1 Beef processed intestine will be classified as wide, middle, thin by their diameter:

Classification	Diameter
a) Wide	56 mm and more
b) Middle	46-55 mm
c) Thin	45 mm and less

2. Technical condition

2.1 The beef intestine will be processed along with technological instruction and hygienic rule of industry approved by Ministry of Food and Agriculture.

2.2 The intestine will be salted by salt of GOST 13830-68 with powder of 1st and 2nd grades and salting should be made completely in part of wrapping.

2.3 The processed beef intestine need to be satisfied the requirements showed in Table 1 by its quality.

Table 1

Quality requirement	Required amount
1. Outward appearance	The moisture is normal (not more than 45%), salting is made evenly in all parts, without any external pollution, and even drying up
2. Color	Simple rosy, white and light colored
3. Processing	It should be cleaned thoroughly from fat and moldy mucous layer and with good wall firmness.
4. The remnants of fat	There should not be a strip of remnants of fat along with intestine.
5. The remnants of moldy layer	There can be a thin strip remnant of moldy layer less than 5cm in space of not less than 2 m along with intestine.
6. Damage of wall	There can be damages of wall which is not passed through (window) and which can endure normal air pressure in space of 50 cm between each other.
7. Pollution	There can be black stripes less than 5cm at the inside of intestine wall in space of 2 m between each other.
8. Spot of salt	There can be spot which is removable if it is washed by water.
9. Rustiness	Not allowed
10. Redness	Not allowed
11. Smell	It should have just smell of itself and no other external smell.
12. The number of ends in a roll and the length of each end	It should have 1-8 ends and the length of each of ends should be not less than 50 cm and without hole on the wall.

13. Damage from chronic disease	Not allowed

3. Wrapping

3.1 The intestine will be wrapped by rope of number 8 by separating 10 m as a roll, and the difference of end will determine the intestine classification:

Classification	End of rope
a) wide	Without knot, open
b) middle	With a knot
c) thin	With two knots

3.2 Beef intestine should be wrapped forming into loops evenly and the length of roll should be not more than 50 cm.

3.3 In each rolls of intestine there should be tied the number of checker-classifier and measurer-wrapper.

4. Packaging

4.1 The salted and processed intestine should be packaged in wooden barrel with iron belt by sealing up closely in order not to enter air placing side by side by package and should be packaged by grouping by its classification.

4.2 The barrel should be put layer inside by grease-proof paper.

5. Labeling

5.1 At the inside of the barrel 10×10 cm of paper birc in which has written clearly the name of product, classification, number of rolls, number of UST, packaged date, personal number of checker and master by irremovable dye by wrapping 2 or 3 by grease-proof paper in order to protect moisture, water, and damage.

5.2 At the outside of the barrel there should be written the name of factory, classification, name of the product, quantity, part number, the address of destination by dye which is irremovable in water.

6. Checking and receiving

6.1 When receiving the outward appearance check will be made among 10 % of each parts and groups.

6.2 A package from each barrel should be checked along with standard requirement. If they do not satisfy the standard requirement, checking will be made in all parts.

7. Storage and transportation condition

7.1 The intestine should be stored in special storage with condition of dry (0-+4°C) and cool, and comparative moisture should be not more than 85 %.

7.2 The intestine in barrel should be put on the special platform in space of 5-20 cm from floor and wall of the storage.

7.3 Transportation condition is similar to storage condition and it should be made by protecting from water, moisture and natural conditions.

2） モンゴル規格<調理・くん製ソーセージ>

Standard of Mongolia

Cooked and smoked sausage **MNS 108-95 (approved in 1995)**

This standard will be used to produce, store, and transport cooked, half smoked, and fully smoked sausage.

1. Definition

1.1 Cooked sausage
Digestible product, which has became tender by adding ice and drinking water when preparing minced meat, for use by keeping for short period (up to 48 hours);
1.2 Cooked and half smoked sausage
The product which its term of keeping was lengthened (up to 7 days) by reducing the humidity in a way of cooking, smoking, and drying;
1.3 Cooked and fully smoked sausage
The product which can be kept for longer period (up to a month) in result of reducing the humidity in a way of cooking, smoking, and drying;

2. Classification

2.1 The cooked and smoked sausage will be classified into the following kinds depending on its processing rule and keeping period:
-cooked
-cooked and half smoked
-cooked and fully smoked
2.2 The cooked and smoked sausage will be classified into the following grades depending on quality of raw material and finished-product:
-highest grade
-1st grade
-2nd grade

3. Raw materials to be used

3.1 The following raw materials will be used in sausage production:
- beef
- pork
- horsemeat
- mutton
- beef meat at the part of the head, crumbs, heart, and brain
- lard
- fat sheep-tail
- powdered egg
- cow dried milk
- starch for food consumption
- the highest and 1st grade of wheat flour
- common salt "Extra"
- nitrite natrium (pure chemical)

- ascorbic salt
- sugar
- polyphosphate
- various kinds of pepper
- nutmeg, caraway, garlic, and other seasonings
- casein natrium
- large intestine of large and small cattle, beef intestine and black intestine, and urinary bladder
- special artificial cover
- rope for package (thread)
- other special raw materials and assistant materials to be used for sausage

These raw materials should satisfy the requirements and indications of standard of that product by their quality indications.

4. Technical requirement

4.1 The sausage will be produced in comply with approved prescription, technological instruction, and rule on sanitary and hygienic control and safe operation.

4.2 When assessing the cooked and smoked sausage with point by organs of sense, it should satisfy the requirements indicated in Annex A.

4.3 Physical, chemical, and microbiological indications should satisfy the requirements indicated in Annex B.

4.4 It is prohibited to use nitrite in places which is not possible to determine the amount of remaining nitrite.

5. Procedure to receive by checking

5.1 Sausage will be received by checking each part. The part means products of same kind which has produced in same day, same shift, and same technological rule.

For commercial organization, the part means products of one kind arrived with one document.

5.2 The sausage with below mentioned quality defect is prohibited to put on sale:

- mould has grown on the surface of skin of sausage and it has polluted by external things;
- surface has creased, become firm, broken and torn open;
- fat of sausage has turned rancid and became yellow or worsened and had unpleasant taste and smell;
- when checking by cutting, some parts have had grey spots and with holes due to sparse packing;
- Inside the covering skin accumulation of oil and soup has formed, and it became in grey from outside;
- Processing made incompletely and uncooked;
- In case that the minced meat is rough and crumbly when cutting sausage;

5.3 Examination result should be accompanied with each part of sausage and the address with the following content need to be enclosed with.

-name of product
-number of country
-produced date
-duration of sale and keeping
-personal number of quality inspector

5.4 When examining the sample of product, the following standards should be complied with.

- MNS 2551-78 method to take sample for research to receive sausage and meat products by checking
- MNS 2553-78 method of bacteriology research for sausage and meat products
- MNS 2550-78 method to make sense research on sausage and meat products
- MNS 514-81 method of physical and chemical research of sausage and meat products

5.5 In case that the result of examination was doubtful, the final decision will be made after making an examination again by taking twice more sample than before from this part.

6. Packing, addressing, storing, and transporting

6.1 The sausage chilled along with technological instruction will be packed into special box by amount of no more than 20 kg. At the bottom of the box layer of grease-proof paper should be put on, the sausage should be packed by arranging in layers and paper padding should be placed between the layers. The container specially for transport of sausage can be used instead of box.

6.2 In one box only one kind of product should be packed in.

6.3 After packing sausage and sealing the box, printed address with the following content should be stuck at the outside of box:

-name of produced organization
-kind of sausage
-number of national standard
-produced date
-keeping period
-personal number of quality inspector

6.4 The cooked and smoked sausage will be kept in storage with temperature of 8-10°C and air relative humidity of 75-78% for the following periods by hanging.

1) Cooked sausage – 48 hour
2) Cooked and half smoked sausage - 7 days
3) Cooked and fully smoked sausage – 1 month

6.5 The packed sausage will be transported by special vehicle satisfied the hygienic requirements.

It is prohibited to pack sausage in sack, to load without package and to transport by uncovered car.

All indications and requirements of this standard should necessarily be complied with.

3） モンゴル規格<家禽肉>

Standard of Mongolia

Chicken and goose meat **MNS 703-87 (approved in 1988)**

This standard will be used to prepare carcasses of chicken and goose meat, which approved that they suit to food consumption by veterinary control and examination, by fowl factory, collective farm, fodder farm, association, hand in trade and public catering organizations, process in industrial way, supply, and receive by checking.

1. Classification

1.1 The carcass will be classified into four groups depending on bird kind and age:
- -fowl
- -chicken
- -goose meat
- -gosling

1.2 The fowl and goose meat will be classified by their strength and fatness:
- -1st grade
- -2nd grade

2. Technical requirement

2.1 The fowl will be processed in fully comply with the requirements of this standard and the sanitary rule in accordance with technological instruction for processing fowl.

2.2 The fowl, which fully satisfies the requirements of UST 3923-86, will be received.

2.3 The meat will be classified as chicken and the meat of fowl became adult.
In meat of chicken and gosling, tibia of breastbone is cartilage, beak is not horny, carcass has soft skin, smooth scales of leg stuck with each other closely, snail is not grown, and the skin of gosling will be soft. For the adult fowl, tibia of breastbone is bony (firm), beak is horny, scales of leg of fowl carcass hardened and grew fat, goose meat has thick skin, snail of cock is big and firm.

2.4 The weight of chicken carcass which has dried by preparing partly should not be less than that indicated in Table 1.

Table 1

Carcass	Weight g
Chicken	480
Gosling	1580

If they satisfy the requirements of this standard by their strength and fatness, and processing, the live-weight of 15 percent of the total carcasses of one group of the fowl which has prepared half can be between 400-480 g.

2.5 The fowl carcass will be classified as fully prepared, partly prepared, fully prepared and accompanied with intestines and neck.
Partly prepared – carcass which is parted only from the intestine, paunch, stomach, and egg throat
Fully prepared – carcass which parted from all the internal organs, head, (between the joints of 2 and 3 of neck, without skin), shoulder joint level and leg by shin joint
Fully prepared and accompanied with intestines and neck – carcass fully prepared and the cleaned intestines (liver, heart, muscle, and stomach) in carcass cavity and the neck was packaged in grease-proof paper and cellophane bag.

2.6 Carcass will be classified as dried (less than +25°C), chilled (0-4°C), and frozen (not more than –8°C) depending on the temperature at the deepness of breastbone.

2.7 The carcass should be well blooded, clean and with good appearance, without yellow fur, remnants of skin, torn, scrap, and spot. The cavity and peak of partly prepared carcass will be cleaned from blood and fodder, and the leg will be cleaned from calcified lump, outgrowth, and sore.

1st grade carcass will have a little bit remnants at the quills, light cutting up to 1 cm at the parts other than breastbone, scratch of skin not more than two, roasted little bit with no impact to the appearance of the carcass.

2nd grade carcass will have a little bit remnants of quills with no impact to meat quality, and scratch of skin up to 2 cm not more than 3.

2.8 If the fowl carcass satisfies the requirements of 1st grade by its strength and fatness and requirements of 2nd grade by its processing, it will be considered as 2nd grade meat.

2.9 If the meat does not satisfy the requirements of this standard on 2nd grade, spine and breastbone curved, with scratch on the back, frozen more than one time, with dark color, and lean (defects), it will be used in recycling factory instead of using in trade and public catering organizations.

2.10 The carcass of old cock satisfies the requirements of standard on 1st grade, but with snail of more than 5 cm will be graded by two grades.

2.11 It should provide the requirements of Table 2 by its strength and fatness.

Table 2

The kind of bird	Definition	
	1st grade	2nd grade
Chicken	With well-developed muscle, muscle bulged noticeably by two sides of tibia of breastbone, and the tibia is unnoticeable. Outside fat has set at the lower side of the stomach and along with spine in interrupted way.	With medium level of muscle development, muscle not bulged from tibia of breastbone, without hollow and created angle. Tibia of breastbone is distinctly bulged and without fat at the lower side of stomach and end of spine. But the muscle is developed well.
Fowl	The muscle is developed well, chest is round, with much fat under the skin along with chest, stomach, and spine. Tibia of breastbone is not bulged.	With medium level of muscle development, chest is triangle, with a little fat at the lower side of stomach and spine, if the muscle developed well, it can be without fat, tibia of breastbone bulged;
Gosling	The muscle is developed well, with fat under the skin along with chest and stomach, and the tibia of breastbone is unnoticeable.	With medium level of muscle development, chest is triangle, with a little fat under the skin of stomach, if the muscle developed well, it can be without fat, tibia of breastbone bulged;
Goose	The muscle is developed well, with a lot fat under the skin along with chest, stomach, and spine, the tibia of breastbone is unnoticeable.	With medium level of muscle development, chest is triangle, with a little fat under the skin of chest and stomach, tibia of breastbone can be bulged;

Remark: The carcass which can not satisfy the requirements of the standard of 2nd grade will be considered as a lean.

3. Receiving procedure

3.1 Meat of fowl will be received in groups. The same grade of carcasses of one kind of bird which has slaughtered in same place together and with one veterinary and quality certificate will be considered as a group not taking into consideration the number of them.

3.2 In order to check the quality of bird meat can suit to the requirements of this standard, not less than 5 % of all the boxes from various places of one group should be chosen.

3.3 If there is a dispute on the freshness of the meat, the research should be done in accordance with UST 2552-78, method to determine the quality indications of meat products by organs of sense, UST 2551-78, method to take sample for the examination to receive sausage and meat products by checking, UST 1161-71, the method to be used in carcass to determine the damage of meat and meat products, and UST 2554-78, research method of bacteriology study.

4. Pressing a mark, packing, transporting and keeping

4.1 Each carcass of all kinds of fowl should be put into boxes with cellophane bag without any case. In case of packing the partly prepared carcass in cellophane bag, legs should be parted from body in advance and should be put into bag with carcass.

4.2 The carcass without bag should be marked by electronic stamp or by sticking it. The electronic stamp with number of 1 for 1st grade, 2 for 2nd grade should be pressed on outside surface of thighbone of the one leg for fowl and chicken, and of both legs for goose and gosling. The number of electronic stamp should be distinct. Paper label with pink for 1st grade and green for 2nd grade should be stuck under the joint of shin for partly prepared carcass and for fully prepared carcass it should be stuck on it. In the address name of prepared factory or company and the word written that "veterinary examination" should be included.

4.3 On the bag of carcass and inside of it there should be address with the following indications:

a) prepared factory and company, its subordinating organization, mark of product,
b) kind of the bird, grade of carcass, processed method
c) the word "veterinary examination"
d) price of 1 kg
e) number of standard

4.4 In accordance with UST 1570-81, box to pack the bird meat products in carcass, UST 2372-77, the system of box, case, and size, the carcass will be put into wooden box or multi-layered stainless metal box which can be used many times. The box should be firm, dry, clean, and without any abnormal smell.

The wrapping paper with marks of A, B, and D should be laid on the bottom wall of the box and the carcass should be covered up by the part exceeded from it. When putting the carcasses into box, they should be put separately in a row by their kind, age, grade, and processed method. If they are not put into bag, the grease-proof paper or paper similar to it should be put between frozen carcasses. The dirty weight of one box will be up to 30 kg.

4.5 The box for transporting the carcass should be addressed by dye with no smell and stuck by paper address. In the address the following indications should necessarily be included.

-name of prepared company and factory, its subordination, product mark
-abbreviation of the name of bird meat
-grade, processed method
-carcass number and pieces
-net and dirty weight
-processed date
-the number of this standard
-address will have a slanting lines of pink color for 1st grade carcass and green for 2nd grade; The number of packer will be added in the address and then address needs to put into box. The carcass of fowl will be marked by its initial block letter classifying by kind and age.

Chicken	TD
Fowl	T
Gosling	GD
Goose	G

After the letter marked kind of bird, processed method will be marked as "E" for partly prepared carcass, "EE" for fully prepared, and "P" for fully prepared and accompanied with intestines and neck.

1st grade will be marked as 1 and 2nd grade will be 2, and the lean which does not suit to the requirements of strength and fatness of 1st and 2nd grades will be marked as "T".

4.6 The box of carcass to be recycled in a factory will be addressed additional "Y" letter.

4.7 The fowl meat will be transported with condition of quick-worsening load.

4.8 Chilled meat will be kept for less than 5 days including processed day in condition of 80-95 % relative humidity and with temperature of 0-+2°C.

4.9 Frozen meat should be kept in a cooler with 85-95 % of relative humidity in condition showed in Table 3.

Table 3

The kind of bird	Duration of keeping in the below temperatures (month)							
	-12°C		-15°C		-18°C		-25°C	
	without bag	with bag	without bag	with bag	without bag	with bag	without bag	with bag
Fowl	5	8	7	10	10	12	12	14
Chicken	4	8	6	10	8	12	11	14
Goose	4	6	5	8	7	10	11	12
Gosling	8	6	4	8	6	10	10	12

4） モンゴル規格<牛、羊およびヤギ半丸・１／４丸枝肉>

Standard of Mongolia

Half and quarter part of beef carcass, and sheep and goat carcass **MNS 129-83 (approved in 1983)**

This standard will be used to prepare, keep, receive by checking and transport the carcass of sheep and goat with age more than 18 months and half and quarter part of beef carcass with age more than 3 years, which has approved by veterinary and hygienic examination to use for food consumption, for export and domestic use in dried, chilled, and frozen type.

1. Classification

1.1 The sheep, goat, and cattle meat will be classified as follows by the operation made to them:
- -dried
- -chilled
- -frozen

1.2 by considering strength and fatness:

- -1st grade
- -2nd grade
- -3rd grade

2. Technical requirement

2.1 Dried, chilled, and frozen meat should satisfy the below requirements by its character.

a) dried meat – it means to shorten meat by cooling at room temperature after slaughtering. In case that the meat became flexible and the outside thin skin has completely dried, and the hollow arisen by pressing at the surface by finger could return its previous type in short time, it is considered that drying has made completely.

b) chilled meat – after slaughtering, meat will be chilled at normal air and special room. Temperature in the deepness of thick part (of muscle) of meat chilled along with technology instruction need to be between 0°C and +6°C.

c) frozen meat – meat will be frozen at cold air in quick-freezing equipment. Temperature in the deepness of thick part (of muscle) of meat frozen along with technology instruction needs to be not more than -8°C.

Remark:

a) The temperature of meat will be measured by setting the special thermometer at the 5-6 cm of deepness of meat muscle.

b) It is prohibited to refreeze the meat.

2.2 Sheep and goat meat for export and domestic use will be prepared in carcass and beef will be prepared in half and quarter carcass.

2.3 Sheep and goat for domestic use can be prepared with combined type by each grade along with permission and decision of related authority.

Remark: If two different grades of meat prepared with combined type, it will be received as the worse grade meat.

2.4 The beef in carcass to be supplied from Makh combinat (Makh Impex) and other slaughtering factories in domestic use should be sawed straightly by the middle of neck, spine, and back (along with spinal cord) or hewed dividing into half carcass.

2.5 To divide the carcass into quarter parts (divide into equal four parts), it should be divided into equal four parts by remaining three ribs at the side between the armpit and the hip with hip side.

Remark: In local areas when preparing the beef for domestic use, the Mongolian way that cut into 7 pieces can be used.

2.6 The esophagus and trachea of sheep and goat carcass, and beef in half and quarter carcass should be fully parted from, and they should have no remnants of offal, skin, penis, testicle, and udder. And also it should not be polluted by blood, cud, and any other external pollution. Snow and ice should not be stuck and accumulated on the surface of frozen meat.

2.7 For the sheep and goat carcass being prepared for export, the fillet and kidney with fat will be remained with according to the agreement with receiver country. But for the beef in half and quarter carcass, besides the spinal cord should completely be parted from, the fillet should be prepared separately.

2.8 The physical and chemical indications of cattle, sheep and goat should comply with the requirements mentioned in Table 1.

Table 1

Indications	Requirements of meet type and quality		
	beef	mutton	goat meat
1. Meat color	Red and reddish purple	Pale red and red	Pale red and red
2. Smell of meat	With its own peculiar smell of the certain kind of meat, without unpleasant smell resulted from its quality became worse and any other external smell.		
3. Fat (not less than %)			
1st grade	17.0	25.3	16.8
2nd grade	14.9	21.4	13.2
3rd grade	5.2	9.5	5.3
4. Protein (number of nitrogen)	3,3±0,15	3,19±0,17	
5.Humidity (not more than %)			
1st grade	60.6	57.7	64.4
2nd grade	63.7	58.1	67.6
3rd grade	71.9	71.4	73.6
6. Caloric content (not less than kcal)			
1st grade	2700	3100	2500
2nd grade	1800	2600	2000
3rd grade	1300	1800	1500
7. Ash (not more than %)			
1st grade	1.0	0.78	0.90
2nd grade	1.00	0.83	1.01
3rd grade	1.05	0.92	1.02
8. Amount of RH	5.5-6.4	5.6-6.4	5.6-6.4
9. Weight of carcass, kg	-	not less than 15.0	not less than 12.0
10. Various bacterium breeds disease	should not exist	should not exist	should not exist

2.9 The physical and chemical indications of meat will be determined by method of laboratory research.

2.10 The weight of meat will be measured by pood with relative fault not more than ±1%.

2.11 When determining the grade of beef, mutton, and goat meat by assessment of organs of sense, the requirements stated in Table 2 need to be satisfied.

2.12 Export is prohibited if more than 10 % of the area of surface layer of beef in half and quarter carcass and more than 5 % of surface area of sheep and goat meat has skin torn. For meat prepared for domestic use, grade will be determined by declining with consideration of skin torn of surface area.

2.13 It is prohibited to process and put on sale the meat, which can be used in purpose of food, but can not satisfy the quality requirements such as not satisfied the requirements on 3rd grade meat, refrozen, with skin torn on more than 30% of the meat surface area, the surface has become dry because of wrong storage, and polluted by blood, in purpose of industry.

3. Pressing a mark on the meat

3.1 The authorized specialists will give a grade and press the veterinary mark with code complying with the instruction approved by the order 204 of Minister of Agriculture on a meat manufactured for export and domestic use from Makh combinat (now it became Makh Impex) and other slaughtering factories.

3.2 When pressing a mark on a meat, the special dye approved by health organization will be used, and the dye should not be flowed and need to be clear.

4. Checking and receiving

4.1 The quality guarantee should be accompanied with each parts of the meat prepared for export and domestic use. In the quality guarantee, the followings should be included:

- veterinary and sanitary examination guarantee confirmed that the meat origin is of healthy cattle and fully approved to use in food consumption
- the meat prepared date
- quality guarantee and the meat prepared number of UST (UST 129-83) will be accompanied with invoice.

4.2 Quality controller and specialists of receiver organization will receive the meat prepared by Makh combinat and other slaughtering factories by checking in each along with this standard.

4.3 UST 514-81will be used when making a chemical and physical examination and GOST 2554-78 will be used when making bacteriology examination. In case of the examined sample is not satisfied the requirements of standard, the final decision will be made by making an examination again taking twice more sample from that part of products.

5. Transportation and storage

5.1 Frozen meat prepared for export will be kept in a storage disinfected to protect from various vermin and rodent at the temperature not less more than -18°C for 5 months, and meat for domestic use will be kept up to 10 months. If there is no special storage, meat should be transported within 5 days by taking a measure to protect meat from any kind of loss.

5.2 The chilled meat should not be kept in a storage with temperature of 0-40°C more than three days after preparation.

5.3 The all kind of meat should be transported by car or train equipped specially for meat transportation and satisfied the sanitary and hygienic requirements.

5.4 The chilled meat will be transported by hanging not touched each other.

5.5 If the special vehicle is insufficient, the meat prepared from local areas for export and domestic use can be transported by ordinary vehicle.
In this case clean paper or tarpaulin should be laid and covered with under the meat protecting from any pollution thoroughly.

5） モンゴル規格<馬肉>

Standard of Mongolia

Horse meat **MNS 0406-82 /approved in 07 April, 1982/**

This standard will be used to receive half carcass and quarter part of horsemeat, which has slaughtered for food consumption, to state reserves by checking.

1. Classification

1.1 Horse meat will be classified as follows by operation made for them:

-dried
-chilled
-frozen

1.2 by strength and fatness:

-1st grade
-2nd grade
-3rd grade

Remark: 1st grade meat will only be prepared for export purpose.

2. Technical requirements

2.1 a/ Chilled meat means that if the temperature in thick part of hip and part consists of shoulders, ribs and forelegs is less than +4°C after it was kept in cold storage with temperature /in normal air/ of 0°C-+4°C for 24 hours.

b/ If the temperature in thick part of hip and part consists of shoulders, ribs and forelegs is less than -10°C, it is named frozen meat.

Remark: Temperature measurement in thick part of the meat needs to be made by thermometer with metal protection with resistance.

2.2 Horsemeat has colors of red and reddish purple, yellowish fat, and specific and pungent smell.

2.3 The meat grade and its physical and chemical indications need to satisfy the following requirements:

	Indications	Meat grade		
		1st grade	2nd grade	3rd grade
1	Muscle development	Muscle-well developed, hip and part consists of shoulders, ribs and forelegs will be with full meat, shoulder blade, rib, outside part of hip, pelvis, back side, and peritoneum need to be covered with fat, abdomen fat is more than 4.5 cm in its thick part	The development of muscle with medium level, outside of quarter part of meat covered with fat with very little gaps, ribs are noticeable by bulging, and abdomen fat is more than 2.5 cm in its thick part	The development of muscle is bad, outside of quarter part of meat covered with thin fat with gaps and can be with shell in some parts, ribs are very noticeable by bulging clearly, and abdomen fat is more than 0.5 cm in its thick part
2	Oil /not less than %/	16.5	11.3	5.3
3	Protein /not less than %/	22.0	22.5	23.0

4	Ash /by percent/	0.87	0.94	1.02
5	Moisture /not more than %/	60.5	65.2	70.6
6	Caloric content /not less than cal/	2500	2000	1500
7	Microbe breeds disease	Should not exist	should not exist	should not exist

Remark: 3rd grade meat should not put on sale and need to be used after processing.

2.4 In order to divide meat into half carcass and quarter parts, half carcass will be made by cutting equally from neck to tail end along with length and quarter part will be made by dividing each half carcass into two by combining the three ribs at the part between the armpit and the hip into hip.
2.5 Meat should be cleaned from external pollution and throat, dregs, fillet, the remnants of internal organ, blood, shell, udder, testicle, red and white throat should fully be parted from.
2.6 Meat should not be touched by beast of prey and rodent, not be changed for color and smell, and also it should be fresh.

3. Sanitation Requirement
3.1 Horsemeat will be prepared according to the rule of veterinary medicine and the instruction to make sanitary and veterinary investigation on meat and meat products.
3.2 Horsemeat should not be used for any consumption, if bacterium breeds diseases like botulism, salmonella, and zoonoz (mouse sore, glanders, stranglers) are revealed during bacteriology research.

4. Checking and receiving
4.1 Horsemeat will be received in conforming to the season and weather condition of that period and operation made for them (dried, chilled, frozen).
4.2 If there is a requirement to determine quality, damage, and pollution, it will be determined according to the standard of method of analysis on meat and meat products.
4.3 Caloric content will be determined by the following formula in calculation way:

$$X=C-/J+3/4.1 + J9.3$$

X-Caloric content in100g of meat /cal/
C-dry substance /in percent/
J-size of grease /in percent/
9.3=caloric content of oil in 1g of meat
4.1=caloric content of protein in 1g of meat
3-weight of ash

4.4 The marks of grade and veterinary analysis will be affixed on each quarter part of meat which will be supplied for food consumption.
Remark: The mark "A" will necessarily be affixed considering with feature of horsemeat.

5. Storage and transportation
5.1 Dried and chilled half carcass and quarter part of meat will be stored in storage conformed to sanitary requirement with relative humidity of 60-70 % and not more than +2°C of temperature for not more than 2 days by hanging at a respectful distance.

5.2 Frozen meat will be stored in a cold storage with temperature of not more than -18°C for less than 3 months. The carcass which has just come out from slaughter of the day will be stayed through whole night in outside by hanging and will be taken inside to the cold storage in the morning before it gets hot under sun.

5.3 Besides dried and chilled meat can be transported by car and wagon equipped for special purpose, frozen meat can be transported by open car /lorry/. But in this case pure snow or tarpaulin need to be laid inside of trough and under the meat, as well as meat needs to be covered over with tarpaulin in order to protect from dust.

5.4 The verification of quality, which date of meat preparation, the address of aimag /province/, summon, and organization, as well as information on quantity was written on it, need to be kept to each drivers who are transporting meat with bill of meat.

6） モンゴル規格<輸出用カット馬・牛肉>

Standard of Mongolia

Horsemeat and beef prepared by cutting into pieces for export **MNS 3514-83 /approved in 1983/**

This standard will be used when preparing the horsemeat and beef by cutting into pieces and classifying for export.

1. Technical requirement

1.1 The 1st grade horsemeat and beef prepared by cutting into pieces will be produced along with technology instruction issued by State Committee of Price and Standard and approved by Ministry of Light and Heavy Industry.

1.2 This kind of meat should be complied completely with the sanitary and hygienic requirements.

1.3 When cutting and classifying the 1st grade horsemeat and beef by their quality, they should be kept by freezing along with related procedure after classifying and cutting the dried, chilled, and frozen half carcasses

1.4 *It is prohibited to use beef carcass which its outside fat turned yellow or meat refrozen by classifying.*

1.5 Horsemeat and beef prepared by classifying and cutting into pieces should fully be complied with the requirements showed in the table.

	Character	
	Beef	Horsemeat
A	B	
1. Outward appearance	It is required that the remnants of internal fat should be cleaned thoroughly and the fillet should be separated from the meat cut into pieces.	
	The 1st grade meat will consist of hip in full, upper part of peritoneum, 1/3 part of rib between 6th and 12th ribs, spine part with spine, 13th rib in full, and the loin.	The 1st grade meat will consist of hip in full, upper part of peritoneum, 1/3 part of ribs between 10th and 17th ribs with spine, 18th rib in full, and the loin.
2. Limit of cutting	When cutting 1st grade meat, it needs to be cut between 5th and 6th ribs and the ribs from 6th to 12th must be sawed *in direction to kneecap* (junction of thighbone and anklebone) by considering 1/3 of the length of rib will remain with spine. But 13th rib, the last rib at the part between the armpit and the hip, should remain full and it *should be cut by the part between rib* and cartilage part connected to breastbone.	When cutting 1st grade meat, it needs to be cut between 9th and 10th ribs and the ribs from 10th to 17th must be sawed in direction to kneecap by considering 1/3 of the length of rib will remain with spine. But 12th rib, the last rib at the part between the armpit and the hip, should remain full and it should be cut by the part *between rib and cartilage part* connected to breastbone.
3. Color	It should have red or pale red color.	
4. Weight of the 1st grade meat by kg (not less than)	30	35
5. Temperature in the deepness of the meat by C° (not more than)		

a) chilled b) frozen		4 -10

Remark:

The weight of meat can be different from the size indicated in the standard in relevant with request of customer.

2. Checking and receiving

2.1 The color and outward appearance of the meat cut into pieces will be determined by organ of sense.

2.2 The temperature in the deepness of meat will be measured by placing thermometer in the thick part close to bone at the deepness not less than 6 cm.

2.3 In order to determine the freshness of meat, research will be done on sample of it in accordance with UST 514-81 and UST 2553-78. If the sample passed research is not satisfied the requirements of the standard, the final decision will be issued after making a research again on sample with size of twice more than before.

3. Packaging, labeling, storage and transportation

3.1 The horsemeat and beef cut into pieces by classifying will be transported with the following types:

a) by chilled type: Meat classified and cut into pieces will be transported by special car or by train by hanging without packaging.

b) by frozen type: Meat classified and cut into pieces will be transported by putting it into white /unbleached calico/ cloth bag /the mouth of bag should be sewed nicely by sewing machine/.

Remark: The type, size and shape of bag material, which will used to put meat classified and cut into pieces in, can be changed in relevant with request of customer.

3.2 The label with the following content should be hanged /stuck/on each classified limb:

- Made in Mongolia
- Mongol export union
- Meat net weight
- Produced date
- Name and number of the factory

Remark:

a) The label should be published with nice appearance in language of ordered country.

b) When hanging a label on chilled meat, label should be put into little polyethylene bag.

3.3 Horsemeat and beef classified and cut into pieces should be stored in storage with 85-90 % of air comparative moisture and with temperature of 0°-+2°C by hanging for not more than 10 days in type of chilled. But in frozen type, they should be stored in storage with 95-98 % of air comparative moisture and with temperature not more than -15°C up to 3 months.

3.4 1st grade horsemeat and beef classified and cut into pieces should be transported by special vehicle along with type mentioned in item 3.2 with condition mentioned in item 3.3.

7） 食肉および食肉加工食品の衛生管理のための一般要求事項

Standard of Mongolia

Meat and meat products.
General requirements for hygienic safety **MNS 5023:2001 /approved in 2001/**

It is necessary that the normative requirements in this standard should be complied with.

1. The scope

This standard will be complied with during the operations related to cattle slaughtering, meat processing, and meat products production for export purpose. This standard establishes the general requirements for hygienic safety in cattle slaughtering, meat processing, and meat products production and directed to provide meat and meat products with hygienic safety guarantee.

2. Normative quotation

In this standard, the following international and national standards used as a quote, and in case of their change the quote will be from the last official original material.

- "Lamb" MNS 1111:98
- "Method to determine meat and meat products damage" MNS 1161:71
- "divided half carcass" MNS 1616:72
- "Beef half and quarter carcass and carcass of sheep and goat" MNS 129:83
- "Amount of heavy metal in food products" MNS CAC 4504:97
- "Amount of remnants of pesticide in food products" MNS CAC 4504:97
- "Information on food products for customers" MNS 4579:98
- "Basic hygienic requirements of food" CAC (Vol.A.Ed.1)
- Hygienic requirements of meat production CAC/RCP 13-1976 Rev 1 (1985)
- Hygienic requirements of fresh meat CAC/RCP 11-1976
- Veterinary and sanitary requirements on raw materials and products originated from livestock and animal
- Method to make checking to cattle before and after slaughtering CAC/RCP 12-1976

3. Registration of factory, location, construction inside the fence, road and square

3.1 Registration

The factory should be built along with plan of professional institution and registered in state registration.

3.2 Location

The factory should be located in dry and clean environment without bog, unpleasant smell, smoke, trash, and other pollution. The general plan of the factory should be approved by veterinary and hygienic control organizations.

3.3 Ground and road inside the factory fence

3.3.1 Ground inside the factory fence should be covered by asphalt partly, turned into a lawn, and easy to clean.

3.3.2 Road inside the factory fence should be covered by asphalt in full, with condition which do not form dust, and easy to clean.

3.4 Construction

3.4.1 Construction of factory should have enough space and square to make veterinary and hygienic control and examination on live animal, meat and meat products, and also to conduct production along with requirements of technology and hygienic safety.

3.4.2 Factory building should have enough air conditioning, illuminated thoroughly by natural and artificial light, easy to clean, and with condition protected from input of external substance into product. The shutter and protection should be made in parts which is possible to be polluted by dust and other things.

3.4.3 It should be built and equipped protecting from nesting of insects, mouse, bird, and other beast of prey.

3.4.4 Rooms and storages for chilling and freezing the meat and finished products should satisfy fully with technological and hygienic requirements.

3.4.5 The building and fence for receiving animals, making examination, and keeping for slaughtering should comply with the determined norms and requirements by veterinary and hygienic control office.

3.5 Production place

3.5.1 Floor should be impermeable, not absorbent, convenient to wash and clean, made by material which is not slippery with no gap, and convenient to make sanitization and cleaning. Also floor should be made sloping for free flow of water into sewerage and it should have a hole with cell which has been placed along with related requirement.

3.5.2 Wall should be impermeable, not absorbent, made by material convenient to wash, easy to clean, and with white and bright colors.

3.5.3 Ceiling should be protected from accumulating dust, and should arise water and humidity as minimum as possible, with condition that fungus and mould do not grow on it, and its dye and lime is firm, and easy to clean.

3.5.4 Window should have net shutter to protect from accumulation of dust and insect, and it should have painted by dye which is firm and easy to wash and clean. Window-sill should be made as sloping in order to be not possible to use it as stand. Door should be made by not absorbent material with smooth surface, and it should be closed fully, if possible it need to be made as closes by itself.

3.5.5 Assistant system, such as stairs, elevator, platform for taking down the product temporarily, and pipe, should be with condition protected from polluting the meat and meat product, possible to clean, and provided by condition to make sanitary and hygienic examination and control.

4. Technological equipment and containers

4.1 The part, which directly touch with products, of equipment and containers which will be used for slaughtering, processing meat, and producing meat products should be made by stainless material with no content of poisonous substance and with properties that do not transmit and absorb the unpleasant smell and taste. They should be convenient to reuse by sterilizing and cleaning.

Their surface should be smooth and without any hole and rift. It is prohibited to use stainless metal, but wooden material or similar material which is inconvenient to clean and sterilize can be used along with approval of hygienic control office.

4.2 All equipments and containers will be installed and placed to be convenient to make sterilization, cleaning and sanitary control and examination according to hygienic and sanitary requirements.

4.3 Wastebin and things which will be used in purpose other than food consumption should be made by stainless metal which has a lid sealed thoroughly and without hole, or they can be made by other material convenient to clean and sanctify, and complied with the above requirements. In that purpose the container for single use can be used and it should have good sealed lid.

4.4 Special mark will be put on the wastebin and things which will be used in purpose other than food consumption, and it is prohibited to use in food product.

4.5 Rooms, cellars and storages for drying, chilling, and keeping meat should have a tool to note and measure temperature of that area.

5. Sanitary and hygienic general condition

5.1 Water supply

5.1.1 The technological need of production will be supplied by drinking water satisfied the requirements of "Drinking water" MNS 900:92 standard.

5.1.2 The factory should have hot water main which will be required for technological need, cleaning, and sanitization. Hot water for cleaning should be not less than 65ºC and for sanitization than 80ºC. Hot water for sanitization should have separate source from water used in other purpose.

5.1.3 Ice only prepared by drinking water (5.1.1) should be used in technological needs.

5.1.4 Steam for technological needs should not contain any substance harmful to human health and pollutes food product.

5.1.5 Non-drinking water can be used in purpose other than technological and its main should be separate from drinking water's main.

5.2 Removal of sewage and waste

The factory should have a system to remove and clean sewage.

5.2.1 Special container for keeping temporarily non-food things and waste should be placed in special place and cleaned within the period stated in sanitary rule. The waste-product point should not be the source to breed any disease and to pollute drinking water, raw material, product, and equipment.

5.3 Air conditioning

5.3.1 The factory should have air conditioning system to let fresh air by removing dust and polluted, extremely heated and damp air.

5.3.2 The direction to export the polluted air should not intersect with the direction to import the fresh air.

5.3.3 Ventilators to export and import the air should have a net shutter to protect from penetration of insects and coat made by stainless material. Shutter of ventilator should be made possible to clean by separating from.

5.4 *Illumination*

5.4.1 The factory should be provided by natural and artificial light with amount not less than stated below.

- At the all control points-540 lk
- At the technological transmission-220 lk
- At the other places-110 lk

5.4.2 At the technological transmission, lamp should be placed to be shone upon the product and it should be protected from polluting the product when the lamp has broken.

5.5 Cleaning and sterilizing tools and equipment

5.5.1 All of technological transmission and room should be placed close to working place and with tools and equipment for cleaning and sterilizing.

5.5.2 Tools and equipment for cleaning and sterilizing should be satisfied fully the condition to make operation along with requirements on hygienic rule, made by stainless material, and easy to clean.

5.5.3 Tools and equipment for cleaning and sterilizing should be connected with hot water main or fully provided with condition to use hot water.

5.6 Sanitary room

5.6.1 Factory's sanitary room should be connected with mains of pure water and sewage, air conditioning, and separated from food product production by the size stated in hygienic legal act, and sufficient to total workers.

5.6.2 Sanitary room should have hot and cold water, preparation to sterilize hands, and drier. Taps of hot and cold water will be combined and operated without touching by hands.

5.6.3 At the factory premise, hot and cold water, sterilizing substance, wash-hand stand with drier should necessarily be existed.

5.6.4 Technological workers should be provided with possibility to have shower after and before the work. Bathroom should be satisfied the requirements of hygienic rule.

6. Hygienic and sanitary requirements of production

6.1 Hygienic and sanitary requirements inside the fence

6.1.1 The road, square, and grass inside the factory fence should be always clean by cleaning in accordance with sanitary rule.

6.1.2 It is prohibited to enter transportation vehicle not for industrial purpose in the fence. Road utilization should be coordinated as not transporting the raw material, product, and waste in one road at the same time.

6.1.3 It is prohibited that domestic animals to be without control in the factory fence.

6.2 Hygienic and sanitary requirements of factory premise

6.2.1 Factory premise, equipments, engineering line system should satisfy the requirements of this standard.

6.2.2 Excess steam and water should not be existed at the places other than heating processing and washing places.

6.2.3 Premise, square, equipment, and tools should be cleaned and sanitized at the beginning, middle and end of operation along with hygienic rule. The preparation and substance approved by hygienic organization will be used in cleaning and sanitization.

6.2.4 Relaxing room, examination and control room, sanitary room for workers should always be clean.

6.2.5 It is prohibited to conduct different operation from the particular operation at the technological certain transmission.

6.2.6 Interchange of heating should be coordinated that environment warmness to be not more than 16°C in operation to bone. Premise, square, equipment will be sanitized and cleaned after continuing the technological operation for 4-5 hours.

6.2.7 Non-food things and waste should be removed in certain period and after that tools which have been touched with waste should necessarily be cleaned and sanitized.

6.2.8 Extermination and sanitization to prevent from vermin and rodent should be made along with hygienic rule under the control of professional organization.

6.2.9 The substances harmful to human health should be kept in special room with certain label and address. Material of package, containers, and the substances to pollute the raw material, seasonings and additional things, and to give various taste and smell to them should be kept far from technological transmission in a special room.

6.2.10 After cleaning and sanitizing the equipment and tools, they should be sprayed thoroughly by clean water to be removed from remnants of chemical substances.

7. Workers' health and hygienic requirements

7.1 Workers at the meat factory should be defined that they are healthy by health check-up.

7.2 Workers should be involved in health check-up in certain period. It is prohibited to hire a person who has a disease can be infected to the product, wound, and skin disease.

7.3 Technological transmission workers who have direct contact with meat and meat product need to have shower and wear clean clothes before work, and also after work they need to have shower and give their work clothes to washing.

7.4 The authorized person, control unit or commission appointed by factory administration will check workers' personal sanitation and take related measures.

7.5 It is prohibited to smoke, chew gum, and have a meal in working place and in condition to pack the product, store, and to load them into transportation vehicle.

7.6 Workers at the transmission of loading meat and meat product should wear special apron, gloves, and boots. Routine to sterilize and clean them to be defined by hygienic rule.

7.7 It is prohibited to let the unauthorized person enter to the factory. If necessary they will be entered only with protection clothing (overalls, pads, hat etc.,).

8. Safety requirements of raw material and product

8.1 Raw material

8.1.1 Veterinary examination will be made in each cattle prepared in purpose of meat and meat product production. If necessary, veterinary control laboratory will make a summary by making a related examination including measurement of body temperature on 15-20% of total animal.

8.1.2 The cattle which has approved that they have no symptoms of infectious disease, with no disease to parasitize, and prepared from safe area by veterinary organization in result of veterinary examination and research will be received.

8.1.3 When receiving, preparing for slaughtering, and slaughtering the cattle, the rule and procedure by veterinary control authority organization will be complied with.

8.1.4 Meat which will be used in meat product production should be confirmed that it has satisfied the requirements of this standard and prepared from healthy animal by veterinary control department.

8.1.5 Raw materials other than meat need to be complied with the requirements of this standard and other related standards, and need to have a hygienic guarantee.

8.1.6 Meat and other raw materials will be received by professional people on the basis of assessment of organs of sense. It is prohibited to receive meat and raw materials which has polluted by external substance and its taste and smell has changed. In case of necessity the laboratory research will be made to decide that whether or not receive the meat and other raw materials.

8.2 *Product safety requirements*

8.2.1 Meat will be supplied to the customers with frozen and chilled types. The buyer and seller will make arrangement by contract on the detailed indications such as physical and chemical features of meat and meat products, dividing the carcass, boning, and packaging.

8.2.2 Meat and meat product should be without pollution, clot of blood, and be clean without external smell. Meat will be kept with frozen and chilled type along with the following requirements.

№	Product	Temperature	Keeping period
1	Chilled meat	0°C-1.5°C	14-21 days
2	Frozen meat	-12°C	6-9 months
3	Deep frozen meat	-18°C	9-12 months

Temperature to chill and freeze and keeping period of meat and meat products of certain kind of animals and cattle will be defined in the standard of certain product in detail.

8.2.3 Meat and meat products will comply with the requirements indicated in Table 1 for their hygienic and safety state.

Table 1

№	Hygienic indications	Measuring unit	Maximum amount to be admitted
1	Remnants of heavy metal	mg/kg	
	Lead, Pb		0.5
	Cadmium, Cd		0.05
	Arsenic, As		0.5
	Mercury, Hg		0.03
	Copper, Cu		5.0
	Tin, Sn		200.0
	Stibium, Sb		0.1
	Selenium, Se		1.0
	Nickel, Ni		0.5
2	Total activity of gamma ray	Bk/l, kg	100.0
	Strontium-90	Bk/kg	50.0
	Caesium-137	Bk/kg	160.0
	Iodine-131	Bk/kg	not allowed
3	Remnants of pesticide:	mg/kg	
	DDT		0.1
	DDE		0.1
	Sevin		0.2
	Hexachlorine (a, ß, γ isomery)		0.1
	Atrasin		0.02
	Lindan		0.1
	Chlorophos		0.1
	Chloropriphos		0.2
	Monokrotophos		<0.02
	Metamidophos		0.1
4	Amount of antibiotic and hormonic preparation, not more than	mg/kg	
	Antibiotic: Benzilpenicillin		0.05
	Anti-parasite: Levotizole		0.01
5	Indications of bacteriology:		
	E.coli – 0157, not more than in 1g		10^1
	Salmonella Spp. not more than in 25g		15-20 cell
	Listeria monocytogenes not more than in 0.1g		10^3
	Campylobacter, not less than in 25g		
	Clostridium botullinum, in 0.1g		400-500
	Bacillus cereus, in 0.1g		not allowed
	Staphylococcus aureus, in 0.01-1g		not allowed
	Psevdomonos aeruginosa, in 25g		not allowed
			not allowed
6	Mould and fungus	mg/kg	not allowed

8.2.4 Meat and meat products will be kept along with condition stated in the item 8.2.2 of this standard. Cellar to chill, freeze and keep meat should be clean and made sterilization and cleaning in due period.

8.2.5 Hygienic inspector of veterinary medicine appointed by authorized organization will make an examination in meat and meat products and press stamp on them. Hygienic safety definition of meat and meat products will be issued by authorized laboratory on the basis of research. The product which

has satisfied the requirements of this standard by examination of veterinary and hygienic inspector and laboratory research will be supplied to the customer.

8.2.6 The package which corresponds with condition of storage and approved by authorized organization will be used in meat and meat products.

8.2.7 The information stated in MNS 4579:98 should necessarily be written on the accompanied documents or package of meat products which is ready to supply with customers.

8.2.8 Meat and meat products will be transported by special vehicle which its wall and inside layer made by stainless material, with smooth surface, with features of impermeable and not absorbent, and easy to make cleaning and sterilization.

9. Hygienic safety control system

9.1 The commission to make hygienic safety control on meat and meat products will be appointed by factory administration. This commission will be responsible for all works related to satisfy the food hygienic and safety state in the factory.

9.2 Each factory should have own hygienic rule. All works related to satisfy food hygienic safety condition in production process will be coordinated by this rule.

9.3 Meat factory will have veterinary control department and physical, chemical, and bacteriological laboratory. Inspectors and experts of these laboratories will make hygienic safety assessment of meat products.

9.4 The examination of veterinary surgeons and inspectors and the result of related laboratories' research will be the basis of granting the quality guarantee to the meat and meat products. Only the product with quality guarantee will be supplied to the customers.

8） モンゴル規格＜と殺豚の半丸枝肉＞

Standard of Mongolia

Slaughter Pigs in Half Carcasses **MNS 167-92 (approved in 1992)**

This standard will be used to prepare, keep, receive by checking and transport the pigs in half carcasses, which has approved by veterinary hygienic examination to use in purpose of food, with live weight of not less than 40 kg and with age more than 5 months for export, industry, and public catering in hot, dried, chilled, and frozen type.

1. Classification

1.1 The pigs in half carcass will be classified as follows:
1.1.1 for its process by operation:
- -hot
- -dried
- -chilled
- -frozen

1.1.2 by considering strength and fatness from fodder, meat quality, and thickness of fat:

a) for meat
- -1st grade
- -2nd grade
- -3rd grade

b) for meat and fat
- -1st grade
- -2nd grade

2. Technical requirement

2.1 Hot, dried, chilled, and frozen pig in half carcass should satisfy the below requirements by its feature.
2.1.1 Hot meat: temperature in deepness not less than +25 °C and surface should be dry.
2.1.2 Dried meat: After slaughtering, pig in half carcass should become flexible kept in room temperature, and it should have dry surface that its fat and thin skin has fully dried, and temperature in deepness should be not less than +8 °C.
2.1.3 Chilled meat: After slaughtering, meat should be chilled in special room at normal air. Temperature in deepness at the thick part of chilled meat should be 0°C-+8°C.
2.1.4 Frozen meat: meat should be frozen, temperature in deepness at the thick part should not be more than -8°C, and the backbone should not be turned black.

Remark:
a) Meat temperature will be measured by setting special measuring instrument in the thick part of muscle at the deepness of 5-8 cm.
b) It is prohibited to refreeze meat by defrosting.

2.2 The grade of pig in carcass should satisfy the following requirements depending on operation to fodder:
2.2.1 The pig with age of 6-9 months will be fed in purpose of meat use.
By live-weight and thickness of fat:
1st grade: 70-90 kg, more than 3 cm
2nd grade: up to 70 kg, more than 2.0 cm
3rd grade: more than 40kg, not less than 1.5 cm
2.2.2 Sow, wild boar, and pig with age more than 9 months will be fed in purpose of meat and fat.

2nd grade: with live-weight of 90-100 kg

2.3 The skin fur of pig in carcass should be cut, singed and also it should be taken the skin off.
2.4 In order to divide pork in half it should be sawed along with white line of spine without damage by getting out spinal cord.
2.5 Head and hoof should be parted from the pig in half meat, and it should be cleaned from blood, clot of blood, hair, and offal, and without any external pollution such as snow, ice, dust etc.
Remark: There can be inner fat not more than 0.3 % of carcass weight.
2.6 The head of pig should be parted from by the front side of 1st joint of neck, cartilage part of eye and ear should be cut away, and it should be clean without any hair and fur.
2.7 The shanks of backside and front side of pig should be cleaned from hair and fur, and hoofs should be parted from.
2.8 Tail will be cut away by its end.
2.9 Muscle of hot, dried, chilled meat should be flexible which is capable to return its previous type in short period after pushing one place by finger. It should not bleed when cutting the muscle.
2.10 It should have own specific smell of fresh meat without any abnormal smell.
2.11 In case of cut of pig in half carcass exaggerates from 5% of surface, with damages from hit, with noticeable redness in fat color, marked by non-food dye, meat with black color can be used its own use under the control and official permission of veterinary hospital.
2.12 The examination of tichinelleoz, phinnoz, and infectious diseases should necessarily be made to pig in half carcass.

3. Pressing a mark on meat

3.1 Grade and number of pig in a half carcass will be determined and a mark will be pressed on it within 1 hour after slaughtering after the decision of veterinary office has passed.
3.2 The special dye which has approved by health organization will be used. The dye of a pressed mark should not be spilled over.

4. Checking and receiving

4.1 The quality guarantee and veterinary certificate which has obtained according to the related procedure will be accompanied with each parts of meat prepared for export and domestic use.
4.2 In quality guarantee and the veterinary examination paper, the final decision of the veterinary and hygienic examination which has fully approved to use for food consumption and also confirmed that it is a meat from healthy pig, definition of laboratory research work, date of preparation, and address of factory which prepared the meat need to be written clearly and they will be accompanied to invoice.
4.3 Meat receiving organization will receive supplied meat by making a check according to the UST 3188-81 of statistic control.
4.4 When making a examination by taking a sample, the standard and procedures to take sample and to receive meat and meat products by checking, and to give assessment by organs of sense will be followed.
Remark: If the result of examination does not satisfy the standard requirements by some indications, the final decision will be made after examining the part again by taking a sample.

5. Transportation and storage

5.1 Transportation will be conducted by vehicle or train with cooler satisfied the veterinary and hygienic requirements, covered, and formed the condition to protect from external impact.

5.2 It is prohibited to transport meat with any kind of products other than meat.
5.3 The chilled and dried pigs in half carcass need to be chilled until the other organs loaded to the vehicle. It should be kept in storage of prepared place for not more than 36 hours after preparation.
5.4 The chilled and dried meat, and offal can be transported together only with permission of veterinary and hygienic organization.
5.5 Temperature during transportation should not be more than +3°C.
5.6 If there is a need to transport hot meat, no more than two layers can be transported by hanging based on permission of veterinary and hygienic organization. Person/organization who transporting this need to notify to the related veterinary and hygienic organization responsible for that area.
5.7 Frozen pigs in half carcass need to be transported in a mass. Transportation condition and temperature of frozen meat will be decided based on agreement between supplier and customer.
5.8 Pigs in half carcass and other products after transporting should be unloaded without delay.
5.9 Chilled and dried half carcass can be stored in a storage with temperature of 0°C-+4°C by hanging for 36 hours.
5.10 Frozen half carcass should be kept in storage with temperature below -8°C.
5.11 Hot meat should directly be taken to further processing operation without keeping.

9） モンゴル規格<羊・ヤギの生ケーシング>

Standard of Mongolia

Sheep and goat raw casing **MNS 0061-98 /approved in 16 October, 1998/**

This standard will be used to receive dried, salted and frozen sheep and goat raw casings at the processing factory or at the receiving point, which can provide the requirements of processing factory, by checking, and also to prepare them in purpose of production.

1. Classification

1.1 Casings of small cattle will be classified as follows by the cattle type:
- -sheep casing
- -goat casing

1.2 By quality:
- -1st grade
- -2nd grade
- -3rd grade

2. Technical requirements

2.1 The instructions approved by State Veterinary Office should be complied with when taking out casing, making first level quality protection, receiving with inspection, packaging, and transporting.

2.2 Casing taken out from one cattle with length not less than that stated in the standard will be called a roll of casing.

2.3 Casing prepared for production should be folded in roll correctly, dried, salted completely in accordance with related instructions, or frozen by making a set with combining several rolls. Casing prepared in that way should be cleaned from inside excreta, with firm wall, and with specific color and taste.

2.4 In the casing there should not be spot (black, green.....) which is not removable in water wash, iron rust, rotten smell, physical matter (grass, cud, dust, stone etc).

2.5 In accordance with the requirements showed in Table 1, the sheep and goat casings will be classified by grade.

2.6 The casing will be frozen as a set with combining several rolls. It is not allowed to freeze by each roll separately.

№	Grade	Total length of one roll casing /m/	The number of parts in one roll casing	The number of holes on the wall of one part casing	Freshness of casing
A. Sheep casing					
1	1st grade	More than 25	1	No hole	Without fat, dried, and folded by salting correctly
2	2nd grade	More than 23	2	1	
3	3rd grade	More than 23	3-4	1	It can be frozen
B. Goat casing					
4	1st grade	More than 20	1	No hole	Without fat, salted, can be frozen
5	2nd grade	More than 18	2	1	

Remark: If there are more than 2 holes within 50cm on the wall of one part casing with length of 25m for sheep and 20m for goat, it will be considered as a stoppage and then it will be two parts casing.

3. Checking and receiving

3.1 The casing should be received and checked only at the premise of processing plant or at the receiving point prepared in accordance with purpose.

3.2 The casing will be received by measuring the length by meter and evaluating the cleaning and damage of it by feeling.

When making a measurement, it is not necessary to open a roll casing. The total length will be calculated by the following formula after measuring the length of a roll and counting half circle:

$$L = N \times l \times 2$$

L – length /m/
N – number of half circles
l - length of one part /m/

3.3 The frozen part will be received and checked after defrosting completely.

4. Packaging and labeling of casing

4.1 In case of not intended to process the casing directly after receiving and checking it, the dried casing will be arranged in a row in special container (wooden barrel, leather bag, plastic bag etc) by layers. By filling up the container, it need to be closed by sealing and quality guarantee certificate will be accompanied. If necessary, the firmness of the wall can be checked by flowing water. The quality guarantee certificate and veterinary examination paper will accompany with each part of the casing that will be supplied to production.

4.2 The followings will be included in quality guarantee certificate:

- Origin
- Received date
- Grade of casing
- The number of roll of casing
- The freshness of casing
- The full name and number of giver
- Packaged date

4.3 In one container one kind of casing with same quality and same grade should be packaged. If the container not filled up, the other kind and grade of casing can be added by making note and separating each of them by grease-proof paper and pure cloth material.

5. Storage

5.1 The casing should not be stored without packaging.

5.2 The packaged casing will be stored in condition with temperature between –18 and +18 degrees which has protected from sun direct shine, dust, moisture /water, rain, snow/ for up to 5 months.

6. Transportation

6.1 The casing will be transported only with sealed package.

6.2 It is prohibited to transport the casing without special package.

10) モンゴル規格<細口および太口血液入りソーセージ>

Standard of Mongolia

Thin and Large Blood Sausage **MNS 110-81 (approved in 1981)**

This standard will be used to produce thin and large sausage, receive by checking, pack, address, store, and transport them.

1. Classification

1.1 The sausage will be classified into the following kinds and grades depending on its raw material and product quality:

Highest grade
-thin sausage "Bariin"
-thin sausage "Gobi"
-thin sausage "Zuushni"

1st grade
-large sausage "Orkhon"

2. Technical requirement

2.1 The sausage should be produced according to the technological instruction, recipe, and the norm of input approved by State Committee of Price and Standard of Ministry of Light and Food Industry.

2.2 The following raw materials will be used to produce sausage.

-beef
-pork, fat
-fat sheep-tail
-blood plasma
-pig scalp
-liquid cow milk with no greasiness
-protein concentrator
-powdered common salt (extra)
-natrium nitrite
-phosphate salt
-ascorbic acid
-sugar
-black or white pepper
-red pepper
-fresh garlic
-nutmeg
-caraway
-intestines of sheep and goat
- pig small intestines, beef black entrails
- thin rope for package
- polyethylene bag

2.3 The raw material used to produce sausage should comply with standard of that product, technical condition, requirement of normative document, and hygienic and sanitary requirements.

Remark: If the laboratories of sausage producing factory do not make chemical research, using the nitrite is prohibited.

2.4 Physical, chemical and microbiological indications of sausage should satisfy the requirements stated in Annex 1.

2.5 When assessing sausage by organs of sense, it should satisfy requirements indicated in Annex 2.

2.6 When assessing sausage by organs of sense, it should take point not less than 32 points. The limit of point should comply with Annex 3.

3. Procedure to receive by checking

3.1 Sausage will be received by checking each part. The part means total products of same kind which has produced in same day, same shift, and same technological rule.

For buyer organization, the part means products arrived with one document.

3.2 The sausage with below mentioned quality defect is prohibited to put on sale:

- mould has grown on the surface of skin of sausage and it has polluted by external things
- skin has broken and torn open
- sparse packed, multicolored because of surfaces have stuck with each other.
- boiled incompletely, uncooked, or fried more than necessary

3.3 Quality guarantee should be accompanied with each part of sausage and the address with the following content need to be enclosed with.

-name of product
-number of standard
-produced date
-duration of sale
-personal number of quality inspector

3.4 When examining the sample of product, the following standards should be complied with.

- MNS 2551-78 method to take sample for research to receive sausage and meat products by checking
- MNS 2553-78 method of bacteriology research for sausage and meat products
- MNS 2552-78 method to make sense research on sausage and meat products
- MNS 514-81 method of physical and chemical research of sausage and meat products

In case that the examined product can not satisfy the requirements of standard, the final decision will be made after making an examination again by taking twice more sample than before from this part.

4. Packing, addressing, storing, and transporting

4.1 After chilling the sausage thoroughly, it should be packed into special box and wooden box (MNS 1570-81) put a layer on its inside by clean grease-proof paper with no external smell by no more than 20 kg.

The container for transporting sausage can be used instead of box.

4.2 In one box only one kind of products from one part should be packed in.

4.3 The "Zuushni" sausage for retail sale and common food consumption should be packed in special polyethylene bag by 5 pieces in vacuum condition.

Net weight of products packed in 1 bag should be 200 g and fluctuation of weight can be ±3%.

The address published on polyethylene bag or on special paper should be stuck at outside of bag. In the address:

-name of ministry and factory
-product name
-net weight
-produced date
-number of MNS
-price in retail trade

Thin sausage "Zuushni" for public food consumption can be put on sale by packing in special paper box with inside layer of grease-proof paper by not more than 5 kg.

4.4 After packing and sealing the product, printed address with the following content should be stuck at the outside of box:

-name of ministry and factory
-kind and grade of sausage
-number of MNS
-net weight
-produced date
-personal number of quality inspector
-price in retail trade

4.5 It is prohibited to pack sausage in sack and transport by uncovered car.
4.6 Thin and large sausages will be put on sale after chilling.
4.7 Sausage will be kept in storage with temperature of 0-8°C and relative humidity of 75-78% up to 24 hours by hanging.
4.8 In condition of that there is no storage with condition mentioned above, sausage need to be sold within 12 hours.
4.9 Packed thin and large sausage will be transported by special car which satisfy the sanitary requirements and with no effect to worsen the product quality.

Annex 1

Physical, chemical and microbiological indications of sausage

Indications	highest grade	1st grade
	thin sausage	large sausage
1. Amount of salt (by percent)	2,0-3,0	2,0-3,0
2. Highest amount of humidity (by percent)	65	70
3. Highest amount of nitrite in 100 g of product (mg)	5	5
4. Lowest amount of protein (by percent)	15	15
5. Lowest amount of oil (by percent)	15	15
6. The number of microorganism in 1g of product (highest amount)	1000	1000
7. Escherichia coli	not allowed	not allowed
8. Microorganism of kind of protein	not allowed	not allowed
9. Pathogenic microbe	not allowed	not allowed

Annex 1 of resolution №45 of 1982
by State Committee of Price and Standard

Annex 1.1 of MNS 110-81

Indications	1st grade
	Thin sausage "Gobi"
1. Amount of salt (by percent)	2.0-2.5
2. Highest amount of humidity (by percent)	67
3. Highest amount of nitrite in 100 g of product (mg)	5
4. Lowest amount of protein (by percent)	15
5. Lowest amount of oil (by percent)	15
6. The number of microorganism in 1g of product (highest amount)	1000
7. Escherichia coli	not allowed
8. Microorganism of kind of protein	not allowed
9. Pathogenic microbe	not allowed

Remark: Sausage "Gobi" will be considered as 1st grade sausage by quality of its raw material and finished product.

Annex 1 of resolution №45 of 1982
by State Committee of Price and Standard

Physical, chemical, and microbiological indications
of thin sausage "Zuushni"

Amount	Unit	Amount
1. Amount of salt (by percent)	%	2.0-2.5
2. Highest amount of humidity (by percent)	%	65
3. Highest amount of nitrite in 100 g of product (mg)	mg	
4. Lowest amount of protein (by percent)	%	15
5. Lowest amount of oil (by percent)	%	15
6. The number of microorganism in 1g of product (highest amount)	piece	1000
7. Escherichia coli	-	not allowed
8. Microorganism of kind of protein	-	not allowed
9. Pathogenic microbe	-	not allowed

Annex 2

Indications of research of sense on sausage

№ Indication	Highest grade	1st grade
	Thin sausage	Large sausage
1. Outside appearance, firmness	Big skin is not damaged and not creased, with smooth reddish color, without any external pollution, and flexible;	-"-
2. State of cut	Minced meat packed thickly, without hole with diameter more than 1 mm, things such as sinew which has reduced to small parts incompletely has not seen;	-"-
3. Taste and smell	With specific and pleasant taste and smell of product and seasonings and without any external smell;	With garlic smell and taste besides pleasant smell and taste of seasonings and without any external smell and taste;
4. Package, shape, and size	It will be wrung by cutting into pieces of 12-13 cm by packing in small intestines of sheep and goat. It will be bent a little bit.	It will be wrung by cutting into pieces of 10-12 cm by packing in small intestines of pig and beef black intestine. It will be bent a little bit.

Annex 2 of resolution №45 of 1982
by State Committee of Price and Standard

Annex 2.1 of MNS 110-81

Indication	1st grade
	Thin sausage "Gobi"
1. Outside appearance, firmness	Big skin is not damaged and not creased, with smooth reddish and yellowish color, without any external pollution, and flexible;
2. State of cut	Minced meat packed evenly, without hole with diameter more than 1 mm, things such as sinew and tendon which has reduced to small parts incompletely has not seen;
3. Taste and smell	With pleasant taste and smell of seasonings and without any external smell;
4. Package, shape, and size	It will be wrung by cutting into pieces of 12-15 cm by packing in small intestines of sheep and goat and artificial cover. It will have bent a little bit.

Annex 2 of resolution №27 of 1983
by State Committee of Price and Standard

Assessment of thin sausage "Zuushni" by organs of sense

Annex 2.1 of MNS 110-81

Indication	Feature
1. Outside appearance	The outside of sausage is clean, and dry minced meat not torn open and a little bit creased.
2. Firmness	It will be flexible.
3. State of cut	Minced meat is without hole with diameter more than 1 mm, and with color of light rosy and pinkish
4. Taste and smell	With specific and pleasant taste and smell of product and seasonings and without any external smell;

Annex 3

The amount of point to give when assessing
the quality of sausage by indications of sense

№ Indication	Limit of assessment by point
1. Smell and taste	7-9
2. Color and state of cut	3-4
3. State of minced meat	9-12
4. State of surface and body	9-10
5. Shape, size, package	4-5
Total	32-40

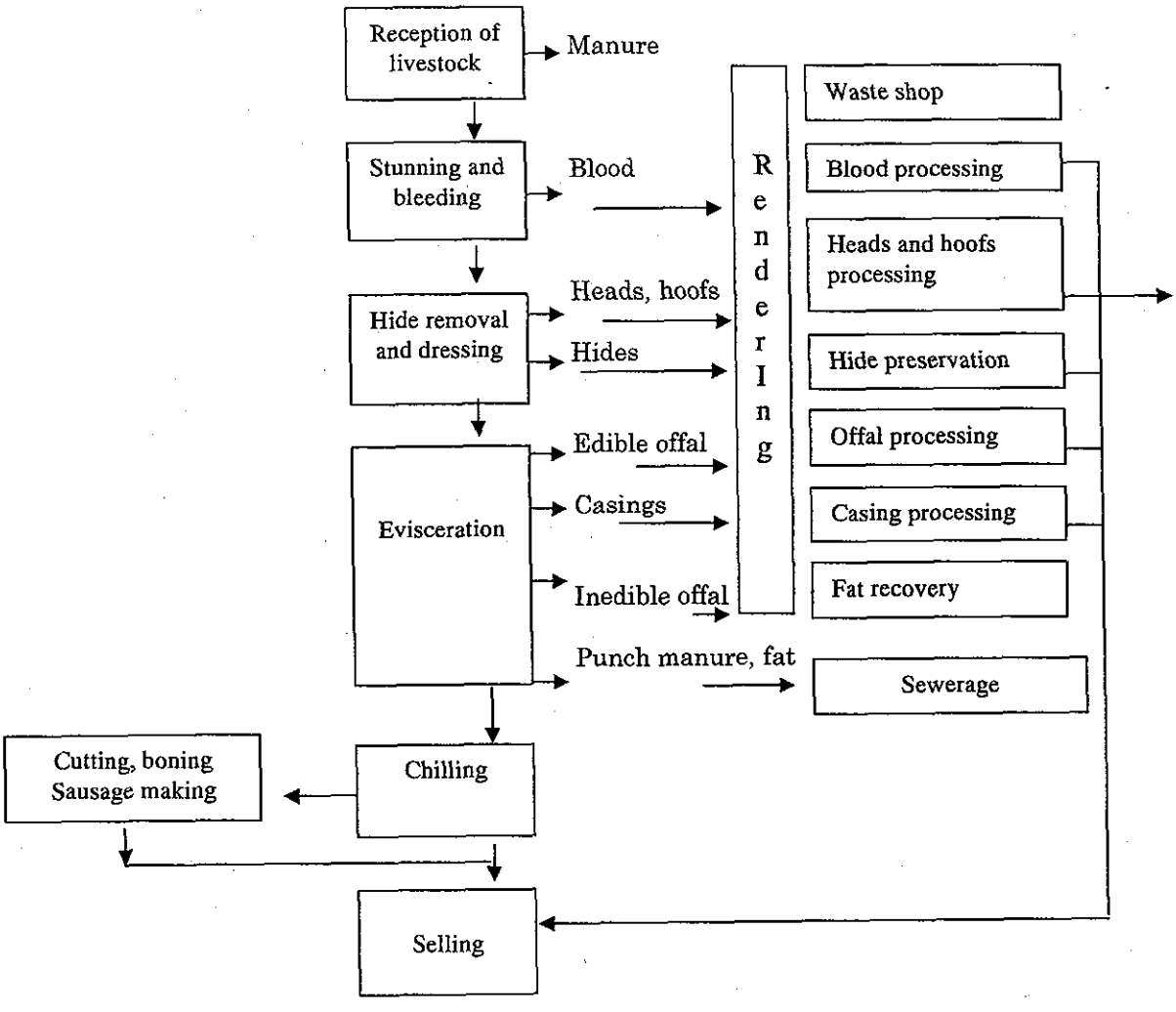
B．モンゴル食肉関連参考資料（英文）

以下は、モンゴル農牧省が、モンゴルの食肉産業振興のために、食肉産業関係者に対する指導や現状認識の促進を目的として作成した資料であり、原文はモンゴル語で書かれたものである。

11) モンゴル食肉産業における環境問題の現状

Environmental issues

Diagram of slaughtering and processing of livestock



Reception of livestock

Animals are delivered to the slaughtering house on feet. Animals are kept and watered at least for 24 hours in reception plot prior to slaughter. During this period animals are tested to reduce the quantity of stomach contents, thereby making cleaning of the intestines easier.

Environmental issues: Water is used for watering of animals. Water can be wasted due to overflowing drinking troughs, leaking hoses and poor washing practices.

Manure is produced and cleaned and disposed of to the city's waste dumping sites.

Stunning and bleeding

Stunning at the factory is carried out for pigs by electric shock, for cattle by concussion devices and for small cattle manually/by knife. After stunning, carcasses are shackled by the hind legs to a conveyor. Bleeding takes place by cutting the cervical vein and one of the arteries. Bleeding is undertaken by sterilized knife, which feeds the blood to a collection facility. About 70-80 % of blood is collected during bleeding; the remainder is lost to the effluent stream. Some blood loss continues during subsequent dressing operations.

Environmental issues: The bleeding area of the slaughter floor is the main source of blood contamination, since blood has a very high organic content. The blooded slaughter floor is washed by water and collected to sewerage directly. Blood also has high nitrogen loads. After blood, fat is the next most important contaminant in effluent generated from the slaughter area. The current situation is that fat has blinded screens in the effluent treatment system and no effective treatment takes place.

Hide removal and dressing of animals.

Prior to hide removal, the head, hoofs, feet and tails are removed. Hides are removed manually for small cattle and mechanically for big cattle. Before, hides were packed unwashed in salt, before they are sent to the tannery. Now this practice has changed. No salting is required, because the current market arrangements are that companies and individuals collect hides on very short intervals and frequent basis.

Evisceration and splitting.

Offal, casings and pluck materials are collected in trolley bins and transferred to other areas of the plant for further processing. Carcasses are split into two using knives and then trimmed and graded. This is followed by washing. Finally, the carcasses are sent for chilling or directly to the boning area for further processing. Carcasses are chilled to temperatures between 0.5^0C and 1.5^0C for at least 24 hours.

Environmental issues: Evisceration and splitting are undertaken without water. However, large amounts of hot water are used for the cleaning and sterilisation of knifes and equipment. Carcass

washing uses a significant amount of water and generates effluent contamination. Water pressure should be measured, because pressure greater than 10 bars removes fat from the surface. This fat contributes to high oil and grease levels in the effluent stream. Large amounts of water are used for cooling and transport of by-products results in high water consumption and high organic content in effluent.

Casing processing

Casings are processed into sausage skins and surgical sutures. Processing of casings involves de-sliming to remove the inner lining "mucosa" and washing.

Environmental issue: Water consumption for casings processing is very high. Determination of real amount of water used for casings processing at the shop was difficult due to absence of measuring devices. Casings processing also contributes significantly to the organic and fat load in the effluent stream.

Paunch washing

The paunch or first stomach containing a large amount of undigested materials, are slashed, emptied and washed with water, so that edible products can be recovered from the paunch. Paunch manure is collected as a separate stream and screened to remove solids. Screened paunch solids are disposed of as waste. The screened effluent is sent to city's sewerage system. Paunch manure is removed by clean water to sewerage directly.

Environmental issues: Paunch manure contains high concentrations of organic solids and other pollutants. Especially BOD_5 concentrations are very high. Since paunch manure is discharged to city's sewerage, it contains high total solid concentration and causes problems at City's central WWTP. A large amount of water is used for cleaning paunch-processing area. A great amount of clean water is used for removing paunch manure from the area where paunch is collected.

Rendering

Rendering takes place at the primary processing plant. There are separate sections for rendering. They are called slightly different from internationally accepted terms. The sections or shops are waste shop, horns and hoofs processing shop, fat recover shop, blood-processing shop. The waste shop deals in recovering technical oil from wasted materials and making bone meal. The horns and hoof processing shop processes horns and hoofs and skins heads. The fat recovery shop extracts edible oil. Finally, the blood processing shop makes blood meal by processing raw blood.

As stated above, the Meat factory is divided into three main plants, primary processing, sausage making and refrigeration. For the pre-assessment purpose, below are given flow diagrams of the three plants.

Cleaning

All work areas and equipment are cleaned daily during the production processes and at the end of each production shift. The cleaning is carried out using hot water to remove waste, blood, paunch

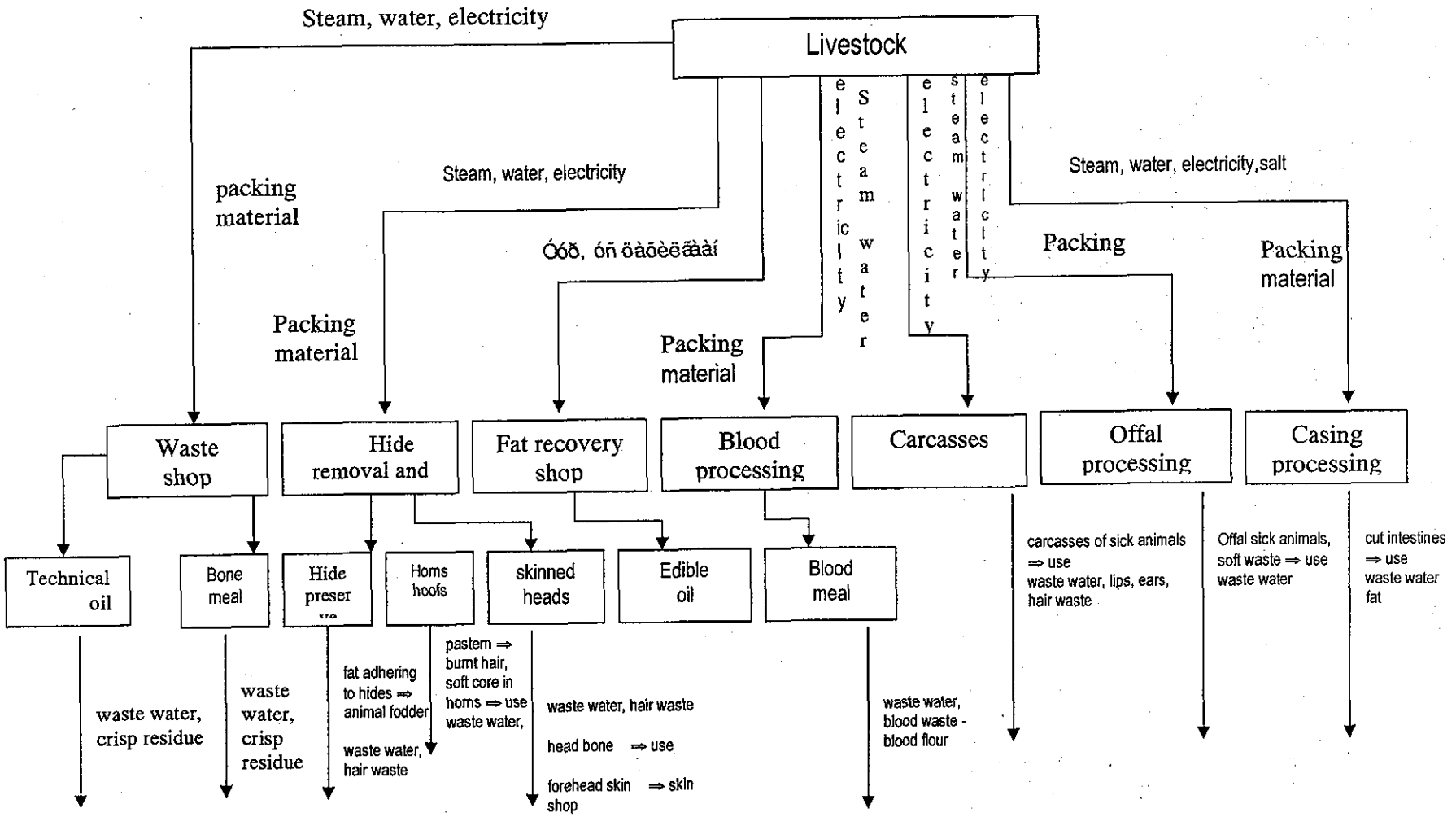
and fat contents. It is observed that the cleaning does not follow usual cleaning regimes. Detergents are used rarely.

The cleaning process is that equipment and floors are hosed down. Hoses have no hydrants at their ends. Therefore, more water is required to clean floors and equipment than hoses with hydrants. Large amounts of water used discharged during cleaning operations due to absence of nozzles. It is observed that workers do not close taps sometimes and water is flown without any use.

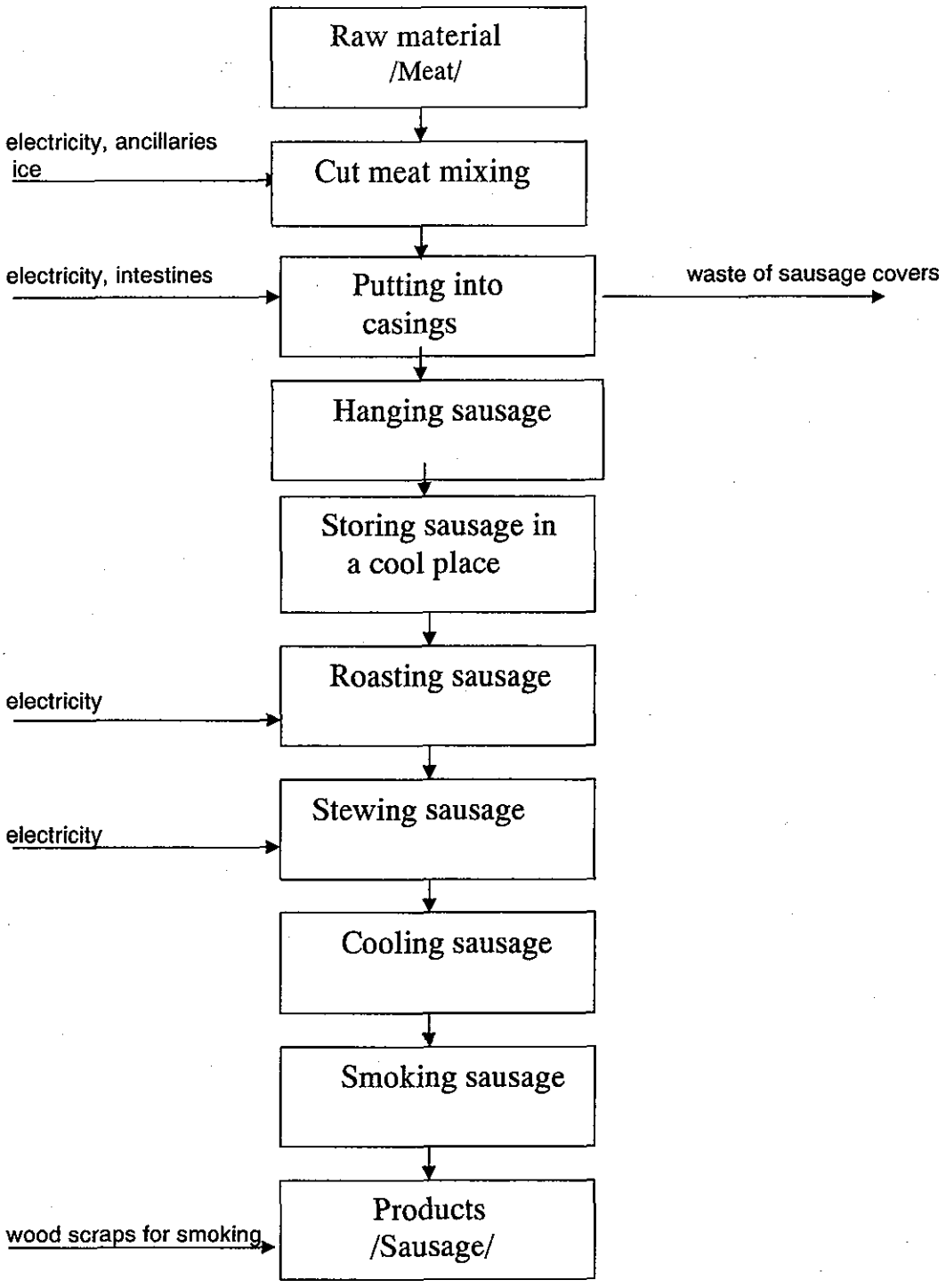
As well as the major cleanings that take during operations and at the end of each shift, knives and some items of equipment are washed and sterilized frequently through production. Operators also regularly wash their hands. Knife sterilizes and hand wash stations are located at workstations on slaughter floors and other processing areas for this purpose.

Environmental issue: Cleaning is one of the most water-intensive operations at the factory. Due to absence of water meters, was not possible to know amounts of water used by each section or even the amount of water used for cleaning along. Wastewater from cleaning contains a high organic load and detergents when they are used for cleaning.

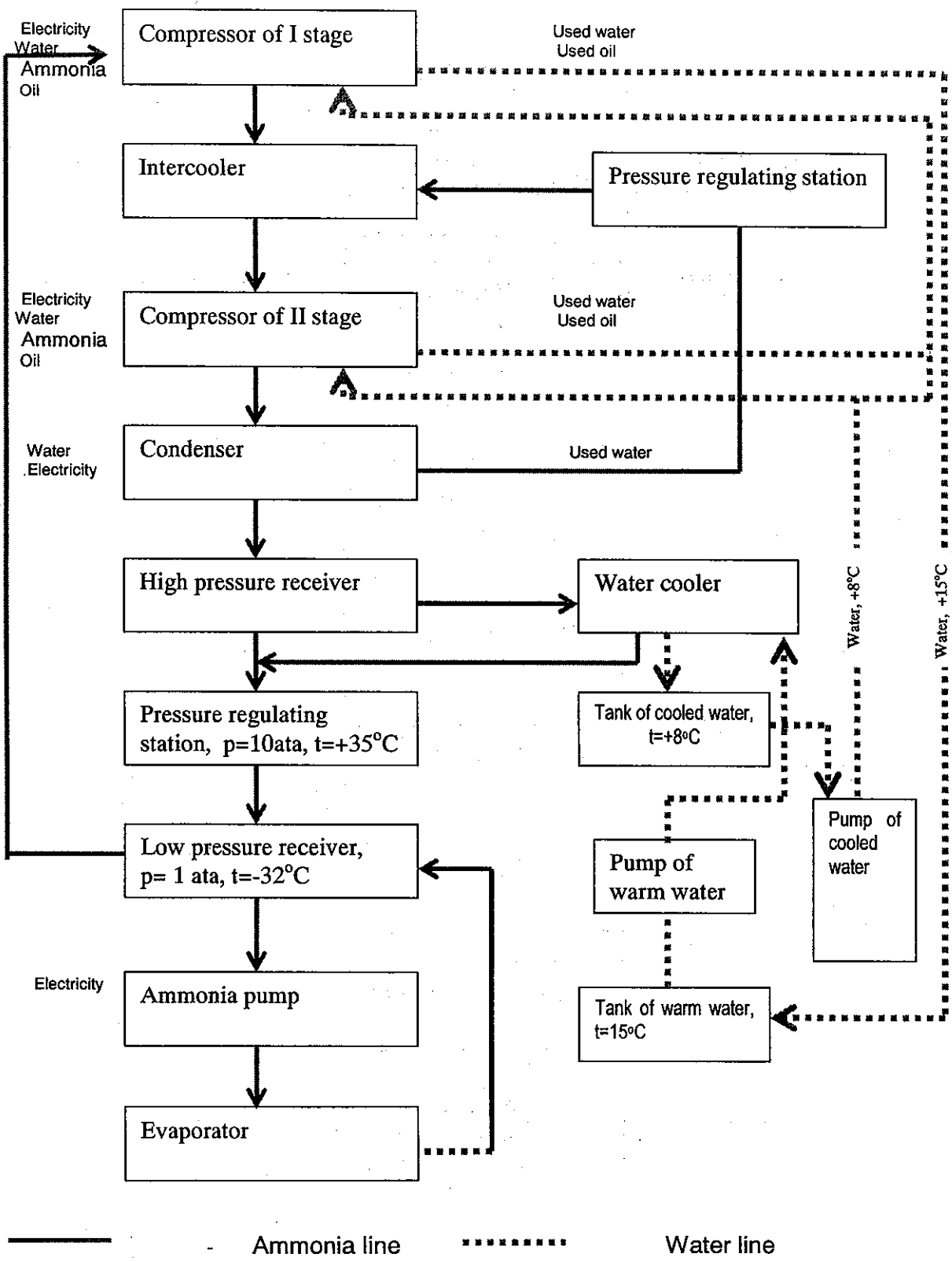
Primary Processing Flow Chart



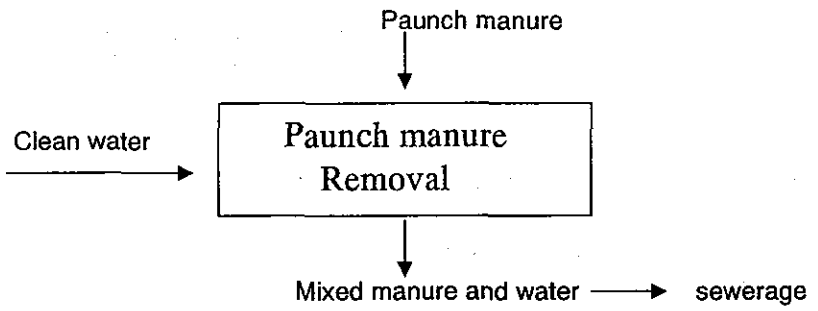
Flow Chart of sausage Production



Refrigeration Flow Chart



Paunch removal flow chart



Cause Analysis of Waste and Emissions

Waste/ emission	Why is waste generated?	Detailed description of the cause of waste stream or emission
Horn and hoof	No market High processing cost. Outdated technology	• Horn and hoof were processed and exported to China. Due to animal disease happened in Mongolia last 2 years the market was closed down. But in order not to waste to the environment the product is still produced. Last year horn was sold for the souvenir.
Waste/ emission	**Why is waste generated?**	**Detailed description of the cause of waste stream or emission**
Bone meal technical oil	No market High processing cost Outdated technology	• By processing bones and soft wastes bone meal is produced. It was exported to China before. Now due to the animal disease the market was closed. Since 2000, bone meal has been kept and reached 418.2 tones.
Waste/ emission and loss	**Why is waste generated?**	**Detailed description of the cause of waste stream or emission**
Steam Water	Technology and equipment is out of dated. Bad house keeping. No measuring devices.	• Generally, all equipment of the workshop is out of dated, using much water and steam. • Due to no measuring device there is no control of water and steam consumption. • No house keeping practice at the slaughtering process. Watering hose is open 24 hours a day.

Sausage Plant

Sausage plant cooks sausage in 2 ways.

1. By using electrical oven. It is used during summer when primary processing plant stopped temporary.

2. By using steam oven. That way is used only in winter, when the primary processing is under functioning. The Power Plant No4 provides the steam supply.

Therefore the material balance considers this 2 ways. We have chosen roasted sausage, which is cooked by electrical and steam oven.

Material balance should be done for unit operations and production process. Therefore we have chosen as unit operation 100 kg roasted sausage and material balance derived by 2 ways for identifying the quantity of wastes and loss during the production. As shown in the table below sausage cooked by the steam oven uses much energy than electrical oven for producing same amount of same product. Unit cost of steam is 14565 tug and the cost of 1 kW electricity is 51 tug, thus the cost of sausage processed by the steam is 3.5 times higher than the processed by the electricity.

The output of the stewed sausage is 100-120%, 120kg of sausages are produced from the 100 kg of contents. But it cannot be kept longer. However the output of the roasted sausage is 80-89%, and can be kept longer.

There is a loss of sausage cover, which is 2.2 meters per 100kg sausage. Daily production is 5000 kg in 2002. Therefore 110 meters are lost per day. It means 2860 meters per month and 34320 meters per year. Unit cost of cover is 183.6 tug. Thus, total cover loss will become 6.3 million tugrug per year.

Cause Analysis of Waste and Emissions (Sausage Plant)

Waste/emission	Why is waste generated?	Detailed description of the cause of waste stream or emission
Waste of sausage covers /m/	Composition of raw materials Operating practices Production technology Production equipment Product specifications	• Ends of plastic covers made of protein, natural and plastic materials are wasted during the putting in operation. In some cases, covers are broken due to low quality. • Production technology is that covers are wasted, because covers and ropes are removed from vacuumed products. • Sausage packing is made by hand.

Waste/emission	Why is waste generated?	Detailed description of the cause of waste stream or emission
Sheep intestines /pcs/	Composition of raw materials Operating practices Production management Production technology Production equipment + Product specifications	• Covers are broken and wasted, because of unstable power supply and steam pressure.
Waste/emission	**Why is waste generated?**	**Detailed description of the cause of waste stream or emission**
Waste water / m^3/	+ Composition of raw materials Operating practices Production management Production technology Production equipment Product specifications	• Large amount of water is used for cleaning sheep intestines. • Using water hose, from which water flows without control while cleaning.
Waste/emission	**Why is waste generated?**	**Detailed description of the cause of waste stream or emission**
Steam (Gcal)	Steam oven has less production than the electrical oven. Seasonally work.	• Sausage cooked by steam uses lots of energy. Electrical oven is loaded by more than its capacity during summer. Low production rate due to lack of capacity of electrical cooking chamber.

Cause Analysis of Waste and Emissions (Refrigeration)

Waste/emission	Why is waste generated?	Detailed description of the cause of waste stream or emission
High water consumption	Production management + Production technology Production equipment Product specifications	• Water is used to cool compressors (22 machines). Water goes through the compressors and is discharged directly to sewerage. Water is relatively clean. It can be polluted with ammonium, because ammonium is used for cooling process. Recycling is essential for save a considerable amount of water/money/.

12) モンゴル国の畜産業

Livestock husbandry of Mongolia

Livestock husbandry is the mainstay of Mongolia's economy and contributes about 90 percent of agricultural GDP. Livestock and livestock processed exports amount to about one- third of foreign exchange earnings.

By the end of 2002 there were 243.2 thousand households with livestock among which 175.9 thousand households being herder's families. As an average, a herder's family takes care for 136 head of livestock.

Five traditional kinds of livestock (camels, horses, cattle, sheep and goats) are kept in Mongolia. On January 1, 2003 the total livestock number was 23.9 million head including 253.0 thousand camels, 1988.9 thousand horses, 1884.3 thousand cattle including 426.0 thousand yaks, 10636.6 thousand sheep and 9134.8 thousand goats.

645.9 thousand head of pure breed livestock, 937.5 thousand head of crosses and 1152.4 thousand head of the native best strains representing 42 breed and strains are bred in Mongolia. Close to 80 percent of the country's total land area, or 128.9 million ha, is a pastureland. The carrying capacity is 35 head of livestock (in sheep unit) per 100 ha. Annual production of animal fodder is equal to 330.3- 438.6 thousand tons feed unit out of which 90-92.2 percent are hay.

225-250 thousand tons of meat, 300.0 - 375.0 thousand tons of milk, 3.0 thousand tons of cashmere, more than 10.0 thousand tons of wool and about 5.0 million pieces of skin are prepared in Mongolia annually. Washed wool and cashmere and goods made of them, like carpet, industrially prepared meat, hides and leather goods are exported.

Some peculiarities of livestock species of native Mongolian breeds

Native Mongolian livestock species were formed under conditions of migratory husbandry, with year- round grazing. The specific biological features of native Mongolian livestock species are as follows:

- High viability, adaptation to the harsh continental climate (- 25- 35°C in winter and + 25 - +30°C in summer), ability to graze on poor vegetation (they can survive even when they lose during winter and spring 25 percent of their autumn live weight), fast recuperation, high genetic potential to produce cheap but tasty meat and other types of products with high quality.

- Intelligence, obedience and high mothering instinct. They are very intelligence at finding places which protect them from cold and wind. They usually seek fresh water and pasture, are not kept long on trampled pasture and do not drink dirty water. Mothers frequently avoid their babies if the latters are kept on dirty places. They are very sensitive to changing weather conditions. For example, if cattle are noisy before leaving pasture, the day will turn cold with snow and storms. If they graze on hills, the day will turn warm and not windy.

If they graze on valleys and low lands, the day will be stormy. In summer, rain is to be expected if calves keep close to their mothers, as if seeking greater protection. A bull calling in rain indicates that the sky clear up. The severe winter is to be expected if in summer, cattle and calves jump frequently pursuing each other with tail in the air.

- Females usually separate from their herd and prefer to choose uninhabited places for giving birth. Baby animals are able to find mothers by their smell during the first 3 days after birth and by their voice for the following days.

- Animals are very watchful. Due to highly developed organs of sight and ear they are easily frightened of any unpleasant sounds and objects.
- Cattle are bred mostly in high mountain and forest steppe, horses in steppe, camels in Gobi desert and sheep and goats in all regions.

Mongolian horses

The formation of Mongolian horses lasted for a long time by unconscious and natural selection and was significantly influenced by the harsh continental climate and conditions specific to mountain forest, forest steppe and steppe.

Mongolian horses are bred for riding, draught and racing. They are used as a producer of meat and milk. The breed comprises several strains like Tesiin gol, Darhad and Galshar that differ from each other by their appearance, endurance, performance and speed records.

34.5 thousand tons of horsemeat and 8.0 million litres of horse milk are produced annually in Mongolia. 2.7 thousand tons of horsemeat are exported. The average liveweight of adult Mongolian horse is 360-380 kg. A good fattened horse weight is 400 kg. Dressing percentage is 52 - 56%, calorific value - 2886 - 3000 kcal. Horsemeat is rich with unsaturated fat acid and used for treating high blood pressure and atherosclerosis.

Average daily milk yield of a mare in summer is 7.5 litre. 1.0 - 1.2 million tons of fermented mare's milk (airag) is produced annually and used for medicinal purposes. The main coat colour of Mongolian horses is bay, black, brown, reddish, greyish. Horses' growth continuous till they reach 7 years of age. Puberty finishes at 18-20 months of age and maturity at 36 - 40 months of age. Mongolian horses are used for 12-15 years for Mature, 90 percent of transport work among herders are fulfilled by horses. Saddle horses can cover 70 - 80 km a day with maximum of 200 km. The load capacity has reached 960- 1440 kg. Horse racing is very popular in Mongolia. Racing competition is organized on the age difference base. Distance of race for one year old horses is 4-5 km, for two year old horses 13- 15 km, for three year old horses 18- 19 km, for stallions and four year old horses 20 km and for adult castrates 25-30 km.

Native Mongolian cattle

On January 1, 2003, the total population of cattle stood at 1884.4 thousand head, including yaks. 27.6% of cattle are distributed in high mountain area, 25.2% in forest steppe, 28.8% in steppe, 12.5% in the Great Lake Depressions and Altai region and 5% in Gobi region.

Mongolian cattle are adapted to migratory husbandry with year-round grazing. Meat of cattle is juicy, tasty and marble with fine muscle fibres (49microns) compared to other beef breeds (51-53 microns).

Chemical composition of meat shows that content of moisture is 60-63.4%, protein-19.5-21.2%, fat -14.5-20.5%, minerals -0.77-0.93% and calorific value -2027.3-2358.3 kcal. Mongolian cattle are small. The head is light, the forehead is broad and the muzzle is thin. Coat colour is red, reddish, dark red, sometimes with dark pots, black, red and white or black and white. They exhibit resistance to tuberculosis, leucosis, brucellosis and poor feeding.

Mongolian cattle have a low milk yield: it varies from 750-800 kg for 180 days lactation. The average fat content is 4.36%.

For the last years, 66.9-113.6 thousand tons of beef are produced annually, out of which 12.9-14.0 thousand tons go to export.

Cattle populations of beef, dairy and dual purpose breeds like Simmental, Alatay, Russian Black and White, German Black and White, Red steppe, Kazakh White headed, Kalmyk, Selenge and East Mongolian Red, are bred in Mongolia.

Mongolian sheep

By their number and production, sheep have a leading place in Mongolian livestock husbandry. The sheep population of Mongolia is estimated at over 10.6 million head. Mongolian sheep are relatively small and late maturing. They are known for their resistance to winter cold and fast recuperation during summer and autumn. They are on pasture throughout the year. The spring weight of sheep are increased by 23.2-32.4% or by 13-19.6 kg during summer and autumn but 25-30% of autumn weight are lost during winter-spring time. They have short fat tail and coarse wool containing true wool, down hair, intermediate fibres and guard hair.

Mongolian sheep are kept mainly for mutton. Mutton is tasty and has high quality. The average slaughter weight is 23.5 kg. The slaughter yield is 48.1%. Rams produce 1.52 kg, ewes 1.23 kg and yearlings 1.0 kg of wool per head with clean wool yield of 60.9%. The wool is very suitable for making felt and felt goods. The sheepskin is thick, strong and warm. 1.5 year old sheep gives skin of 113 square decimetre weighing 3.2 kg. The weight and square of sheepskin increase according to age of sheep.

Ewes are milked in June and July for 30-45 days and give 29.7 kg of milk and 6.35% of fat. About 70% of total dry matter is protein that is rich with amino-acids (92.69%). Rams are used for Mature for 5-6 years and ewes for 6-7 years. They produce 103-105 lambs per hundred ewes.

15 thousand tons of wool is processed annually in Mongolia, and carpets, felt, felt boots, thick cloth, blanket and knitted wear are made.

There is much room for exporting of cheap coarse and semi- coarse wool. 1.7 million head of pure breed and cross sheep belonging to coarse and semi-coarse wooled, fine and semi-fine fleeced breed, breed groups and strains are bred in Mongolia.

Mongolian goats

Mongolian goats are easy to keep, well adapted to diverse environmental conditions and relatively prolific. Because of their pointed muzzle and thin and mobile lips, they are able to pluck out sparse and short grass on hill slopes among stones, and to feed on affermath. On poor pasture with thin grass stand, where cattle, horses and even sheep remain underfed, goats are able to find enough feed and maintain productivity.

The most famous product of Mongolian goats is cashmere, whose lightness, softness, relative strength, low heat conductivity and uniformity make it one of the most valuable wool fibres.

Native Mongolian goats are very important for the national economy, because, together with the much valued wool fibre (cashmere) they also produce such industrial products as meat and milk, as well as goatskin.

Mongolian goats have a good fattening ability on pasture area. In autumn, mature bucks weigh 55-58 kg, mature females 37-41kg, 2.5 year old bucks 35-38 kg, and 1.5 year old females 29-31 kg. The goats are of medium size. They have strong constitution, good compact conformation, well developed skeleton. 90% of goats are horned. The predominant colours are blue, red, black and white.

The coat of local goats has a mixed composition. There is a clear distinction between long straight lustrous

guard hairs (15-17 cm) and short (4-5 cm) soft undercoat (cashmere wool). Guard hair grows evenly over the whole year. Wool undercoat grows during autumn and winter. Its fineness is 13-14 μm. When the warm days are back again, the undercoat gets coted and is shed (combed).

Average undercoat yields from goat flocks are: yearlings 200-240 g; 2 year olds and older 240-380 g. The lactation period lasts for 7 months, from mid of March to mid of October. Average milk yields are in range of 50-60kg (20-30kg of marketable milk). The total dry matter of the milk is 15.44%, total protein 3.87%, fat 5.81%, sugar 4.78% and minerals 0.89%.

At the end of 2000, there were 9.6 million heads of goats in Mongolia. About 3.0 thousand tons of cashmere with diameter of 14-16 μm, are prepared in Mongolia annually, as an important export contingent.

Among native Mongolian goats there are several strains like Zalaa jinst, Erchim, Bayandelger, Buural, Ulgiin ulaan, Altain ulaan, etc. Two new breeds were developed: Uuliin Bor and Govi Gurvan saikhan.

Mongolian camels

There are totally 19.1 million camels on the world and 0.8 million of them are 2-humped camels. 30 % of 2-humpled camels are in Mongolia. To judge from this 2-humped camels are so rare in the world and Mongolia is main area for the camels. In Mongolia there were 895.3 thousand camels in 1954.Today the number of camels are decreased by 3 times than that time. Since 1995 total number of camels has decreased by 22.4%. That means 82.3 thousand camels have died since 1995.Thus Mongolian camels are decreased fast and it is in danger of extinction. Most of the dead camels are for food. In recent years people kill camel for the food as it has plenty of meat and fat. Since 1995 totally 229.3 thousand camels are used for food. In other words every year 10% of camels used for food because of poverty, lack of food and cash in the countryside.

Camel meet: Mongolian camel's meat yield is 61.9-64.1 % and death weight is 56.8-57.8%, inside fat is 5.1-6.4%. Camel meat is used for food and also people dry camel meat in stripes.

13) モンゴル国の原料肉供給

Meat material supply

Mongolia is a country of about 2504,0 thousand people and 25,4 million livestock-sheep, goats, cattle, horses and camels. Sheep and goats account for about 21,4 million of the 25,4 million livestock. Meat is a dietary staple with important cultural significance in Mongolia. This fact serves as a note of caution about drawing conclusions as to the proper functioning of the Mongolian meat production system.

Mongolia has vast pastures. It is a relatively dry and relatively cold country, with a short growing season. It has inadequate roads and transportation facilities, and inadequate communications facilities. These conditions affect the meat industry-for example animals are herded or "trailed" to slaughter at the largest meat plants, rather than being shipped. Mongolia's largest meat plants only slaughter in the period of July to December, when animals can be trailed and when they must be slaughtered because there is insufficient fodder to winter them over. There is also a phenomenon in Mongolia called "traditional slaughter", which is done manually or on a household basis rather than by a meat processing facility.

There is a statistical data shows that in 1989, of the total Mongolian live-weight supply of meat, approximately 60 percent was slaughtered in the provinces or by home slaughter, all for local consumption. Another 14 percent was exported as live animals or meat products. Thus 26 percent was supplied to the cities, such as Ulaanbaatar, Darkhan (and Erdenet, which the Darkhan meat plant supplies), and Choibalsan. However, of this 26 percent almost one-third was slaughtered locally and delivered to the cities. Even though there is a meat plant in each of the three cities, it is thus clear that meat is supplied to these cities from other sources as well.

Of the 7 million animals slaughtered in a year in Mongolia, 2 million are killed in the three urban meat plants and the rest are slaughtered in aimag /province/ centers or by traditional slaughter. No one knows precisely how much meat from traditional slaughter comes into Ulaanbaatar. Ulaanbaatar meat plant kills from July to December and sells some and freezes some of its carcass slaughter as it goes. The Ulaanbaatar plant can store 16000 tons of frozen carcasses, which is less than two months' supply. It stops killing in December but the aimag centers then slaughter for shipment to Ulaanbaatar. The frozen meat at the Ulaanbaatar meat plant is not used until June or July, just before the new slaughter begins. It is estimated that the Ulaanbaatar plant supplied about 50 percent of the meat consumed in Ulaanbaatar. The government was not building new slaughter facilities in the country, but rather just completing facilities started under the old system. These are primarily small facilities but the idea is to have slaughter capacity closer to animals to reduce the losses when animals are trailed over long distances to the large cities. In a number of instances the new facilities are being set up as shareholding companies and local government may be using barter trade to get access to meat processing equipment. The Ministry fully supports private slaughtering plants, but does not expect substantial entry in Ulaanbaatar with the existing overcapacity.

Under the old central planning system livestock was owned by the state. Allocation and delivery orders were issued to the aimag centers, which then arranged for animals to be delivered as specified to the various meat plants. Elaborate scheduling charts were worked out in May for the coming slaughter season at the big urban meat plants.

With the privatization of the herds and the nominal elimination of the central allocation system, central allocation and delivery orders no longer control the procurement of livestock for meat plants. It is by no means clear what has replaced the old system, but there appear to be many opportunities for competition in procurement.

Apparently May 1992 an effort was made by two or three of the urban meat plants acting in concert to acquire the animals needed for slaughter at a single price to which it was hoped all livestock owners would agree. This price was 200 tugriks per live kilogram of sheep delivered for slaughter.

There are a couple of peculiarities with respect to the live prices paid for slaughter animals. Sellers of slaughter animals would agree to forward contract for months in advance at firm prices. But sheep were being delivered for slaughter in November that had been forward contracted in May at a firm price. Second, livestock sellers were receiving a single live price not reflecting quality differences even though the large meat processing plants were selling meat with three quality grades at different prices. The pricing system is not yet translating better sales quality into higher prices for livestock producers who produce better animals.

Of the 18 aimags in Mongolia, was assigned and drew animals from ten of them, from aimags as close as 45 kilometers and from as far away as 1200 kilometers. The Darkhan meat plant drew from four aimags. However, in some instances where an aimag was approximately midway between two urban meat plants, animals from that aimag might go to either plant. In Darkhan and in other areas around the Darkhan meat plants, city government were able to acquire animals for slaughter by paying more for the animals in cash or barter than the meat plants were willing to pay.

The cities would then have the animals slaughtered on a custom basis for a fee by the urban meat plants, taking the meat for sale under rationing in the cities and arranging with the meat plants to sell or otherwise utilize the by-products. Cities and other local government units apparently had control over items of value to livestock owners and this was in a better position than the meat plants to bargain for animals for slaughter. There are great opportunities for competition in the Mongolian meat industry. Meat plants could compete for slaughter animals. On the selling side, meat is already being shipped into the large cities where the largest meat plants are located.

There are a number of areas where more information about the Mongolian meat industry would be useful in evaluating the tentative conclusion that there is substantial room for the play of competitive forces that are now being realized.

These areas include:

- The meat rationing system and government allocation orders,
- The trailing system and the extent to which livestock owners can choose among slaughter options,
- Transportation costs,
- Retail meat establishments, and the manner in which such shops acquire meat,
- The role of exports of live animals and of meat
- The effects of seasonality on the potential for competition,
- Any significant competitive differences in the markets for sheep, goats, cattle, horses, hogs, and camels and their meat:

The livestock procurement process and the role of custom kill arrangements, and local slaughter capacity in the aimags.

14) モンゴル国の食肉生産

Meat production

The production of fresh meat is a relativeiy low value-added process-in the typical case animals are purchased, they are slaughtered and their meat is sold. Animals are often bought by the live-weight pound, and meat is sold by the pound. The-entire production process, from purchase of animal to sale of meat, often will take only a few days. By far the largest portion of meat processing cost is the cost acquiring animals for slaughter. Meat processing can also include the production of processed meats, such as sausage.

There are three large Mongolian meat processing plants one in Ulaanbaatar, one in Darkhan and one in Choibalsan. Darkhan is about 250 kilometers north- of Ulaanbaatar and Choibalsan is about 700 kilometers east of Ulaanbaatar. In general they slaughter sheep, cattle and goats, with some hogs, horses and camels-producing whole carcasses, which are sold fresh or frozen and sold later.

These are not the oniy meat plants that slaughter livestock in Mongolia. There are smaller plants at Saynshand in Dornogobi province southeast of Ulaanbaatar and at Uliastay in Zavhan province west of Ulaanbaatar. In addition, there are apparently some slaughter carried out in province centers.

Livestock production under nomadic conditions is the most important economic and financial resource of Mongolia. The agricultural sector contributes 20,0% to the GDP, of which livestock production constitutes 79,5% of the total output of agriculture (statistical data of 2003).

Until the end of the 1990 the government was in charge to provide all necessary contributions in order to develop and sustain the productivity of the livestock sector. As this turned out to be ineffective in many respects, the government opted for the privatization of important parts of these structures in 1999. By then the necessity emerged to create a new service system. All partners involved in animal health and production matters-governmental, private services and livestock owner- now have to define and take over their respective responsibilities.

15) 畜産物生産チェーンにおける輸出向け食肉の付加価値化

Meat Value Chain Livestock Products for Exporting

Carcasses and Boneless

Not much new can be said about carcass production as it relates to exporting to traditional importers like Russia and some other prior Soviet Union-affiliated economies, except for some offal utilization reforms. Additional modernization, which would improve operational efficiency within the production for Russia and potentially China, offer a large financial opportunity at this time. Management training in the productive and efficient use of the labor resource seems to be severely needed as soon as possible. It is obvious that more competitive advantage could be derived just from efficient use of labor without regard to all other impediments.

However, the in-plant sanitary and associated infrastructure status of Mongolian processors must be greatly improved for entrance into most other non-traditional trading economies. Additionally, the health status of the livestock population must be improved to world standard as well.

Boneless production needs expert assistance in efficiency of operation. However, without more volume of sales, many operations cannot be trained to perform as desired. What would be useful are more sales and a specific program of training in the various segregation of cuts schemes used worldwide.

As part of the boneless component, a further process value-added item exists. This is ground (minced) meat. In most Eastern European markets, including Russia, minced meat is a major component of consumer sales. It can be sold either bulk, prepackaged, spiced and precooked in pattie form, etc., or in some combination of form. Contamination of minced product by microorganisms does present some concern but does not prejudice a major block to success in Eastern Europe situation

Tinned Meat Products

Currently only one possible canning facility exists in Mongolia. This line is not in use and the owners claim that the size of product that can be produced—410-gram and 160-gram sized units—are not in demand from traditional Russian buyers. They claim they have limited capital and cannot retool the line. Nonetheless, designing tinned meats for the export market, Mongolian meat

exporters must consider numerous circumstances. They must develop livestock products that will appeal to foreign consumers in Siberia ***but also especially targeted*** to Southeast Asian and Mid Eastern countries.

Several items could be the main ingredients for canned potted meat[1] formulations, as well as vegetables mixed with meat (stews). They can be convenient and very low cost and still have a distinctive Mongolian character, although the can sizes are larger and with regular meat formulations, the unit price could be considered too expensive for the typical Siberian family targeted. This may not be the case for the cheaper formulation for the tropical environment consumer. Using the inexpensive raw material, product could be designed to fulfill a specialized demand at a very low price for the other targeted family buyers who have limited choices of low cost meat products.

Unofficial research has suggested a demand for desirable Mongolian tinned meat in countries like Philippines, Malaysia, Indonesia, Viet Nam, Thailand, etc. The first market research should be to purchase tinned meat samples sold in Siberia, as many Eastern European meat processors produce huge quantities of tinned meat varieties that could be duplicated and even improved by Mongolian processors. Secondly, a ***simple market survey methodology*** should be used to send "shoppers"[2] into the major outlets located in the foreign urban areas of interest (Southeast Asian and Mid Eastern warm climates). They should be able to survey the product on the shelves and collect data on the type of tinned meats imported as well as the most popular packaging desired by local population. After evaluation of data, samples can be collected and shipped back to Mongolia for duplication and enhancement. As simplistic as this suggestion sounds, it could be very effective without high cost. ANNEX BB contains the methodology for can manufacturing as well as a basic recipe for the ever-popular SPAM-type product. The following is a listing of possible products including potted-type formulations[3].

Meat, Jellied Mammy Style Hash Curried Mutton

[1] Potted meat is a formulation designed to be inexpensive, as the main ingredients are the lower priced offal items derived from the slaughter of livestock.
[2] A "shopper" is a person sent into a situation disguised as a typical shopper but really doing market investigations. This is common methodology used by western companies to self- evaluate services given by the staff to customers. This could be Mongolian embassy staff doing market evaluation study.
[3] These offal items, include cheek meat; livers; hearts; head meat; tongue; tongue trimming; salted tongue; pig skin; stomach; tripe; weasand meat, brains, lips, snouts, kidney, spleen, melts, etc.

Tongue, Beef	Potted, Meat	Potted Beef
Luncheon Tongue	Potted, Tongue	Potted, Horse
Canned Tripe/w/Milk Sauce	Canned Brains/w/Milk Sauce	
Canned Sausage (Vienna)	Canned Sausage (Bulk)	

Sausage

Much has been discussed relative to sausage manufacture. Few large plants participate in this market. The excuse is that small so-called illegal operations (informal sector) have a competitive advantage since they do not have to follow the same standards as the large plants. Observers point to the fact that large plants are very inefficient in their operations and therefore cannot compete with legitimate small firms who are more efficient. This lack of production of sausage by large plants inhibits the development of production expertise for possible exporting.

Smoked Semi-Dry Sausage

Dr Romans, University of Illinois, Champaign-Urbana, has visited Mongolia and has written about (Land-O-Lakes Project) the great potential for this category of value-added products. The atmospheric conditions in Mongolia give this product a comparative advantage for Mongolian processors.

Pre-cooked Minced

This product has great potential in Mongolian meat exports. Because this is a cooked product, it can by-pass many of the animal health issues currently constraining exports. However, plant sanitary issues will restrict development of a successful product that would be accepted by other developed economies. Once HACCP procedures and the federal inspection system proposed have been implemented, this product will have a chance to succeed. Investigation and familiarization of the product and its production should have a high priority in the Mongolian research and development (HUNSTECH) agenda.

Dry Meat Snack Foods

The world market demand for dried meat snack foods products is suspected to be very strong. However, for Mongolia, you need to utilize the less valuable cuts, not beef rounds, but the rough cuts from sheep, goats, horses, camels, Yaks and maybe cattle. The good muscles need to be sold for steaks and roasts.

(Translated from the study material named "Possibility to increase the export of livestock products from Mongolia".)

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16) 各種食肉、食用および非食用の脂肪と油、ならびにソーセージ用ケーシングの製造とマーケット

Variety Meats, (Offal), Edible & Inedible Fats & Oils, and Sausage Casings Manufacture and Marketing

EDIBLE AND INEDIBLE VARIETY MEATS (OFFAL)

Before the days of artificial refrigeration, variety (offal) meats were largely wasted. However, at the present time, they represent a source of food supply of considerable importance, as well as contributing to the stocks of medicine and yielding fertilizer and stock feed of high value. Offal may be classified as edible, inedible, and medicinal. The handling of killing floor offal differs with respect to the species and will be discussed separately.

BEEF OFFAL

The blood used in the manufacture of blood sausage is obtained from cattle. Attaching a bucket to the incision in the throat immediately after the animal is stuck, thus catching a portion of the blood, collects it as it pours from the severed veins. The blood from koshered animals cannot be so collected and escapes onto the floor. Blood that is to be used for edible purposes must be gathered as clean as possible, in clean containers, and held until the animal passes inspection to prevent use of blood from diseased animals. Blood to be used in the manufacture of blood albumen is also collected in this manner. The blood that escapes to the floor drains into basins is used in ***blood meal*** and fertilizer manufacture.

Cattle hides receive a careful inspection to determine their condition as to scores, grubs, brands, etc., to establish their grade. They are then directed to the hide processing area for curing. The men who skin out the feet cut off the dewclaws. All tailbones are also removed. A carefully removed hide has little or no flesh or fat adhering to the fleshy side of the skin.

Cattle feet are removed at the knee and hock joints, leaving the hoofs attached to the lower legs. These are sent to the bone-house for disposition in the manufacture of neat's-foot oil, glue, and bone products.

Head Products

After inspection -- the heads are moved to the offal floor. Here the horns are removed and sent to the bone-house where they are dried, the piths being used in glue manufacture and the horn sold for the manufacture of ornaments. The tongues are removed by chopping the hyoid bone at its base and then removing the tongue with a knife The tongues are usually "long-cut," that is, the epiglottis and larynx remain attached, thus increasing the weight of the tongue by one-third. Short-cut tongues do not have these organs attached. Tongues are given a careful inspection at this time. Frequently an enlarged follicle is found on the upper surface of the tongue and may be filled with ingested matter or may be inflamed or even contain pus. The surrounding tissue is frequently infected with actinomycosis. Such tongues are carefully trimmed, or if diseased, are condemned.

Frequently, cattle tongues are variably pigmented some being entirely black. This is not an abnormal condition. Tongues are thoroughly washed, chilled, and sent to the curing area for a sausage material; some tongues can be sold fresh or fresh frozen.

Cheek meat, temple meat, and other meat from the head are cut from the bones, spread upon trays, and set in chill-rooms to cool. They may be sold as fresh or fresh frozen for use in sausage manufacture or cured for the same purpose. Some head meat and cheek meat is used in canned meats.

The skull is cut with a power-driven knife in such a manner as to allow the removal of the brain. The brains of cattle that have been stunned are clotted more or less with blood due to fracturing of the skull with the hammer, and as a result, must be handled carefully and chilled quickly to prevent deterioration. Brains from koshered cattle are particularly desirable, as they do not present a bloody appearance. Brains are sold fresh chilled but also fresh frozen or are used in canning recipes.

At the base of the skull lies the pituitary body, one of the ductless glands. This is carefully removed and used for medicinal purposes (see Table 4). Another ductless gland, the pineal, lies beneath and between the hemispheres of the brain. This gland is sometimes removed for medicinal purposes, but usually remains intact with the brain. The bones of the head are sent to the bone-house to be rendered for tallow, glue, and bone products. The hard palate is removed and chilled for use in sausage manufacture.

Viscera Products

The methods of removing the viscera prevent contamination of those organs and the carcass with fecal matter. The esophagus and the rectum are tied to prevent the escape of the contents of the digestive tract. The small intestine is tied before it is severed from the fourth stomach to prevent contamination with fecal matter. The neck of the bladder is also tied.

The digestive organs then are moved to the offal processing area. The omentum, or caul, is stripped from its attachments to the stomachs and placed in a truck to be sent quickly to the oil-house for chilling and melting into oleo stock[1]. The caul, together with the ruffle, yields the highest quality of oleo oil. The remaining fat from the stomach is carefully removed and also finds its way into oleo stock. The esophagus is severed from the stomach and sent to a special table for disposition. The fibrous membrane lining of the esophagus is very dense. The muscular coat is stripped from the fibrous coat, the former being used in sausage manufacture as ***weasand-meat,*** while the latter is prepared for use as a sausage casing of high quality known as the ***weasand.*** The ***spleen***, which is attached to the ***rumen, or first stomach***, is detached and sent to the tank to be rendered for tallow, or is chilled and used for sausage manufacture. The first and second stomachs—***the rumen and the reticulum***—are then cut open and their contents ejected, thoroughly washed, and sent to the ***tripe*** department. The ***rumen*** yields ***plain tripe*** and the ***reticulum*** yields ***honeycomb tripe***. The ***omasum, or third stomach***, does not find any economic use but is tanked with other inedible offal. The ***abomasum or fourth stomach*** is cut open, emptied, cleaned, and sent to the tallow tank.

The small intestines, which are suspended from the outer edge of the ruffle, or mesentery, are detached by means of a knife. The ruffle fat then accompanies the caul to the oleo department. The small intestines are run through the de-fatting machine, which removes the fat from the outer surfaces, then are turned and run through the sliming machines, later finding their way to the casing department to be cured for sausage casings under the name of ***beef rounds***. They also find a limited use in the manufacture of tennis racket strings, perfume, bottle caps, etc. The large intestines are held in a network of fatty tissues that is removed and sent to the oleo department. The ***caecum (blind gut or cap end)*** and the first two feet of the colon are known as the ***beef bung***. They are carefully defatted, turned, cleaned, freed of nodules, and sent to the casing department to be cured for sausage casing. ***Beef middles*** come from the remaining portion of the large intestines, extending from the bung to the rectum. Middles are defatted, cleaned and sent to the casing department to be cured for sausage casings. The rectum is not used as a container for edible products. It is closely defatted and then tanked. "Machine" fat, the fat resulting from running rounds through the fatting machines, and "chip" fat, the fat obtained from trimming the large intestines, are rendered for edible tallow. The ***pancreas***, one of the organs of digestion attached to the intestines, is sometimes separated and chilled to be sold as "***stomach sweetbreads,***" but ordinarily remains with the intestinal fat and is rendered into tallow or oleo stock.

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[1] The principal edible products made from beef fat are oleo stock, oleo oil, oleo stearin, and edible tallow. Oleo oil and oleo stearin are the products obtained by pressing oleo stock

The liver receives a careful inspection, as it is very much subject to parasitic and bacterial invasion. The greater part of the blood circulation from the digestive tract passes through the liver that thus becomes the first stopping place of much infectious material absorbed by the veins of the intestines. Livers are therefore very prone to abscesses, tuberculosis, etc. Flukes and other parasites frequently make their way into the liver from the intestines through the bile duct. After passing inspection, the livers are sent to the offal department. Methods for handling ***livers*** include washing with water. This removes any blood, bile, or other contamination. The gall bladder is carefully removed, preventing contaminating the liver with bile. The gall bladder is then punctured and bile collected. ***Bile*** has commercial value as a medicinal agent. Galls are being marketed as ox gall and are used by tanners and by soap manufactures. Gallstones are occasionally found in the gall bladder. These find a steady market in the Orient region. Beef livers are hung on racks in chill-rooms until thoroughly chilled. They can be sold fresh and/or fresh frozen. They can also be used in some sausage formulations.

Oxtails are partially severed by the rumper, but remain attached to the carcass until final inspection has been accomplished. They are then removed, spread on trays and placed in chill-rooms. They can be sold fresh or fresh frozen. Many are used in canned oxtail soup.

The urino-genital organs of beef animals are disposed of by the following methodology. The urinary bladder is drained, washed, inflated, dried, and prepared for use as a container for certain kinds of sausage. The ***ovaries*** of cows are sometime saved for use as medicinal agents, but supply usually exceeds demand. The uterus and its appendages are tanked with other inedible offal. The male urethra (pizzle) is usually rendered into glue. The testicles of bulls are not usually used for food (in the U.S. small quantities are sold as edible, called Rocky Mountain oysters); some are used for the preparation of medicinal agents and the balance tanked as inedible offal. The prostate and Cowper's glands of the bull are also sometimes used in the preparation of medicinal agents. The udders of cows are frequently found to be diseased, so that U.S. inspection agency forbids their use for food except under special conditions. Some mammary gland tissue is used for medicinal purposes.

The thyroid is a ductless gland lying in the throat on either side of the trachea and just below the larynx. The action of this gland (as well as the other ductless glands) in life is not well understood. However, it is known to have direct action upon blood circulation, and is largely used in the preparation of medicinal agents used in heart control. The supraenal glands, or adrenal bodies lie in contact with or in front of the kidneys. They produce a medicinal property used largely in surgery for the control of hemorrhage. The thymus gland is commercially known as the sweetbread. It is sold fresh and/or fresh frozen. ***Sweetbreads*** are largest and most tender in young animals, becoming smaller and tougher as the animal ages. Those in older animals have no commercial value and remain part of the dressed carcass. The thymus gland lies just under the thoracic cavity, extending back as far as the third rib and the heart, while the cervical portion extends forward in the throat along the trachea.

Beef hearts are cut open, exposing the cavities of the heart to inspection for beef measles. The hearts are washed, spread on trays in the chill-room, and are sold fresh or fresh frozen. Beef ***kidneys*** are practically never removed on the killing floor but remain attached to the carcass. However, any fabrication process of carcasses leaves kidneys available for sale.

SHEEP AND GOAT OFFAL

The most important of the by-products is, of course, the pelt, its value being dependent upon the market value of wool products and skins. Sometimes pelts may be worth more than the carcass. The pelts are sent directly to processing for the removal of wool product and then curing of the skins.

The blood of the sheep or goat goes entirely into inedible blood products. The small intestines of the sheep make the highest quality grade of sausage casings, and all small intestines of sheep are saved for this purpose

or for manufacture into violin strings, surgical ligatures, etc. Surgical ligature is made almost exclusively from small intestines of sheep. Conversations with world industry casing executives suggest that Mongolian sheep casings are tougher and not well accepted. They may have been discussing Inner Mongolia product; nevertheless, Mongolian product in the medicinal use of intestines must be examined. This informed worldwide executive did mention a high demand of (curly) small intestines from goats in the Japanese market.

Head Products

Sheep/goat tongues are removed, washed, and chilled to be cured and packed as pickled or jellied lamb's tongue. Head meat and cheek meat are trimmed away from the bones of the head, spread on trays, and chilled for use in sausage or to be sold fresh or fresh frozen. The brain is removed and then chilled and sold fresh or fresh frozen, or is used for canning. The bones of the head are then rendered for tallow and bone products.

Viscera Products

The rumen and reticulum of sheep/goat are occasionally prepared for tripe, but are ordinarily tanked with the large intestines and the third and fourth stomachs. The liver of sheep/goat has a very low commercial value, a few being used in sausage products or sold fresh or fresh frozen. The testicles of a young male sheep/goat are known as "lamb fries." Present methodology of dressing sheep/goat leave the spleen attached to the diaphragm (skirt) of the dressed carcass; the hearts are washed, chilled, and used in sausage. The kidney is not removed on the killing floor but remains part of the dressed carcass. The thymus gland may be removed and sold as sweetbread product.

Mutton Fat and Other Oil Products

The caul, ruffle, and other killing fat products produce a low quality oleo stock compared to the product produced from cattle. Some of the fat might be rendered for oleo oil, but the greatest part will be tanked for mutton tallow. The feet go to the glue-house.

HOG OFFAL

Because of the practical impossibility of hog blood without contamination, the U.S. inspection agency prohibits its use as an edible product unless special sanitation provisions are set in place. Practically no effort is made to collect hog blood. It runs into specially designed drains in the floor and is gathered for the manufacture of fertilizer, blood meal, etc.

Hog hair is thoroughly washed, separated from the scurf, sterilized by boiling, and dried. The heavier bristles are separated for use in the manufacture of brushes, etc. The remainder of the hair is put through a curing process and then used in automobile seats, cushions, mattresses, etc.

Head Products

The esophagus is slit open lengthwise and thoroughly cleaned, later being used in the manufacture of sausage. It is usually cured before being so used. The meat of the esophagus is known as weas and meat. In the offal room, the external ***ear*** is cut from the head and finds its way into the sausage room, where it is used for headcheese, souse, etc. Some ears are used in the manufacture of gelatin. The external ear canal is removed and used in inedible offal. The lower jaw is pulled away to facilitate handling of the head. The ***snout*** is removed from the upper jaw by means of a power-driven snout stripper. The snout is used for the same purpose as the ears. A small amount of muscle tissue in the snout (snout meat) is sometimes removed and used separately in the manufacture of sausage. The lower lip is also used in the manufacture of headcheese and souse, etc. The ***tongue*** is removed and sent to the pickle area for curing to later be put up as lunch tongue, either jellied or canned. The tonsils are removed and sent to the offal tank together with the ear canals,

the ethmoid, and turbinated bones, etc. The muscle tissues of the head are cut away and receive the name of the part of the head from which they are removed, such as temple meat, ***cheek meat***, etc. This is all used in sausage manufacture, being used either fresh or cured. The warm meats are spread on trays and placed in chill-rooms to be thoroughly chilled before being placed in cure or sent to the sausage room. The fat of the head is sent to the rendering tanks to be rendered into lard. The skull is split -- by a power-driven knife that splits the skull in such a manner that the ***brain*** can be removed whole. The brain is chilled and disposed of fresh, fresh frozen, or canned. The teeth, ethmoid, and turbinated bone are removed from the skull by means of machines designed for that purpose. The bones are then washed in a rotary washer and sent to lard tanks for rendering into lard.

Whole hogs' heads or "market heads" are allowed to be sold without removal of the teeth or bones; the outer surface of the head must be thoroughly cleaned and free from hair. The hoofs and dewclaws of hogs are removed on the killing floor and are tanked for fertilizer. Hog skins are seldom removed on the killing floor but remain as a part of the wholesale cut. If removed in further processing from the cuts, skins are used to make gelatin, and some high quality skins (e.g., belly) are used in the manufacture of shoes and footballs)

Viscera Products

Owing to the amount of tank water entering the ***lungs*** of hogs during the process of scalding, U.S. inspection agency prohibits lung being used as an edible food product. The ***stomach*** is turned, thoroughly cleaned, cured, and used as a container for headcheese, as hog tripe, or as an ingredient in sausage or potted meats. A portion of the mucous lining of the stomach of a pig is rich in ***pepsin***, and a large amount is removed and used in the manufacture of medicinal agents. The small intestine, which is about 56 feet in length (17.1 m), is removed by pulling it from the membrane (mesentery or ruffle) from which it hangs suspended, and is thoroughly cleaned, slimed, and cured to be used for sausage casings or for medical ligatures, etc. A small quantity of the large intestine is used for casings for certain kinds of sausage (thuringer, blood sausage, and frizzes). The rectum, known as the "bung," about three feet in length, is highly valued as a casing for summer sausage, liver sausage, etc. Great care is exercised in removing the bung from the carcass and trimming it afterwards. A cut or scored bung means a considerable loss. Many small bungs are split and two sewn together to make one large bung. The liver is almost entirely used in liver sausage, liver puddings, etc., though large quantities can be sold fresh frozen. The heart is either sold as fresh frozen or used in sausage. The kidneys are usually removed, chilled, and used in stews. Giblet meat (the pillars of the diaphragm or what corresponds to the hanging tender in cattle) sometimes is removed for sausage meat, but in practice it is allowed to remain on the carcass to be sold as part of the loin. The urino-genital organs are largely of an inedible nature. Hog bladders are frequently utilized as containers for sausage, but owing to their high odor must receive special treatment before they may be used. Ovaries and testicles are saved in a limited extent for manufacture of medicinal agents, but for the most part they are tanked with the uterus, pizzle, and other inedible offal.

Lard and Oils

The lean meat is trimmed from the larynx and the fat from the trachea, and the balance of the respiratory tract is rendered as inedible offal. The mesentery is heavily deposited with fat, known as the ruffle fat because of the particular ruffled appearance of the outer border after the intestine has been removed. The ruffle and the caul (the thin, lace-like fat), fat filled membranes attached to the stomach, are all sent to the tank for rendering into lard. The large intestine, which is about 16 feet in length (4.9 m), is usually rendered into grease, though a few are cleaned, cooked, and sold under the name of ***chitterlings***. The spleen (also know as ***melts***) and pancreas are usually sent to the lard tank with the caul and the ruffle fat, although the spleen is occasionally removed and used in sausage. Leaf fat is rendered without chilling or is placed on a truck and taken to the chill-room, where each piece is hung separately over wooden rods or on hooks and left to chill, after which it is rendered into high quality grades of lard—neutral and open-kettle rendered.