

WELCOME

Methods of slaughter

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- **Slaughter** is the term used to describe the killing and butchering of animals (bleed to death) usually for food. Commonly it refers to killing and **butchering of domestic livestock (*tamed animals*) in a humane way.**
- ❑ At present the animals most commonly slaughtered for food are
 - cattle (for beef and veal),
 - buffalo (cara beef),
 - sheep (for mutton),
 - goats (chevon),
 - pigs (for pork),
 - horses,
 - and fowl (largely chickens, turkeys, and ducks)
 - increasingly fish from the aquaculture industry (fish farming)

Some of the norms

Slaughter methods vary all over the world according to religion, tradition and regal legislation.

Every method ought to fulfill the following conditions.

1. The animal should be **killed with a minimum suffering** considering pre slaughter treatment and killing.
2. **Bleeding** of the animals should be **complete** as possible to ensure good quality meat.
3. The sticking and dressing should be performed in **most hygienic way** - to avoid contamination of meat.

Humane Slaughter

- According to the law, animals should be **stunned** into unconsciousness prior to their slaughter to ensure a quick, relatively painless death.
- Stunning has two purpose,
 - 1.To induce an immediate state of insensibility.
 - 2.To produce sufficient immobility to facilitate the sticking process to initiate bleeding.

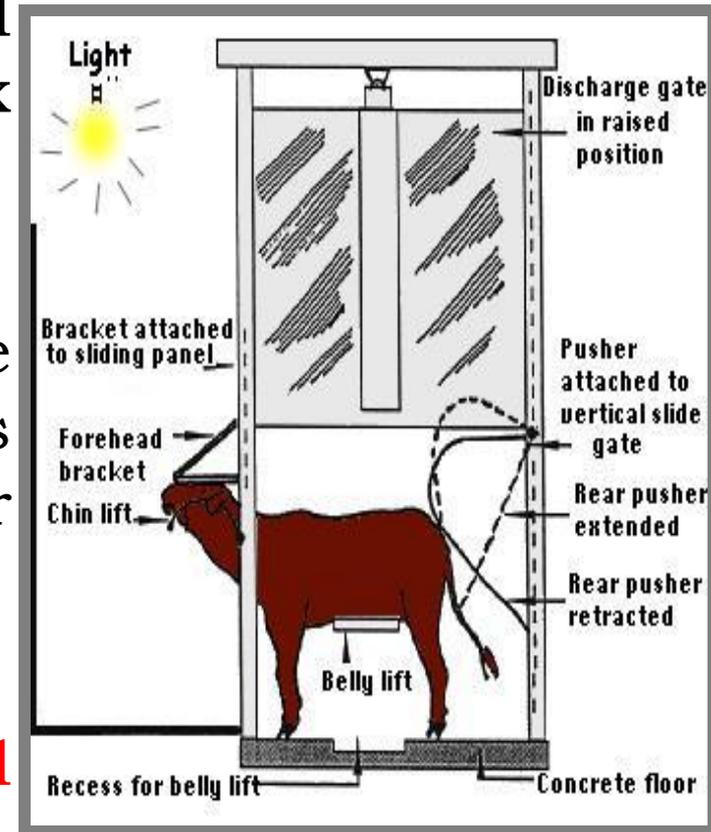
The pre-slaughter handling

- Animals are transferred from lairage pens directly through race into an area of stunning and slaughtering.
- For mechanical and electrical stunning animal heads is presented in such a position that the equipment can be applied operate easily (shelf type head restraint is most successful)



The pre-slaughter handling...

- In case of small animal, **hydraulically-operated** tail pusher in the back of the box is useful for restraint.
- Positioning of **light** above the animal's head to attract its attention to facilitate proper stunning.
- In some cases **manual restraining** is also practiced.



- Slaughter of farm animals is normally a two stage process of **stunning** and **bleeding** (should be effected **within 3 mins** after stunning).
- Animal must be stunned before slaughter by an **appropriate , recognized stunning method** that must produce immediate unconsciousness that lasts until death.

Mechanical
stunning



Electrical
stunning



Ritual methods of slaughter

- The major difference from the general practices in most countries is that the animals are **not stunned** prior to slaughter.
- In most of the cases the slaughtering is **regarded as offering to their god**, therefore the slaughtering is one of the most pious and religious matter to them.

Mainly three method are there

- I. Jhatka / Hindu / Sikh Method
- II. Halal / Muslim Method
- III. Jewish / Kosher Method

Sikh or Hindu slaughter method (jhatka)

- **Jhatka** meat is meat from an animal which has been **killed by a single strike of a sword or axe to sever the head.**
- The head of the animal is held securely, or fastened to a rigid pole or other object.
- The hind legs are held away by hand. The head is severed with a heavy, sharp axe or sword in a **single stroke.**

Jhatka method



- This **kills the animal immediately** because the spinal cord is severed, and the blood flow to the brain is stopped almost instantly, causing brain death within seconds.
- Therefore this method is **less painful to the animal than other methods.**
- Jhatka is the Sikh method of killing an animal. Sikhs are recommended to eat the jhatka form of meat, as they do not believe that any ritual gives meat a spiritual virtue.

Muslim / *Halal* Method

- *Halal* slaughter is the method of slaughtering animals for meat prescribed by Muslims.
- It involves **cutting the throat of the animal** so as to bring about rapid, complete bleeding and the quickest death possible.
- Stunning prior to slaughter is generally **not** practiced.



Halal method



- *Slaughter gently but firmly by holding animal's head back, and in a quick, single cut move across animal's throat just below the jawbone, cutting the windpipe, esophagus, arteries and veins forward of the neck bone.*

▪ The method of killing an animal for the sole purpose of making its meat fit for human consumption is called **Zibah** (Arabic word – purification / rendering good).

The most important requirements of *Halal* slaughter are:

- The animal should be **healthy** and **without injuries**.
- The animal should be treated with **respect and sympathy**.
- No animal should see another animal die.
- The slaughter should be done **by a practicing Muslim**.

- A blessing should be given before the cut.
- A sharp instrument, usually a knife, should be used to slaughter the animal in a **single, unbroken move.**
- The oesophagus, trachea and jugular vein should be cut **without damaging the spinal marrow.**
- The **blood** should be totally **drained.**

Loss of consciousness and bleeding efficiency

- The deep, large cut through all the blood vessels of the neck causes **Blood loss & hemorrhagic shock.**
- Blood loss leads to \longrightarrow **anoxia** and almost immediate loss of consciousness.
- Spinal cord intact \longrightarrow **Complete bleeding** \longrightarrow Good quality meat.



Stunning in Slaughter of Ruminants and Chicken (Halal method)

1. Two types of stunning methods can be used -----
Electrical and **Mechanical** Stunning.
2. By a trained Muslim slaughter man.
3. The stunning **should not kill** or incur permanent injury to the animal.

❖ Electrical stunning

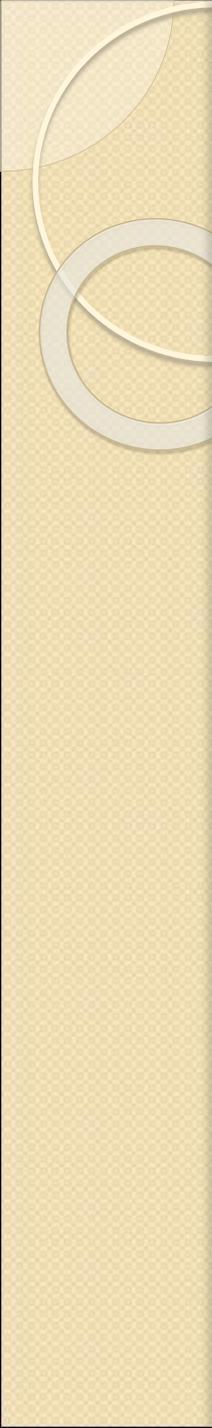
- The certification authority will control the current to be used.
- Only “**water stunning**” used in Poultry.
- For animals “**Head only stunner**” used.

❖ Mechanical stunning

- Used only in **cattle** and **buffaloes**.
- **Non-penetrative type** (mushroom head) percussion should be allowed.
- Stunner **should not penetrate** or **break the skull**.
- If skull is found penetrated or broken, the carcass should be identified as non halal.

Jewish / Kosher Method

- **Kashrut** is the body of Jewish law dealing with what foods we can and cannot eat.
- According to Kashrut you may eat any animal that has **cloven hooves and chews cud**.
- **Camel** and **pig** lack these qualities so they are not Kosher.
- Of the animals to be eaten the birds and mammals should be **killed according to Jewish law**.

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- Animal with **disease** or **flaws** in **organs** are **forbidden**.
 - Animal must be **alive** at the time of slaughter.
 - Any form of prior **stunning** is prohibited.
 - It prohibits consumption of **blood**.
 - Certain parts of permitted animal may not be eaten (Spleen, heart, liver).

Some of the terms

1. **Talmud:** The body of the Jewish law, which specifies the ritual method.
2. **Kosher Meat:** Meat fit for Jewish consumption. (Obtained according to the ritual method).
3. **Shechita:** The act of killing of animals for food.
4. **Shochet:** The person who performs Shechita.
5. **Terefa / Treyf:** The meat unfit for consumption by Jewish community.
6. **Chalef:** The razor sharp knife, roughly twice the width of animal neck used to kill the animal.

- Among other features, *shechita* slaughter severs the **jugular vein, carotid artery, esophagus and trachea** in a single continuous cutting movement with an **unserrated, sharp knife**, avoiding **unnecessary pain to the animal**. Failure of any of these criteria renders the meat of the animal unsuitable.



The Five basic rules of Jewish Slaughter

- I. The neck incision shall be completed **with out pause**, pressure, stabbing, slanting or tearing.
- II. The Shochet is normally assisted by the sealer (**Shomer**) who is responsible for putting **Kosher mark** on the brisket and edible offals.
- III. Shochet carries out a post mortem examination by making an incision to Xyphoid process and inserting the arm to detect adhesions in thoracic cavity. (process called **Searching**)

Contd....

IV. The carcass fit for consumption must be **porged** by removing large blood vessels in fore quarter prior to sale.

V. Kashrut or **Kosher certification** for meat.

● Meat (the flesh of birds and mammals) cannot be eaten with dairy.

● Utensils that have come into contact with meat may not be used with dairy, and vice versa.

Humane Slaughter

Modern abattoir

1. Stunning – Mechanical
Electrical
Chemical
2. Bleeding / Sticking

Two methods of bleeding



1. Bilateral severance of the carotid arteries and jugular veins- by insertion across the throat, caudal to the larynx (in ritual method).

2. Insertion in the jugular furrow at the base of neck and sever the brachiocephalic trunk and anterior vena cava.



In case of pig knife is inserted in the middle of the neck at the depression in front of sternum and sever the anterior vena cava.

Precaution must be taken:

- The knife should not be passed too far, it may puncture the pleura, blood comes out and adhere to the thoracic cavity produce **back bleeding** or **over sticking**.
- In case of pig over sticking may produce pocket beneath scapula (during scalding blood and water accumulate) and results cooked appearance.
- **Bleeding time:** Cattle-6 min (yield is 13.6 kg),
Sheep-5 min (1-2.5 kg),
Pig-6 min (2.2 kg)

Dressing of Food Animals

- Methods of dressing of various food animals

1. Booth or Bed System



2. Line or On-the rail dressing



I. Booth or Bed System

- In this system **one or two persons** do all the work in one place.
- No individual is allotted with a specific work.
- All the slaughter procedure is **carried on floor**.
- Prevalent in most municipal and corporation abattoir in **India**.
- Major disadvantages
 - **hygiene is poor,**
 - **operation is congested.**



2. Line or On-the rail dressing

- Consists of conveying the carcass by gravity or power through **overhead rail** to various places after stunning and sticking.
- Also known as one man-one job system.
- Men will be at different places carcass will reach them and they will attend to their allotted work.
- Manual labor saving devices such as brisket cutter, hock cutter, hide puller, etc., are used.



- In modern meat plant line method of slaughter is highly essential.

In this system there are four types.

I. Gravity rail system

- In this method the carcass will be suspended from a spreader and single wheel trolley or runner, gravitated to each station and stopped by manually operated stop on the overhead rail.
- The system is used for lower slaughter rates **10-40 cattle/hr.**
- Most compact and **economical.**
- **Less chance of breakdowns** with consequent loss of production.
- **Adequate ceiling height** is necessary because of the pitch of the rail to gravitate the carcass.

2. Intermittent Powered System

- In this system the carcass is suspended over a spreader(gambrel) and trolley, and moved mechanically on a level rails at an intervals by means of variable timing device.
- Here Slaughter rate of **10-75 cattle/hr** can be achieved.



3. Continuous Power System

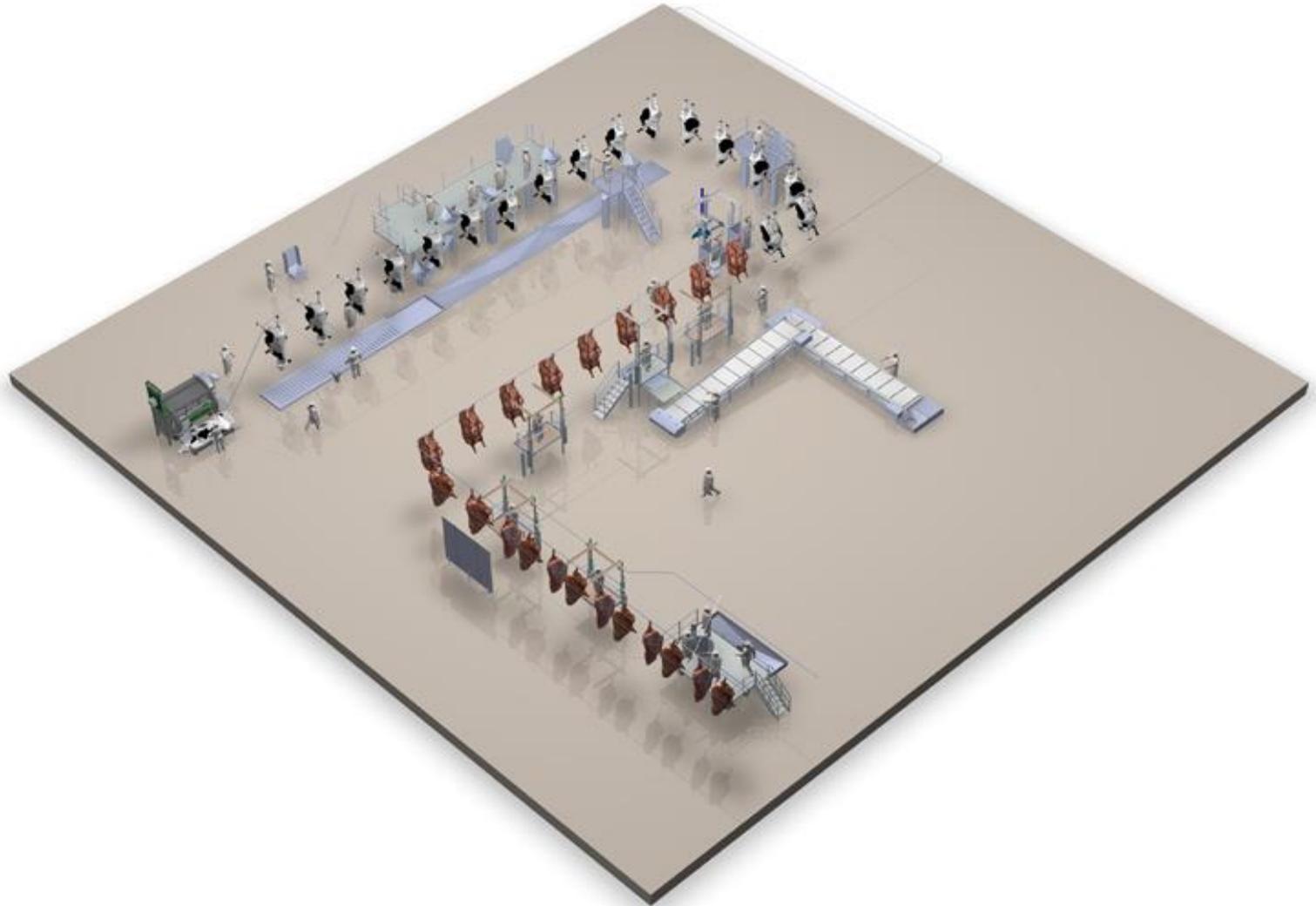
- Here dressing line will be in continuous motion.
- More **sophisticated** instruments are used in the slaughter line (mechanical hide puller, moving top inspection table etc.)
- Carcass can be revolved to a full 360°.
- The **platform** may be fixed or movable, elevated or lowered.
- Rate of slaughter – **40-120 cattle/hr.**



4. Canpak System

- This is a **continuous conveyerised** method in which heavy Beef trolleys or runners suspend the carcass from overhead rail.
- Here everything is done systematically (mechanized).
- Rate of slaughter – **50-150 animals/hr.**
- Commonly used in modern meat plants.
- Here from arrival of animals till completely dressed the work is divided into 32 divisions (each work is carried out by one man).
- Developed and patented by the Canada Packers Ltd., Canada; hence called Canpak system.

Canpak System



Advantages of line system over booth system

- ⊙ Time is saved.
- ⊙ Safer for operatives.
- ⊙ Hygienic than booth system.
- ⊙ A comfortable operative position is provided to the operator.
- ⊙ Saving of space.
- ⊙ Increased output and enhanced value of carcass.

Possible Disadvantages

- ▶ High standard of engineering maintenance is needed.
- ▶ When break down occurs production ceases completely.
- ▶ Trained personnel needed.
- ▶ Meat inspection is sometimes more difficult and possibly less efficient.

Whole procedure











ed organ conveyor





Casualty slaughter

- When animals are suffering from such disease or injuries which doesn't render the meat unsuitable for human consumption, are being slaughtered.
- Reasons in most of the cases are, Dystocia, Tympany, Respiratory disease, Joint disease, Reticular foreign bodies, Circulatory disease, enteritis, Fracture, Recumbency, Abortion etc.
- On firm decision has to take (by veterinarian), whether the animal is suitable for transport to nearby slaughter house.
- These animal must go through **ante mortem inspection**.
- **Slaughtered immediately** on arrival.
- Should be **isolated** from normal animal.

Emergency slaughter

- When the animal is healthy, but requires on-farm emergency slaughter, owing perhaps to limb fracture, uncontrolled hemorrhage, injury causing severe pain, or distress or functional or physiological disorder, that animal may be humanely slaughtered on the farm to save it from pain and the carcass transferred to abattoir.

Rules:

- Undergone ante-mortem inspection.
- The body of the animal has not been dressed.
- Animal accompanied to the by a veterinary certificate.
- Body of the animal should be transported to slaughter house in hygienic condition, within one hour of the slaughter
- In slaughterhouse post mortem inspection is done to confirm the oath in certificate.

