

FAQs

1. What are the meat producing animals in India? Meat from which animals is normally consumed in India and exported from India?

Domesticated sheep, goats, pigs, buffaloes, cattle and poultry birds are the main meat producing animals in India. Meat from sheep, goats and chicken is mainly consumed in India and meat from buffaloes and cattle is mostly exported.

2. What is an abattoir?

An abattoir is a meat production factory, where all the operations are dictated by standards of hygiene and animal welfare. Location, design, layout and operations of an abattoir should conform to certain specifications and standards.

3. What are main factors that decide appropriate location of an abattoir?

The location of the abattoir has to be decided based on three major factors, *viz.* (i) Raw material availability, (ii) Market and (iii) Infrastructure facilities. Raw material, *i.e.*, livestock has to come from rural areas while the meat produced has to find market in cities. Generally, the outskirts of the city or town are preferred for establishing an abattoir.

4. What are essential steps involved in a model abattoir practice?

The essential steps involved in a model abattoir practice include:

- Holding animals in lairage
- Antemortem inspection
- Stunning
- Bleeding
- Skinning and evisceration
- Postmortem inspection
- Washing with clean water

5. What are the main considerations for the design of slaughter unit in an abattoir?

The slaughter hall is the main component in the complex where slaughter and dressing of the animal take place. The important components of this unit are: (i) Stunning pen, (ii) Hoist and overhead rail systems for bleeding, skinning and evisceration, (iii) Byproducts section and (iv) Condemned carcass room. The main considerations for the design of this unit are:

- Unidirectional flow of carcasses
- Separate sections for slaughter, skinning and dressing
- Spacing between lines to facilitate easy movement of carcasses and personnel
- Facilities for collection / disposal of byproducts and wastes
- Washing facilities

- Carcass hanging room
- Meat cutting room
- Lockers for equipment
- Adequate toilet facilities for personnel

6. What is evisceration and how it is done?

Removal of visceral organs of an animal during slaughter and dressing is called evisceration. The rectum is loosened and tied. A small cut is made in the belly wall just above the brisket and the fingers of the left hand are inserted to protect the viscera. The belly wall is opened with right hand with a knife. The stomachs, intestines and rectum are removed. The bladder is taken out. Oesophagus is pulled up through the diaphragm. The breast bone is split and the pluck (trachea, lungs, heart, spleen and liver) is removed. These byproducts are removed to their respective compartments.

7. What are the essential steps in processing of poultry?

Live birds are held for about 16 hours without feed but with ample water prior to slaughter. This will minimize contamination of carcass during dressing. Antemortem inspection is done to see that the animals are healthy and are fit for slaughter. The jugular veins are cut to bleed for 2 – 3 minutes. The dead birds are scalded in hot water at 58 – 60 °C for 2 – 3 minutes to loosen the feathers. Feathers are removed in a defeathering machine. The bird carcasses are then washed with water, visceral organs removed by hand and carcass quality checked in postmortem examination. The washed carcasses are cooled in slushed ice at 4 °C for 2 h and then packed for marketing.

8. Mention about water requirement in an abattoir.

A safe, potable and constant supply of water shall be available. Water requirement in an abattoir is: 450 L / day / pig, 270 L / day / cattle and 50 L / day / sheep or goat. Supply of clean hot water shall be available in the slaughter hall and workrooms during working hours. Every sanitary convenience in an abattoir shall be supplied with water by means of suitable flushing appliance. Facilities for washing of hands shall be provided for persons working in an abattoir.

9. What is rendering?

Rendering unit is one of the essential units in modern abattoir. Thermal processing of byproducts for the production of animal feed ingredient is referred to as rendering. Rendering process has been advocated to process fats, blood, offals, condemned carcasses, feathers, bones and trimmings. The wet, dry and continuous low temperature rendering are the three principal types of rendering.

10. Give a brief account of wet rendering.

This process is also referred as steam rendering in which a large tank is loaded with raw material and the tank is sealed. Steam is introduced into the material and maintained at 2 kg / cm² pressure till the fats are freed from the tissues. Three layers form in the tank – fats on top, water layer in the middle and slush at the bottom. Water and fats are removed to obtain rendered solid material.

11. Explain HACCP system.

For production of safe meat with better shelf life, the HACCP (Hazard Analysis Critical Control Points) system has been widely recognized as a process control system during the meat production operations of animals in abattoirs. The HACCP system is a proactive process control system for minimizing or eliminating hazards (biological, physical and chemical) and for producing wholesome and safe meat in abattoir.

The main principles of design for HACCP system are:

- *Critical control points (CCP):* These are the steps to prevent or eliminate meat safety hazard or reduce it to an acceptable level.
- *Critical limits:* These are maximum or minimum values to control a hazard at CCP to prevent or reduce safety hazards.
- *Monitoring procedures:* This will ascertain whether a CCP is under control.
- *Corrective actions:* When there is a failure in the specified action to meet a critical limit, an alternative (corrective) action is necessary to meet a critical point.
- *Verification procedure:* This will help find out that HACCP is implemented as intended.
- *Documentation:* Records related to the procedures followed need to be maintained.

12. What is sanitation?

Sanitation relates to all the cleanliness activities in abattoir and surrounding environment with a goal of eliminating or limiting the pathogenic and spoilage microorganisms. Facilities or cleaning meat plant include ample supply of cold and hot water, wash basins, hoses, hose pipes, sterilizers, sterilizing rooms, detergents and sanitizers. General cleaning procedure involves removal of soil, gross fat and meat scrapings, treatment with chemical detergent of proper strength and temperature, washing with hot water and treatment with a sanitizer such as chlorine.

13. What are the general requirements to manage an abattoir?

The following are the general considerations to manage an abattoir.

- Livestock maintenance in stock yards or in lairages
- Organization of animal owners: There are two categories
 - Butchers slaughtering their own animals and pay fees to the abattoir owners
 - Butchers handing over the animals to the abattoir authorities for slaughtering
- Antemortem examination and disease control

- Upkeep of abattoir: Physical structures and equipment
- Personnel management including training
- Organizing production schedules and achieving production targets
- Proper handling of carcasses, byproducts and wastes
- Postmortem examination
- Maintenance of sanitation and hygiene in abattoir
- Effluent treatment
- Social welfare measures for the staff
- Follow up of stipulated regulations and specifications
- Regulating inputs and outputs and supervision of critical quality control points.

It is essential that personnel qualified in veterinary science and meat technology manage the abattoir.

14. What type of equipment are required in an abattoir?

The equipment have to be kept as simple as possible to keep costs down and is the minimum required to run a slaughter house. The equipment and fittings shall be of such material and of such construction as to enable them to be kept clean. Self draining type of equipment are recommended for abattoirs. The implements shall be of corrosion resistant metal or other cleansable and durable material. Suitable facilities shall be provided in convenient places within abattoirs for the sterilization of wiping cloths, knives and other equipment used in the abattoir.

The necessary equipment for a small scale abattoir for sheep are listed below:

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| • Water trough | • Hanging beams |
| • Electric stunner | • Hoist |
| • Skinning cradle | • Head washer hose |
| • Overhead rails | • Tripe table (Stainless steel) |
| • Blood bins | • Trolleys |
| • Gambrels | • Buckets |
| • Offal bins | • Sterilizer for hand tools |
| • S - hooks | • Water storage tank |
| • Weighing scale | • Fat screens |
| • Hose pipes | • Septic tank |
| • Splitting saw | • Wash basins |
| • Knives | |

15. How carcasses or meats are graded?

The carcass or meat can be graded as Prime, Choice, Standard, Commercial and Utility, which are characterized as below.

- **Prime:** This is meat produced from young and well fed animal, highly acceptable and palatable, has better marbling, juiciness, tenderness and flavor. Such meat is most useful for roasts and steaks.

- **Choice:** It is meat of high quality with slightly less fat than prime grade meat. This meat is more useful for braising and pot roasting.
- **Good:** Meat has little fat with acceptable degree of quality. It is less juicy and less tender.
- **Standard:** This meat has very thin covering of fat and has mild flavor and lacks juiciness.
- **Commercial:** This is meat from old animals, lacks tenderness and requires long and slow cooking with moist heat.
- **Utility:** This is meat from old animals, lacks tenderness and juiciness with very little fat but provides a palatable and economical source of meat for pot roasting, stewing, and boiling or ground meat dishes.

Further, meat from sheep is labeled as Veal (< 3 months of age), Calf (3 – 8 months), Lamb (1 - 2 year, yearling mutton) and Mutton (> 2 years) depending on the age of the animal.