

### **Standard Operating Procedure for Rendering Plants**

Rendering plants processes waste materials like bone, lard or tallow of animals and chicken slaughter wastes. The waste generation is 27% of the total body weight for large animals and 17% for small animals, of this 8% is the weight of bones, 1% is blood & 5-6% is intestine. On an average around 25% of the body weight of poultry is generated as inedible waste.

In the rendering plant, the raw material (animal/chicken waste) is transferred to a conveyor and discharged into magnetic separator for removal of ferrous materials. It is then pulverized to uniform particle size and then treated in a cooker to temperature in range 120<sup>o</sup>C to 135<sup>o</sup>C with adequate pressure based on the capacity of the cooker. At this temperature, the moisture gets evaporated and fat separate from bone and protein. De-hydrated slurry of fat & solids is discharged from the cooker. It is then sent to the screw press where the solid's fat content to 10-12%. The solids that bypass the screw conveyor is returned to the cooker. The solids discharged from screw press are called press cake and is used for making the meal. Fat removed from the screw press is discharged into the centrifuge which removes the impurities in the fat and the cleat fat is collected. For poultry waste pre-breaking is optional and directly taken to cooker through conveyor. Fat press is also optional as the poultry meal with fat is preferred for using it as feedingredient.

There are other rendering processes also like microbial fermentation of waste using steam. Some units use driers instead of cookers (or a combination of drying & cooking) and then pressed and milled to obtain the meal while the fat from the press is decanted/centrifuged to obtain tallow.

The following are the essential requisites of a rendering plant from pollution angle:

1. Rendering Plants can be operated only with the consent of the Pollution Control Board. It is taken under Red Category. The distance criteria for Red category are applicable to such units. In addition there should be a setback distance (distance from the side walls of the plant to the plot boundaries on all sides) of minimum 10m on all sides. The minimum distance to the nearest residence shall be 100m.
2. A Rendering Plant should have good network of waste (raw material) collection & transportation system. It should have a good fleet of vehicles specially designed for the purpose.
3. The vehicles used for the purpose should be closed type and refrigerated inside so that foul smell is contained during transportation. For plants collecting waste from within 20 km radius of the rendering plant, refrigeration is not insisted. Vehicles should have fully closed chamber with stainless steel lining. The vehicles should be GPS tagged and should take the shortest route to the plant so that the waste material is

conveyed to the plant in the shortest time. In case of non-refrigerated storage and transport of offal, it should reach the rendering plant within 12 hours after generation.

4. The unit should maintain a complete register for recording the movement of each vehicle. Vehicles should be affixed with stickers "Slaughter wastes to Rendering plants" and address with contact number of the rendering plant. The vehicle should have uniform colour code to identify the vehicle. The rendering plant owner should arrange immediate removal of waste in the case of breakdown of vehicle during transportation. All vehicles and offal containers must be washed with hot water or with mild soap solution, on every delivery.
5. The feeding area to the raw material holding tank shall be fully enclosed so that complaints due to odour are prevented.
6. Processing should be done as quickly as possible on receipt of raw material. Enclosed area with freezer facilities shall be provided if storage of raw material is required. Capacity of cold storage tank should be capacity of the rendering plant per day. If due to breakdown, the storing capacity is 100%, then the receipt of raw materials shall be stopped and the matter informed to the Pollution Control Board & LSGD.
7. The Rendering Plant should essentially have a system for collection of odorous gases generated at various points in the plant. The odorous gases

thus collected shall be treated in an odour control system like bio-filter, carbon filters or scrubber system. Gas Incinerators (heating the exhaust gas to 850°C) are the best option to destroy odour. The incinerated gases can be let out through exhaust pipe at roof level of the building in which it is installed.

8. The odour level at 1m from the boundary of the unit shall not be below detectable level when measured with Olfactometer. In case of complaints, the Board officials can take legal air samples and measure in the odour laboratory of the Board.
9. A typical rendering plant generates waste water from the following sources: vehicle washing, raw material liquids, cooking condensate, vessel/plant washing, air pollution control equipment, serum water from blood processing etc. This results in waste water with high BOD (of the order of 250-750mg/l), oil & grease (of the order of 150-1000mg/l), COD of the order of 1000-4000mg/l). It may also contain high concentration of ammoniacal nitrogen and very high concentration of coliform bacteria. Hence Effluent Treatment Plant of primary, secondary (including UASB followed by aerobic treatment) & tertiary treatment (including disinfection) is highly essential.
10. Precautions to be taken like netting /fencing the area to prevent the entry of birds/stray dogs/rodents in the premises.

11. Green belt (preferably herbal) should be created by planting canopy trees around the plant
12. Good practices like packaging, labeling and correct storage of products shall be ensured. Storage facility for keeping product should be provided for at least 7 days production.
13. Should have predetermined maintenance schedule of equipments to ensure that all the equipments are functional with maximum possible efficiency.
14. Raw material that is suspected of being contaminated with chemical hazardous substances such as used-mineral oils and other potential sources of high levels of PCB or dioxin must not be used to make rendered products that may be used as animal-feed ingredients.
15. Spillages should be cleaned up without delay. Any spillages of cooked material should be considered to be contaminated and be reprocessed through the heat treatment.
16. Floor sweepings or material dislodged from equipments during cleaning should be collected and reprocessed through the heat treatment.
17. Records of receipt of raw materials should be maintained and should include date of receipt, supplier name & quantity and shall be produced to the Board officials for verification on demand.
18. Records of despatch of finished materials should be maintained and

should include date of despatch, destination of products, customer name & quantity and shall be produced to the Board officials for verification on demand.

19. Once the functioning of the rendering plant is found to be successful, the Board Officials shall ensure that waste from all chicken stalls/slaughtering units in a designated area are transferred to that unit. This condition shall be incorporated in the consent issued to chicken stalls/slaughtering units.
20. All the chicken stall owners should have entered into an agreement with rendering plant owners for collection of waste from chicken stall. This agreement should be produced before the concerned LSGD/PCB for renewal/consent to establish poultry stalls.
21. If the waste is not given to the rendering plant as per the agreement, the matter may be informed to concerned LSGI/PCB. Likewise, if the waste is not collected by the rendering plant as per agreement, same may be reported to the LSGI/PCB.
22. Rendering is the only approved technology for processing slaughter waste. Dumping, lands filling, digestion in biogas, are not permitted.
23. Renderings plants may be established in each district based on the waste generated from that district. Waste generated in each district should be quantified. Consent may be granted to rendering plants to process that quantity of waste. No waste should be transported from one district to

another for processing, provided that the district has rendering plants with sufficient capacity. It may be allowed only in cases of breakdown of plants.

24. State level expert committee may be constituted for monitoring and evaluation of functioning of the plants.
25. Provision for washing the bins/trays should be provided at the site.
26. ETP should have sufficient capacity for processing wash water too.
27. All poultry stalls should enter into an agreement with rendering plants for collecting the waste and this agreement should be produced before PCB/LSGI for getting approval for poultry stalls.
28. The district level monitoring committee (DLMC) constituted as per the Hon'ble NGT order in O.A no.606 of 2018 shall monitor the activities.
29. Unauthorized waste collection should be stopped. For this, DLMC shall monitor the activities.
30. In the case of carcass of stray animals, littered on road side, or other public places, the rendering units shall process such carcasses also after informing the concerned local body.

  
CHAIRMAN