



## KERALASTATE POLLUTION CONTROL BOARD

കേരള സംസ്ഥാന മലിനീകരണ നിയന്ത്രണ ബോർഡ്

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### Revised 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>0</sup>C to 135<sup>0</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 is reduced 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. For poultry, waste, pre-breaking is optional and can directly be taken to cooker through conveyor. Fat press is also optional as the poultry meal with fat is preferred for using it as feed ingredient.

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. 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 existing nearest residences and other existing institutions/establishments 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 rendering plants collecting waste from within 20 km radius, 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 4 hours of generation. As there are practical difficulties in transferring the waste within 4 hours, freezer facility is preferred.
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

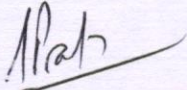
material. Enclosed area with freezer facilities shall be provided if storage of raw material is required. Capacity of cold storage tank should be capacity of the rendering plant per day. If due to breakdown, the storing capacity is 100%, then further receipt of raw materials shall be stopped and waste distributed to other rendering unit with prior information to the concerned Pollution Control Board office & LSGI.

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<sup>0</sup>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 be below detectable level when measured with Olfactometer.
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 are 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. Rendering is an approved technology for processing slaughter waste. Dumping, lands filling, digestion in biogas, are not permitted.
20. Waste generated in each district should be quantified. No waste should be transported from one district to another for processing, except in following cases and subject to the approval of the District Level Facilitation & Monitoring Committee (DLFMC).
  - i) Rendering plant situated in a different district is at a shorter distance than the plants in same district.
  - ii) Rendering plants in the same district is not having sufficient capacity.
  - iii) In cases of breakdown of plants.

- iv) In other cases as per approval of concerned DLFMC's (District Level Facilitation & Monitoring Committee).
- v) Under any circumstances, waste should not be transferred to other states.
21. Provision for washing the bins/trays should be provided at the site.
  22. ETP should have sufficient capacity for processing wash water (generated during washing of vehicles carrying waste) too.
  23. The district level facilitation monitoring committee (DLFMC) constituted as per the Hon'ble NGT order in O.A no.606 of 2018 shall monitor the activities. In case of transfer of waste to different district (item 22) the DLFMC of both the districts are to be alerted.
  24. Unauthorized waste collection should be stopped. For this, DLFMC shall monitor the activities.
  25. In the case of carcass of stray animals, littered on road side, or other public places, the nearest rendering unit shall process such carcasses after informing the concerned local body.

  
**CHAIRMAN**