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KERALA STATE POLLUTION CONTROL BOARD

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Standard Operating Procedure(SOP) 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 120⁰C to 135⁰C 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.

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.

The following are the 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.

- For industrial areas, 10 m setback is to be insisted only for the boundary of industrial area.
 - Existing establishments refer to establishments other than industrial establishments like educational institution/ court/ public office/ hospital/ place of worship/ community hall
2. A Rendering Plant should have good network of waste (raw material) collection & transportation system. Raw material shall be unloaded in an enclosed area with adequate pollution control measures. The entire activity of the unit shall be carried out in an enclosed building. The plant 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. 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. Freezer/Cold storage/Chilling facility shall be provided in meat stalls (point of collection) and in the raw material storage area at the rendering plant.
 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 on the day of receipt of raw material itself. 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 & LSGL.
 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, scrubber system or Gas Incinerators

8. Effluent Treatment Plant of adequate capacity shall be provided to achieve the following standards:

Parameter	Standard
pH	6.5-8.5
BOD (3 days at 27°C)	30 mg/l
COD	250 mg/l
Suspended Solids	50 mg/l
Oil and Grease	10 mg/l
Ammoniacal Nitrogen	50 mg/l
Sulphide	2 mg/l

ETP should have sufficient capacity for processing wash water (generated during washing of vehicles carrying waste) too.

9. Precautions are to be taken like netting/ fencing the area to prevent the entry of birds/ stray dogs/ rodents in the premises.
10. Providing a green belt around the rendering plant is desirable
11. 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.
12. Should have predetermined maintenance schedule of equipment to ensure that all the equipment are functional with maximum possible efficiency.
13. There shall not be any spillages. In case of accidental spillage, the same shall be cleaned up without delay
14. Floor sweepings or material dislodged from equipment during cleaning should be collected and reprocessed
15. 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.
16. 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.
17. Rendering is an approved technology for processing slaughter waste, dumping, lands filling, digestion in biogas, are not permitted.
18. 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.
19. Provision for washing the bins/trays should be provided at the site.
20. The district level facilitation and 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 the DLFMC of both the districts are to be alerted by the concerned rendering plant.
21. Unauthorized waste collection should be stopped. For this, DLFMC shall monitor the activities.

Revised Standard Operating Procedure for rendering plants issued vide PCB/HO/SEE3 /TECH/80/2019 dated 10.11.2021 stands cancelled from the date of issue of this SOP.

Signed by
Sreekanth S **CHAIRPERSON**

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