

MAHARASHTRA POLLUTION CONTROL BOARD

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No. MPCB/JD(WPC)/B: 5404

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CIRCULAR

Sub: Thumb Rules for slaughter house waste management and design of pollution control systems/measures.

Ref: Approval of CC meeting held on 12/12/2014.

The slaughter house means a slaughter house wherein 10 or more than 10 animals are slaughtered per day and is duly licensed or recognize under a Central, State or provincial act or any rules regulations made there under – as per the notification S.O.270 (E) "Prevention of cruelty to animals (slaughter house) Rules, 2001:". The slaughter means the killing or destruction of any animal for the purpose of food and includes all the processes and operations performed on all such animals in order to prepare it for being slaughtered.

There are 216 slaughter houses out of which 65 slaughter houses are not in operation or closed in the State of Maharashtra. These are service oriented performing slaughtering and dressing it caters need of consumers and raw materials to industries such as tanneries, bone mills, gelatine, glue manufacturing, livestock animal.

The Central Pollution Control Board has published guidelines for solid waste management in slaughter houses on September, 2004 wherein they have mentioned following contents:

A. The average weight and type of the animal –

a – Large animals (cattle buffalo veal) – 350 Kg./Animal

b- Small animals (Goat/sheep/pig) – 30 Kg/Animal

Classification of Slaughter Houses

Sr. No.	Category	Nos. /day slaughtered	Tons of Live Weight Killed Per Day (TLWK)
1.	Large	Above 200 large animals or more than 1000 small animals	More than 70 Tons
2.	Medium	50 to 200 large animals or more than 300 upto 1000 small animals	15- 70 Tons
3.	Small	Less than 50 large animal and 300 small animals	Below 15 Tons

B. Types of Solid waste and Recommended Methods for Disposal

Type of Waste	Constitute of waste	Category of Slaughter House	Disposal Method
Type I	Vegetables matter such as Rumen and stomach and intestine contents dung, agricultural residue etc.	Large	Biomethanation
		Medium	Biomethanation or composting
		Small	Biomethanation or composting
Type II	Animal matter, such as inedible offals, tissue, meat trimmings, waste and condemned meat, bones, etc.	large	Rendering
		Medium	Rendering or Composting with Type I waste
		Small	Composting with Type I waste or Burial

D. Percentage of solid waste generation

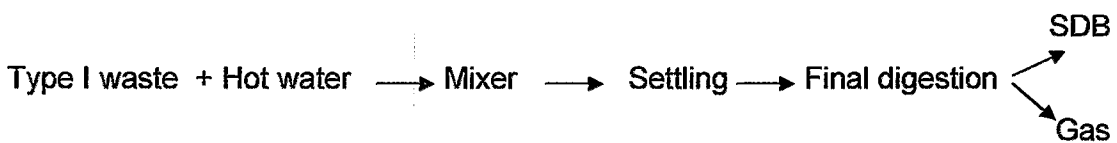
Category	Type of Waste	Percent %	Total %
Large Animals (Bovine)	Type I Waste	4.0	27.5
	Type II Waste	23.5	
Small Animals Sheep Goat	Type I Waste	7.0	17.0
	Type II Waste	10.0	
Pig	Type I Waste	1.0	4.0
	Type II Waste	3.0	

E: Capacity of Bio gas Plant

Sr. No.	Category	Bio-gas Plant Capacity	Sludge/Slurry Wet
1.	Large	200large animals - 3 Ton/day	@ 25% of 3 Tons = 750 Kg/day

1)The bio-gas plant is feasible only when the waste generation for type I waste will be around 1250 Kg/day

2) The scheme for bio-gas plant



3) Hydraulic rotation time for waste between 21 to 25 days

F: Rendering Plant –

All animal matter is type II waste are processed in rendering system. The main constituents of animal matter are fat, water and solids. Rendering process is to separate physically the fat, water and solid. This is effected by heating and rupturing connective tissues of individual fat and muscle cells so that raw fat and other materials bound within is free. The recovered fat is used for industrial purposes eg: soap and greases. It also used for edible purposes. The solid portion which is known as meat milk or bone milk is utilized for the manufacture of stock feed and fertilizers.

The rendering carried out in a two ways dry rendering and wet rendering.

- (i) **Wet Rendering** – where the raw material (Type II waste) is processed with added water or condensate derived from steam. The wet rendering tank is usually, cylindrical boiler having a cone shape bottom with a get wall outlet. The cooking is carried out at high pressure from 3 kg/cm² to 4 kg/cm². The time required from varies from 4 to 6 hours.
- (ii) **Dry Rendering** – Wherein the Type II waste without the loss of any nutrient by using specially designed cooker where the steam is applied to

the jacket and not to the material. The process will be completed in 4-5 hours the steam pressure in the cooker from 3-4 kg/cm².

The dry rendering plant have units such as metal detector, pre breaker, cooker, fat extractor and hammer mill.

(III) Air Pollution Control System (APC) to Rendering plant:

The both dry and wet rendering require **APC system comprising bio-filter with bio-media for odour control** where **stack is not required** but where bio-filters are not provided where all gases shall be scrubbed with odour control system with proper exhaust/duct. The emergency duct with height above the roof shall be provided for emergency exhaust of gases.

G. Liquid waste generation –

The water consumption – Large animals – 270 liters/animal/day
Small Animals – 40 Liters/animal/day

The average liquid waste generation is @ 80% of the total water consumption, it requires effluent treatment plant comprising Collection, screen, equalization, primary clarifier, aeration, secondary clarifier, settling tank, sludge drying beds and treated effluent disposal mechanism.

H. Composting-

Type-I & Type-II waste can be used for compost making, compost stack preparation by providing alternate layers of type-I waste and type-II waste should be built up to a height of 4 to 5 feet . The heap should preferably be laid direct on the ground. It is advisable to put a layer of about 6 – inch of course material, such as maize or millet stalks, banana stumps, straw, grass, small twigs etc. in order to achieve proper ventilation. The minimum two turning required to obtain a uniform compost material. The turning is normally advised after two to three week & second turning after three to four week. The compost can be removed after four to five week. The total time is required is about 90 days it varies from type of the material and ambient temperature.

The proper impervious platform shall be provided to compost yard/pits. The proper material storage bunker shall be provided with proper compound wall to

the compost yard/pits. The following specification for area of the compost yard/pits may be adopted.

50 animals – 0.15 Acre

100 animals- 0.30 Acre

150 animals- 0.45 Acre

I: Incineration- the incineration is also an option for treatment of slaughter house waste. In incineration, waste is burnt at temperature between 850degree centigrade to 1100 Degree centigrade in specially design combustion chamber. The auxiliary fuel is used start for ignition it required skilled man power. Heat recovery can be a economical source of viability of incinerator. The height of the chimney of the incinerator shall be based on EPA standards.

J. Air Pollution Control system for Boiler: The height of the chimney shall be based on fuel consumption for boiler/baby boiler used for steam and hot water generation.

Investment in the units for Bank Guarantee Regime

A. Approximate Capital Investment

Sr. No.	Treatment Process	Large (200 to 1000 animals)	Medium (50 upto 200)	Small (Below 200)
1.	Biomethanization	5-11 Lakhs	2/- Lakhs	1.5/- Lakhs
2.	Rendering	1.5/- Cr. to 7/- Cr.	50/- Lakhs to 1/- Cr.	50/- Lakhs
3.	Composting	Not allowed	1/- to 3/- Lakhs	1.5/- Lakhs

B. Bank Guarantees to be imposed

Sr. No.	Treatment Process	Large	Medium	Small
1.	Biomethanization	1/- Lakhs	50,000/-	25,000/-
2.	Rendering	5/- Lakhs	2/- Lakhs	1/- Lakhs
3.	Composting	Not Allowed	1.0/- Lakhs	50,000/-
4.	ETP	1/- Lakhs	50,000/-	25,000/-

K. The applicability of these thumb rules to Existing Slaughter Houses

- I. All proposed slaughter houses shall follow these rules:-
- II. The BG regime as notified shall be applicable to existing slaughter houses.
- III. The existing slaughter houses shall comply with these thumb rules within 6 months from date of issue of consent. During the non compliances bank guarantee will be encased if not complied in 6 months. The double bank guarantee shall be imposed and they will be permitted upto one year. In no case the non-compliances will be accepted after one year.
- IV. The existing slaughter houses availing advantage under clause K (III) above shall have proper tie up for rendering/composting/bio-methanisation/ETP waste water treatment with proper agreement. The copy of agreement shall be submitted within 15 days from grant of consent to the MPCB consent granting Authority with a copy to Regional Officer and Sub-Regional Officer of the Board for further checking the compliances.
- V. The existing large category slaughter houses shall take enough care for transportation of type II waste to rendering facility. No smell nuisance shall be notice.

L. Material Balance of Slaughter House

Slaughtering capacity	Waste Generation		Total Effluent/Day	Products MT/Day.
	Type I	Type II		
Above 200 large animals or more than 1000 small animals Total Live Weight Killed per day (TLWKD) = 70 Tons	3 Tons @ 4% of TLWK (70 Tons)	17 Tons @ 23.5 % of TLWK (70 Tons)	@ 80% of the water Consumption (270 Litrs/large animal or 40 Liters/small animal)	1. Meat @ 40% to TLWK (70 T.) = 28 T. 2. Edible offals @ 3% to TLWK (70 T) = 2 T. 3. Meat and Bone Mill powder (MBM) @ 35% to type II waste = 6 T. 4. Fats/Tallow @ 20% to type II waste = 3.5 T.

These rules are come into force with immediate effect.


(Rajeev Kumar Mital)
 Member Secretary

Copy to: All HOD's, MPC Board, Mumbai.
All RO's, MPC Board.