

“Guidelines for Environmental Management of Dairy Farms and Gaushalas”



Central Pollution Control Board
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1. Introduction

India ranks first among the world's milk producing Nations since 1998 and has the largest bovine population in the World. Dairying has become an important secondary source of income for millions of rural families and has assumed the most important role in providing employment and income opportunities particularly for marginal farmers.

Dairy farms are the establishment which in-house milching animals to produce milk for distribution and processing dairy products in milk processing plants. Gaushalas are the establishment which in-house weak, sick, injured, handicapped and abandoned homeless cattle/cows to rehabilitate them.

The dairies/gaushalas may be categorised on the basis of nos. of animals (adult cows & female buffaloes) in a dairy/gaushala i.e. Category-I (upto 25 animals), Category-II (26-50 animals), Category-III (51-75 animals), Category-IV (76-100 animals) and Category-V (above 100 animals).

As per the Livestock Census, carried out by the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, the year-wise livestock population of adult female bovine is as follow:

Sl. No.	Year	Adult Cows	Adult Female Buffaloes	Total Cows & Buffaloes
1	1951	5,44,00,000	2,10,00,000	7,54,00,000
2	1956	4,73,00,000	2,17,00,000	6,90,00,000
3	1961	5,10,00,000	2,43,00,000	7,53,00,000
4	1966	5,18,00,000	2,54,00,000	7,72,00,000
5	1972	5,34,00,000	2,86,00,000	8,20,00,000
6	1977	5,46,00,000	3,13,00,000	8,59,00,000
7	1982	5,92,00,000	3,25,00,000	9,17,00,000
8	1987	6,21,00,000	3,91,00,000	10,12,00,000
9	1992	6,44,00,000	4,38,00,000	10,82,00,000
10	1997	6,44,00,000	4,68,00,000	11,12,00,000
11	2003	6,45,00,000	5,10,00,000	11,55,00,000
12	2007	7,30,00,000	5,45,00,000	12,75,00,000
13	2012	7,67,00,000	5,66,00,000	13,33,00,000
14	2019	8,14,00,000	5,50,00,000	13,64,00,000

Also, as per the Livestock Census carried out by the Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture and Farmers Welfare, in 2019, the state-wise total population of adult female bovine is as follow:

Sl. No.	State/UT	Adult Cows	Adult Female Buffaloes	Total Cows & Buffaloes
1.	Andhra Pradesh	19,80,000	31,61,000	51,41,000
2.	Arunachal Pradesh	1,02,000	2,000	1,04,000
3.	Assam	38,18,000	1,38,000	39,56,000
4.	Bihar	71,47,000	36,70,000	1,08,17,000
5.	Chhattisgarh	33,79,000	3,83,000	37,62,000
6.	Goa	30,000	14,000	44,000

7.	Gujarat	44,94,000	56,71,000	1,01,65,000
8.	Haryana	9,45,000	21,00,000	30,45,000
9.	Himachal Pradesh	9,32,000	3,69,000	13,01,000
10.	Jammu & Kashmir	12,31,000	4,02,000	16,33,000
11.	Jharkhand	34,58,000	4,35,000	38,93,000
12.	Karnataka	40,63,000	16,71,000	57,34,000
13.	Kerala	6,90,000	8,000	6,98,000
14.	Madhya Pradesh	73,42,000	52,96,000	1,26,38,000
15.	Maharashtra	56,99,000	33,19,000	90,18,000
16.	Manipur	77,000	10,000	87,000
17.	Meghalaya	3,33,000	3,000	3,36,000
18.	Mizoram	21,000	1,000	22,000
19.	Nagaland	21,000	3,000	24,000
20.	Odisha	31,94,000	1,52,000	33,46,000
21.	Punjab	15,25,000	22,76,000	38,01,000
22.	Rajasthan	68,19,000	70,15,000	1,38,34,000
23.	Sikkim	68,000	0	68,000
24.	Tamil Nadu	48,20,000	2,61,000	50,81,000
25.	Telangana	14,93,000	21,86,000	36,79,000
26.	Tripura	3,03,000	3,000	3,06,000
27.	Uttarakhand	8,22,000	4,96,000	13,18,000
28.	Uttar Pradesh	92,07,000	1,57,32,000	2,49,39,000
29.	West Bengal	72,73,000	1,93,000	74,66,000
30.	A & N Islands	16,000	1,000	17,000
31.	Chandigarh	8,000	8,000	16,000
32.	Dadar & Nagar Haveli	4,000	1,000	5,000
33.	Daman & Diu	1,000	0	1,000
34.	Delhi	Not available	Not available	Not available
35.	Lakshadweep	1,000	0	1,000
36.	Puducherry	37,000	2,000	39,000
37.	All India	8,13,53,000	5,49,82,000	13,63,35,000

2. Environmental Issues in Dairy Farms and Gaushalas

The major environmental issues of dairy farms and gaushalas are discharges of dung and urinal wastewater. The poor handling of dung and wastewater causes odour problem also. A Bovine animal, on an average, weigh 400 kg and discharges 15-20 kg/day of dung and 15-20 litres/day of urine.

Many dairy farms and gaushalas discharge the cattle dung along with wastewater into the drains, leading to clogging, which ultimately reach to rivers and create water pollution. Also, these clogged drains become breeding ground for mosquitoes creating health hazards and odour nuisance. The dung produces many gases/compounds such as carbon dioxide, ammonia, hydrogen sulphide, methane, etc. which emitted into the atmosphere and responsible for odour issue.

The disposal of cow/buffalo dung is the biggest challenge in dairy farms and gaushalas. However, cattle dung, if effectively utilised, can be a resource of manure & energy. The cattle

dung contains many beneficial constituents which may be used as fuel source either by direct combustion (dung wood) or converted to biogas, soil conditioner, fertilizers, material for wall plastering, construction of granaries, livestock & fish feeding, etc.

Now, following guidelines are framed for management of wastes from dairy farms and gaushalas.

3. Guidelines for Waste Management in Dairy Farms and Gaushalas

3.1 Solid Waste Management

The solid wastes produced from dairy farms and gaushalas are basically organic in nature, consisting of cattle dung, feed residue, bedding, etc. The waste produced is not hazardous in nature but its proper handling and disposal needs attention. The guidelines for the management of solid wastes are as follow:

- i. Dairies and gaushalas should collect dung from the floor of the shed at regular interval, so as to keep the floor clean. The surrounding areas should also be cleaned regularly to prevent obnoxious smell in the area.
- ii. Dairy premises and its surrounding areas should be properly sanitized and disinfected, e.g. by sprinkling crushed lime, regularly.
- iii. The solid wastes should be collected & stored properly for its treatment.
- iv. Dairies and gaushalas should dispose the domestic hazardous wastes (vaccines, vials, medicines, syringes, etc.) as per the provisions of “Solid Waste Management Rules, 2016”.
- v. Dairies and gaushalas should not wash dung & fodder residue etc. into drains in order to avoid clogging of drains. The local bodies/corporations/SPCBs should ensure that untreated wastes are not discharged outside the dairy premises.
- vi. Dairies and gaushalas should have adequate infrastructure to ensure proper handling, treatment and disposal of solid wastes and wastewater. They may set-up individual or common treatment facilities wherein cluster. The local government bodies/corporations/SPCBs should facilitate the dairies/gaushalas/ entrepreneurs/ NGOs in setting up of individual or common treatment facilities.
- vii. The following methods for disposal/ utilisation of solid wastes (dung) may be adopted:
 - a. Composting/Vermicomposting: Composting is a manure management practice to reduce the impact on the environment. Composting is the biological decomposition and stabilization of organic material. The process produces a final product that is stable, free of pathogens, reduced odours and can be applied on the land. Vermicomposting is the method of preparing compost with the use of earthworms that enriches soil quality by improving its physicochemical and biological properties. It is becoming popular as a major component of organic farming system.
 - b. Biogas/Compressed biogas (CBG) production (anaerobic digestion): Biogas plants are the best way to handle the dung waste. Biogas is generated in the process of biodegradation of organic materials under anaerobic conditions which may be utilised for cooking and power generation. The Biogas plant provides the digested organic manure for crops. Biogas can be processed and filled in cylinders. The biogas may be further purified to remove hydrogen sulphide (H₂S), carbon dioxide (CO₂) & water vapour and compressed (known as Compressed Bio Gas, CBG)

which has methane (CH₄) content of more than 90% as per BIS standard IS 16087:2016. CBG has calorific value and other properties similar to CNG and hence can be utilized as green renewable fuel as replacement of CNG in automotive, industrial and commercial areas.

- c. Manufacture of dung wood to be used as fuel: The cattle dung can be used as fuel as a replacement of firewood. The cattle dung can be dewatered and converted to value added products such as logs, powder etc. by mechanized/semi-mechanized machines. This option can be easily adopted at dairy farms and gaushalas in economical manner, creating substantial value & no damage to the environment.

3.2 Wastewater Management

The guidelines for the management of wastewater are as follow:

- i. Dairies and gaushalas should take necessary steps for the judicious usage of water for drinking & bathing of cattles and other services including floor cleaning, however, the same should not exceed 150 litres/day/cattle.
- ii. Dairies and gaushalas should ensure that the wastewater, being discharged, is adequately treated so as to meet the standards as prescribed by SPCBs/PCCs.
- iii. Dairies and gaushalas should ensure that the wastewater does not percolate through ground and pollutes the groundwater. The flooring of the shed should be properly paved (impervious) with a wastewater collection system. However, the floor should not be slippery in order to ensure safety of animals.

3.3 Air Quality Management

The guidelines for the management of air quality/emissions (includes gaseous emissions, odour and dust) from dairy farms and gaushalas are as follow:

- i. The animal housing should be adequately ventilated allowing sufficient supply of fresh air to remove humidity, dissipate heat and prevent build-up of gases such as methane, carbon dioxide, ammonia, etc.
- ii. Dairy farms and gaushalas should follow good housekeeping practices like maintaining proper sanitary conditions, protecting dung from unwanted pests/insects in order to minimize odour nuisance.
- iii. The floor, feeding, water and air spaces available for each animal should be adequate for standing, resting, loafing, movement, feeding, watering and ventilation. The space requirements should be provided as per the standards prescribed by the Bureau of Indian Standards (BIS) (BIS 12237:1987 & 11799:2005).
- iv. Dairy farms and gaushalas should improve/modify the quality and dosage of feed/forage/supplements in order to reduce enteric methane generations from livestock. It is beneficial to animal health/nutrition and reduced impact on environment. They should obtain ration advisory for the same from any of the agricultural institutes/departments like Krishi Vigyan Kendra, State Dairy Department, Animal Husbandry Department, NDRI, NDDB, etc.
- v. Dairy farms and gaushalas should plant trees or develop green belts to provide a barrier against the spread of foul smell or noise originating from them.

4. Siting Policy:

The siting criteria will be applicable for new establishment, however, the existing establishments should take appropriate pollution control measures as per the guidelines. The siting policy for dairy farms and gaushalas are as follow:

- i. Dairy farms and gaushalas should be located outside city/village boundaries, atleast 200 meters away from residential dwellings and 500 meters away from hospitals & schools.
- ii. Dairy farms and gaushalas should not be located in flood prone areas, subject to flooding at 1-in-25-year or more frequent levels in order to avoid contamination of water bodies.
- iii. Dairy farms and gaushalas should not be located in areas with shallow groundwater depth of about 10 to 12 feet and in particular in alluvium areas in order to avoid groundwater contamination.
- iv. Dairy farms and gaushalas may be allowed to follow minimum distance criteria given below which may be subject to vary with the local conditions:
 - a. National and State Highways: 200 meters from National Highway and 100 meters from State Highway in order to avoid odour nuisance and road accident caused due to cattle.
 - b. Major drinking water reservoir on catchment side: 500 meters in order to avoid water contamination due to leakages/spillages from the dairy farms and gaushalas.
 - c. Drinking water source like wells, summer storage tanks, other tanks (drinking water): 100 meters in order to avoid water contamination.
 - d. Major watercourses like River and Lake: 500 meters in order to avoid water contamination.
 - e. Canals: 200 meters in order to avoid water contamination.
 - f. Inter-se distance between two establishments should be atleast 5 meters for ventilation. Each unit should provide atleast 2.5 meters from each side and develop the green belt.

5. Regulatory/ Monitoring Mechanism:

- i. The local authorities/corporations should carry out inventory of the dairy farms and gaushalas located in their jurisdiction in the modified inventory performa given at **Annexure-A**. The same should be updated and shared with the concerned SPCB/PCC on annual basis (calendar year wise).
- ii. The local bodies/municipal corporations shall publish a public notice in newspapers and on their website for registration of dairy farms and gaushalas as per municipal law. The registration may be done preferably through online mode and same may be displayed at their websites.
- iii. The SPCBs/PCCs shall publish a public notice for dairy farms and gaushalas to obtain consent to establish and consent to operate under Water Act, 1974 as well as Air Act, 1981 as per the categorization of industries. CPCB issued directions on 10.07.2020 under Section 18(1)(b) of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 regarding classification of Dairy Farms and Gaushalas into Orange and Green Category, respectively.
- iv. The SPCBs/PCCs/local bodies/municipal corporations shall upload the environmental guidelines and **Form-A** for compliance status of environmental guidelines on their website and also circulate to all the dairy farms and gaushalas. The compiled status of

- compliance in the form of report shall be submitted once in six months by SPCBs/PCCs to CPCB for Audit purpose.
- v. The concerned SPCBs/PCCs/local bodies/corporations should monitor the dairy farms and gaushalas on regular basis to ensure the proper disposal of cattle dung and wastewater to check compliance of environmental norms. The SPCBs/PCCs will consider the carrying capacity of the surroundings while allowing a new establishment and laying down the environmental norms.
 - vi. The SPCBs/PCCs shall carry out environmental audit of atleast 2 dairy farms and 2 gaushalas, randomly selected from each district of the state/UT and submit the compliance and action taken report to CPCB on half yearly basis.
 - vii. CPCB shall carry out environmental auditing of 4 dairy farms and 4 gaushalas in each state/UT, randomly selected based on the information received from SPCBs/PCCs on annual basis.
 - viii. In case of any violation of environmental norms under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and Environmental (Protect) Act, 1986 by dairy farms and gaushalas, the concerned SPCBs/PCCs should impose environmental compensation as per the CPCB methodology for “Environmental Compensation to be levied on Industrial Units”, for damaging the environment and in order to stop polluting activity and initiate prosecution for repeatedly polluting units.
 - ix. SPCBs/PCCs should provide training and consultation to the Gram Panchayat for implementation of guidelines in their jurisdiction. Gram Panchayat should ensure the implementation of the guidelines by dairy farms and gaushalas falling under their jurisdiction for handling and management of the wastes.
 - x. Hands on practical trainings on environment/waste management & treatment technologies, scientific feeding for enteric methane reduction, waste to wealth management programme, etc. should be provided to dairy workers/entrepreneurs by the local bodies/SPCBs/PCCs on regular interval.

Status of Compliance of Guidelines for Environmental Management of Dairy Farm and Gaushalas

(Encircle the correct one)

1.	Name/ address of Dairy Farm/Gaushala	
2.	Area occupied by Dairy Farm/Gaushala (plot area)	
3.	Contact person (Name, Designation, and Contact No, FAX, e mail)	
4.	Status of registration with local bodies/corporations	Registered / Not-registered
5.	Status of consent to operate from SPCBs/PCCs	Valid/Expired/Applied
6.	Total no. of animals in dairy farm/gaushala a. Adult Cows b. Adult Female Buffaloes c. Calves d. Any other	
7.	Category of dairy farm/gaushala	Category-I (upto 25 animals) Category-II (26-50 animals) Category-III (51-75 animals) Category-IV (76-100 animals) Category-V (above 100 animals)
8.	Total amount of cow/buffalo dung produced (ton per day) by dairy farm/gaushala @ 14 Kg/day/animal	
9.	Methods of disposal/utilization of cattle dung by dairy farm/gaushala	Composting/Vermicomposting Biogas/Compressed biogas (CBG) production Manufacture of dung wood Any other (specify)
10.	Whether wastewater is treated or not?	Yes/No
11.	Methods of disposal/utilization of wastewater by dairy farm	In drain/field

Solid Waste Management		
12.	Is the dung collected from the floor of the shed at regular interval, so as to keep floor clean? Are the surrounding areas cleaned regularly to prevent obnoxious smell?	Yes/No Yes/No
13.	Are the dairy premises and its surroundings areas properly sanitized and disinfected regularly?	Yes/No
14.	Are the solid waste collected & stored properly for its treatment & disposal?	Yes/No
15.	Are the domestic hazardous wastes (vaccines, vials, medicines, syringes, etc.) disposed as per the provisions of "Solid Waste Management Rules, 2016"	Yes/No
16.	Are the dung & fodder residue etc. washed into drain?	Yes/No
Wastewater Management		
17.	Total amount of water used for drinking & bathing of cattles and other services including floor cleaning per day	litres/day
18.	Are any necessary steps taken for judicious usage of water for drinking & bathing of cattles and other services including floor?	Yes/No
19.	Is any wastewater percolate through ground?	Yes/No
20.	Is the flooring of shed properly paved with wastewater collection system?	Yes/No
21.	Whether infrastructure to ensure proper handling & treatment of wastewater?	Individual treatment facility Common treatment facility No treatment
Air Quality Management		
22.	Is the animal housing adequately ventilated?	Yes/No
23.	Are the good housekeeping practices followed?	Yes/No
24.	The space provided for animals by dairy farm/gaushala Covered floor area Open floor area Feeding manger length Water trough length	 m ² m ² m m

25.	Is ration advisory obtained from any of the agricultural institutes/department?	Yes/No
26.	Are the dosage of feed/forage/supplements given as per ration advisory?	Yes/No
27.	No. of trees/plants planted in the premises	
Siting Policy		
28.	<p>Minimum distance from following features:</p> <ul style="list-style-type: none"> a) Residential Dwelling/Hospital/School b) National Highway/State Highway c) Major drinking water reservoir on catchment side d) Drinking water source like wells, summer storage tanks, other tanks (drinking water) e) River/Lake f) Canal g) Dairy Farm/Gaushala 	
29.	Is dairy farm/gaushala located in flood prone area?	Yes/No
30.	Is dairy farm/gaushala located in shallow groundwater depth area?	Yes/No

(Signature of Official)
(Name & Designation of Official)

Inventory Performa for Dairies and Gaushalas in the State/UT

Sl. No.	Description	Urban Area	Peri-urban Area	Rural Area
1.	Total no. of dairies <ul style="list-style-type: none"> • Category-I (upto 25 animals) • Category-II (26-50 animals) • Category-III (51-75 animals) • Category-IV (76-100 animals) • Category-V (above 100 animals) • Total 	• • • • • •	• • • • • •	• • • • • •
2.	Total no. of animals in <ul style="list-style-type: none"> • Category-I dairies • Category-II dairies • Category-III dairies • Category-IV dairies • Category-V dairies • Total 	• • • • • •	• • • • • •	• • • • • •
3.	Total amount of cow/buffalo dung produced (ton per day) by <ul style="list-style-type: none"> • Category-I dairies • Category-II dairies • Category-III dairies • Category-IV dairies • Category-V dairies • Total 	• • • • • •	• • • • • •	• • • • • •
4.	Methods of disposal/utilisation of cattle dung and wastewater by dairies (to be enclosed)			
5.	Total no. of dairy colonies/clusters (list of such dairy colonies/clusters along with the details of no. of dairies, no. of cattles, method of disposal/utilisation of cattle dung & wastewater, etc. to be enclosed)	•	•	•
6.	Total no. of Gaushalas <ul style="list-style-type: none"> • Category-I (upto 25 animals) • Category-II (26-50 animals) • Category-III (51-75 animals) • Category-IV (76-100 animals) • Category-V (above 100 animals) • Total 	• • • • • •	• • • • • •	• • • • • •

7.	Total no. of animals in <ul style="list-style-type: none"> • Category-I Gaushalas • Category-II Gaushalas • Category-III Gaushalas • Category-IV Gaushalas • Category-V Gaushalas • Total 	• • • • • •	• • • • • •	• • • • • •
8.	Total amount of cow dung produced (ton per day) by <ul style="list-style-type: none"> • Category-I Gaushalas • Category-II Gaushalas • Category-III Gaushalas • Category-IV Gaushalas • Category-V Gaushalas • Total 	• • • • • •	• • • • • •	• • • • • •
9.	Methods of disposal/utilisation of cattle dung and wastewater by Gaushalas (to be enclosed)			

Note:

Urban area: As per the Census of India 2011, the urban area is defined as follows:

- i. All places with a municipality, corporation, cantonment board or notified town area committee, etc.
- ii. All other places which satisfied the following criteria:
 - a. A minimum population of 5,000;
 - b. At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and
 - c. A density of population of at least 400 persons per sq. km.

Peri-urban area: It is an area or habitation located on the perimeter of the urban area having partial or complete influence of urbanization. It undergoes dramatic changes over a given period of time.
