

Research Project Report on

# **POULTRY SLAUGHTER WASTE MANAGEMENT**

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2018-2019



**HESTER**

**CEE**

Centre for Environment Education

# **POULTRY SLAUGHTER WASTE MANAGEMENT**

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2018-2019

## Abstract

Our country face enormous challenges because of the exponential rise in population, widespread poverty and limited resources. The human and industrial activities generate different types of pollution like air, water and solid/hazardous waste.

The government has formulated acts/rules to address the challenges due to air, water and solid/hazardous waste generation. The responsibilities for implementation of these acts/rules are assigned to respective agencies. Unfortunately, there are no adequate facilities for scientific management of municipal solid waste management as there are serious issues related to segregation, treatment and utilization/disposal of this waste.

Poultry waste, a component of MSW management which is one of the grey areas, which need immediate attention. CEE in partnership with M/s Hester Bio-Sciences Pvt. Ltd. addressed this issue in a research project in Ahmedabad about the possibility of converting this waste into an energy value project. 190 poultry slaughter houses were identified in the areas like Rakhial, Dariapur, Gomtipur, Bapunagar, Danilimda, Amraiwadi, Behrampura, Shahpur the city from which the slaughter waste can be collected and through a scientific process can be converted into a useful by product.

## About Centre for Environment Education

Centre for Environment Education (CEE) is a national institute engaged in developing programmes and material to enhance public awareness about the environment and sustainable development. CEE was established in 1984 as a Centre of Excellence in Environmental Education, supported by the Ministry of Environment Forest and Climate Change (MoEF&CC), Government of India. It was created in recognition of the importance of environmental education in India's overall environment and development strategy. CEE has been engaged in pioneering education and communication towards raising awareness and concern, leading to action. CEE works at the interface of the social, political, economic and biophysical dimensions of life and society. CEE works with different communities, stakeholder groups and decision makers on issues of immediate concerns. CEE has 34 offices across the country and an office at Germany.

# About Environment Management Group

The Environment Management Group (EMG) at CEE is actively involved in organizing awareness, training and capacity building programmes in the field of sustainable industrial development. EMG organized WETSKILLS India 2015 and 2017, an Indo-Dutch Skill development programmes related to water and wastewater aspects for technical students and faculties of India and Netherlands. In addition to this EMG also acted as a techno-legal advisor to NGT-Pune, industrial associations and common environmental infrastructure facility operators for improving their performance and thus compliance, ZLD, sustainable production and waste utilization in the state of Gujarat.

Gujarat Pollution Control Board (GPCB), National Environmental Engineering Research Institute (NEERI)-Nagpur and CEE have signed MoU for the purpose of encouragement, facilitation, collaboration, technology transfer and partnership towards promotion and development of best practices in the field of environment for adoption of concept of 4R, build capacity. It is further intended to develop skill of the stakeholders through various programs, share best EMP and implement the concept of circular economy for sustainable industrial development.

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# Acknowledgment

The Environment Management Group (EMG), CEE, Ahmedabad is truly thankful to Mr. Rajiv Gandhi (Chief Executive Officer and Managing Director, Hester Bio-Science Pvt. Ltd.) for showing faith by associating with CEE for the project of poultry slaughter waste management for the city of Ahmedabad.

The Environment Management Group, CEE, Ahmedabad is also thankful to Ahmedabad Municipal Corporation (AMC) for extending necessary support and providing information. We further convey sincere thanks to AMC for helping us in conducting site visits and collecting samples from the shops.

J. K. Vyas  
Head,  
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# Abbreviations

CEE	:	Center for Environment Education
CPCB	:	Central Pollution Control Board
EMG	:	Environment Management Group
EMS	:	Environment Management System
GIDC	:	Gujarat Industrial Development Corporation
GPCB	:	Gujarat Pollution Control Board
HWM	:	Hazardous Waste Management
L.D.C.E.	:	L. D. College of Engineering
MoEFCC	:	Ministry of Environment, Forest & Climate Change
PWM	:	Poultry Waste Management
SDG	:	Sustainable Development Goals
TSDf	:	Treatment, Storage Disposal Facility
ZLD	:	Zero Liquid Discharge

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## Project Objectives

- 1) To research about poultry slaughter waste management nationally and globally – especially its production, collection, management, utilization and disposal
- 2) To find out local technologies available for the treatment of poultry slaughter waste and types of by products
- 3) To estimate the feasibility of setting up rendering process plant in Ahmedabad for zero waste meat shops
- 4) To reduce the quantity of waste going in to the environment, conserve natural resources and reduce the cost of treatment.

## Background

### Poultry Industry

Poultry industry mainly refers to chickens. Poultry industry is classified into two i) Broilers and ii) Layers.

**Broilers:** A broiler is any chicken that is bred and raised specifically for meat production. Many typical broilers have white feathers and yellowish skin. Most commercial broilers reach slaughter-weight (2.5 to 3 kg) between four and seven weeks (maturity period) of age, although slower growing breeds reach slaughter-weight at approximately 14 weeks (maturity period) of age.

**Layers:** Primarily striking difference between layers and broiler is, layers are female. Layers are raised for egg production. A layer attains weight of 1.5-1.9 kg at the age of maturity around 20-22 weeks. Layers attain sexual maturity around 20–22 weeks and laying eggs up to 72 weeks of age and then they are sold as spent hens. Layers are generally not used in a food purpose because of their tiny size and low weight. Compared to broilers they live longer, eat lesser and lesser growth rate.

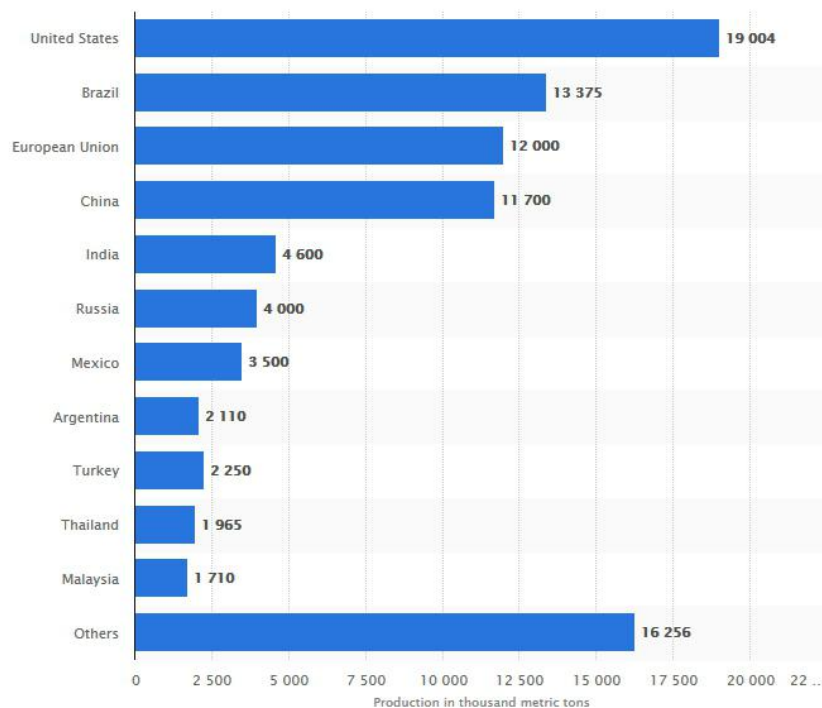
### Poultry Industry worldwide scenario

Food & Agriculture Organization estimates the majority of poultry meat production comes from the regions of Asia, North and South America, and Europe. These regions hold key market –players - China, U.S., Brazil and the European Union. Over the long-term, for individual countries, China, followed by the U.S., Brazil and India are projected to contribute the greatest amount of additional poultry meat by 2027 compared to their average in the base period 2015-17. Remove sentence in red color.

China is the world's second largest poultry producer, and a major destination for U.S. poultry. It is by far the largest market for exports of U.S. chicken paws. The U. S. exported approx. \$300 million in poultry products to China in 2014. Chicken feet are used in several Chinese regional cuisines; they can be served as cold dish, beer snack, soup or main dish.

### Poultry Industry in India

India is the 5<sup>th</sup> largest broiler meat producing country after USA, European Union, Brazil and China. The annual production of chicken in India is around 4.6 million metric tons in 2018. USA stands first with the production of broiler meat around 19 million metric tons in the year of 2018.



#### TOP 5 POULTRY PRODUCER COUNTRIES

UNITED STATES  
BRAZIL  
EUROPEAN UNION  
CHINA  
INDIA

## Laws applicable:

- 1) Food and Safety Standard Authority of India (FSSAI) act
- 2) The Water Act – 1974,
- 3) MSW Rules 2018
- 4) Hazardous waste rules – 2018
- 5) The Air Act - 1981

## The Food and Safety Standard Authority of India (FSSAI) act

**The Food Safety and Standards Authority of India (FSSAI)** has been established under Food Safety and Standards, 2006 which consolidates various acts & orders that have hitherto handled food related issues in various Ministries and Departments. FSSAI has been created for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import to ensure availability of safe and wholesome food for human consumption.

An FSSAI food license is the one and only most important license which is necessary for the food business operators in India. All the eligible food operators like the manufacturers, transporters, distributors, retailers, etc. are thus required to have an FSSAI food license before the commencement of the business. But, getting an FSSAI license is not a onetime protocol, however it is equally important in order to make sure that your license is up to date. The validity of an FSSAI license thus extends from 1 to 5 years and it depends upon the number of years which is chosen by the food operator.

If any person or food business operator (except the persons exempted from licensing under sub-section (2) of section 31 of this Act), himself or by any person on his behalf who is required to obtain license, manufacturers, sells, stores or distributes or imports any article of food without license, shall be punishable with imprisonment for a term which may extend to six months and also with a fine which may extend to five lakh rupees.

If any person or food business operator, himself or by any person on his behalf who is required to obtain licence, manufacturers, sells, stores or distributes or imports any article of food without licence, shall be punishable with imprisonment for a term which may extend to six months and also with a fine which may extend to five lakh rupees.

## The Water Act – 1974

This is an act to provide, prevention and control of water pollution and maintaining or restoring of wholesomeness of water.

This Act paved the way for the creation of Central Pollution Control Board (CPCB) and State Pollution Control Boards (SPCBs). As of now there are 29 SPCBs and 6 PCCs in the country. SPCBs and PCCs are responsible for implementing this act in respective states and union territories. The act applies to industries and the local bodies both, which is to strictly monitor the discharge quality of the effluent or wastewater and take necessary actions if it is being violated.

In case of violation of the act a person / company/ industry have to bind to the verdict given by Hon'ble High court/Pollution Control Board which can be either penalty or a closer notice with or without imprisonment.

## The MSW rules - 2016

The MSW refers to municipal solid waste. Municipal Solid Wastes (Management & Handling) Rules, 2000 (MSW Rules) are applicable to every municipal authority responsible for collection, segregation, storage, transportation, processing and disposal of municipal solid.

## The Air Act – 1981

If the industry is equipped with boiler, then they must have consent from the respective pollution control board and it has to follow “The air act-1981”.

In case of offending/violation of the law, pollution control board is entitled to issue closer notice to the offender.

## Poultry waste management in Ahmedabad

Poultry waste needs urgent attention, as a formal management does not exist for this waste. As the unavailability of the concrete data it is estimated that only in Ahmedabad city generation of poultry waste is approx. 20 tones/ day. It is either sold to middlemen for processing of some body parts or disposed in municipal dumping sites without any treatment which is against the law and is causing issues related to environmental pollution. If we impart necessary treatment to this waste, we can treat at least 4 tones/ day and divert this waste from going in the landfill.

CEE works on various waste management initiatives for awareness of citizens as well as capacity building policy makers on new technologies and updated laws for smoother operations. In order to address this issue and research about the possible actions at a city level, CEE started a research project in partnership with Hester Biosciences Pvt. Ltd. Literature survey was done to understand the status of this waste globally and how it is being managed in other major cities of India. CEE approached Ahmedabad Municipal Corporation for the details about management of poultry waste. In order to go forward with the research, CEE convened a stakeholder's meeting in the month of June 2018 to present the primary research and take opinion of experts, Stakeholders like Gujarat Pollution Control Board, Ahmedabad Municipal Corporation, National Institute for Occupational Health, Hester Bio-Sciences Pvt. Ltd, LDCE and others were present and gave their valuable inputs. The minutes of the meeting are attached in **Annexure 1 & 2**.

## Ahmedabad ward and zone details

The Ahmedabad Municipal Corporation established in July 1950, is responsible for the civic infrastructure and administration of the city of Ahmedabad.

Ahmedabad is basically divided into 6 different zones and 64 wards.

### 6 different zones are listed below:

- North zone
- East zone
- West zone
- Central zone
- South zone
- New west zone

Out of these 6, except west zone and new west zone rest of the 4 zones were visited and poultry slaughter shops were located in Shahpur, Dariapur, Danilimda, Shah-e-alam, Gomtipur, Bapunagar, Saraspur, Kalupur, Lal Darwaja etc.

## Methodology

The methodology was finalized based on the experts' suggestions. Since Ahmedabad majorly has non registered, non-certified slaughter shops, it was important to identify them and have their database as Ahmedabad Municipal Corporation did not have it. The three step methodology was finalized as follows:

- 1) **Understand the characteristics of poultry waste**
- 2) **Locate the slaughter shops in Ahmedabad through field visit**
- 3) **Discover the possible technologies and process**

### 1) Understand the characteristics of poultry waste

Before proposing a pilot plant for processing the slaughter poultry waste, it was imperative to know the characteristics and contents on the waste. Since the proposed by product was fish feed powder due to high level of protein, it was important to know the amount. Laboratory analysis of protein content as well as wastewater generated during the process was conducted.

CEE sent the collected sample of wastewater, and sent it to the Bhagwati Enviro Care Pvt Ltd. An analysis report from the lab is attached in **Annexure 3**

With the assistance from Ahmedabad Municipal Corporation and Mr. Rakesh Gamit (Food Dept.-AMC). Mr. Ketan Umaraliya visited Nutan Chicken shop located in Amraiwadi, Ahmedabad on 31<sup>st</sup> August, 2018 along with two food inspectors from AMC appointed by AMC - Mr. Kashif Rajput and Mr.



Rajesh Vanzara

CEE collected a sample of solid waste, which comprised of head and legs of the chicken, from the premises with a view to knowing about the protein content in it. CEE also collected sample of wastewater generated.

The sample of solid waste was sent to Gujarat Laboratory located at Madhupura, Ahmedabad. As per the analysis report submitted by Gujarat Laboratory, the protein content from the head is around 16.82 gm/100gm **Annexure 4** and from the legs it is 17.34 gm/ 100gm **Annexure 5**.

The sample of wastewater was sent to the Bhagwati Enviro Care Pvt Ltd. Ahmedabad for laboratory analysis **annexure 6**. As per the report submitted by the Bhagwati Enviro Care Pvt Ltd. the COD and BOD content from the sample was above the wastewater discharge limits set by the Central Pollution Control Board (CPCB) and thus it was imperative to impart treatment to this wastewater.

## 2) Locate the slaughter shops in Ahmedabad through field visits

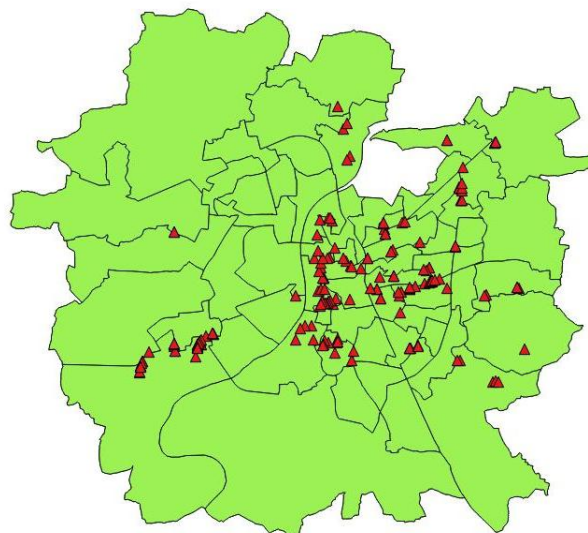
Since the protein content was in satisfactory amounts, the next step was to know the approximate quantity of waste generated and identifying the shops. As intimated by AMC officials, most of the poultry slaughter waste shops are not registered under FSSAI. Though it is imperative to have the registration, most of the shops are just small shanties. The slaughtering is done on the spot when the customer comes which even solves the purpose of freshness.

With a view to getting assistance and necessary information from Ahmedabad Municipal Corporation, CEE approached different departments like Solid Waste Management, Health and Food. Mr. Rakesh Gamit (Food department-AMC) helped CEE with his inputs and provided useful information.

In order to locate and find out number of poultry slaughter shops in Ahmedabad, CEE gave opportunity to students to join in the project. 6 students of L.D. College of Engineering joined the project for identifying the locations of slaughter shops.

Along with identifying shops, the students were required to conduct an interview with the poultry slaughter shop. A questionnaire (**Annexure 7**) was prepared by CEE. CEE identified poultry shop hot spots in Ahmedabad as per the six zones. All students were divided in a group of 2 forming 3 groups. They were allocated different wards of the particular zone of the Ahmedabad city with pre decided time limit. The team was able to locate the data of 190 poultry slaughter shops.

The geographical latitude and longitude data of poultry slaughter shops, which was collected by volunteers from Ahmedabad city, is represented as below.



*Topographical representation of locations of poultry slaughter shops*

Some of the challenges faced during field visit are

- 1) Due to unavailability of data, they had to search across the entire ward as well as ask the local community members
- 2) Many shop owners were not co-operating with the interview and not comfortable with data collection, especially FSSAI license details.

### Field visit at Zaveri Chicken Shop:

In order to understand the differences in operations, waste generation & management between a large poultry operator and small shed owner, the CEE team visited one of the largest slaughterer and distributor of chicken meat **M/S Zaveri Chicken Shop, Vejalpur, Ahmedabad** on 1<sup>st</sup> November 2018 **Annexure 8.**

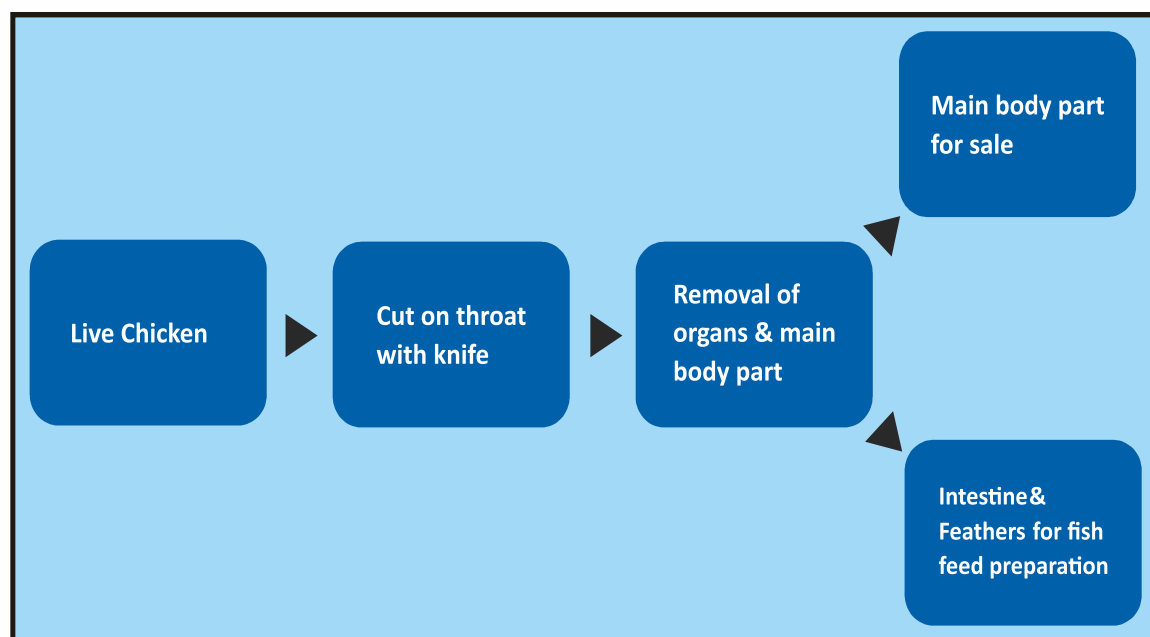
The team was comprised with following members:

- 1) J. K. Vyas (Head, EMG-CEE)
- 2) Vipul Patel (Associate Program officer, EMG)
- 3) Ketki Gadre (Project coordinator, EMG)
- 4) Srishti Sing (Project coordinator, EMG)
- 5) Ketan Umaraliya (Project officer, EMG)

Zaveri chicken shop is registered shop under FSSAI regulation. Zaveri chicken shop is one of the largest wholesale distributor of chicken and mutton meat in Ahmedabad.

The team interacted with shop owner Mr. Bakhtiyar in order to have an idea about poultry slaughter process and following actions, their daily consumption, quantum of daily waste generation and their process of waste management.

Process diagram of Zaveri chicken shop:



### 3) Discover the possible technologies and process

To understand latest technologies & current best practices available in India for the waste management, by visiting a rendering plant.

CEE contacted Mr. Sreenivasulu Suram (Factory Manager, Godrej Tyson Foods Pvt. Ltd.) requesting a plant visit with a view to understanding the best existing practices in the country for the management of waste generated post slaughtering of poultry and better environment management .

CEE staff Ms. Srishti Singh and Mr. Ketan Umaraliya visited Bengaluru facility of Godrej Tyson Foods Pvt. Ltd. which is located at Doddahallur Village, Hoskote Taluk, Bangalore Rural district on 27<sup>th</sup> February, 2019.

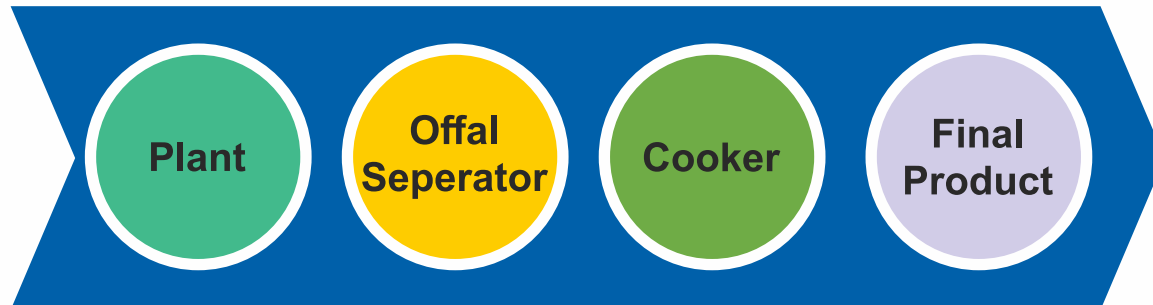
CEE team met with key officials of the plant:

- 1) Mr. Ravi Kumar (Manager - Finance & Accounts)
- 2) M/s Sumathi R (Asst. manager – HR)
- 3) Mr. Nagesh Kumar (Plant operator)
- 4) M/s Adritya (Lab in charge)

#### Key Observations:

CEE team was accompanied by M/s. Adritya, Mr. Ravi Kumar and Mr. Nagesh Kumar.

The line diagram showing the sequence of operation of production is as under:



CEE team was briefed with a presentation on rendering process and the characteristics of the product along with the history of the plant. According to the information provided by the Godrej officials, there is zero discharge of waste into the environment.

#### Plant (Slaughtering operation & offal separation):

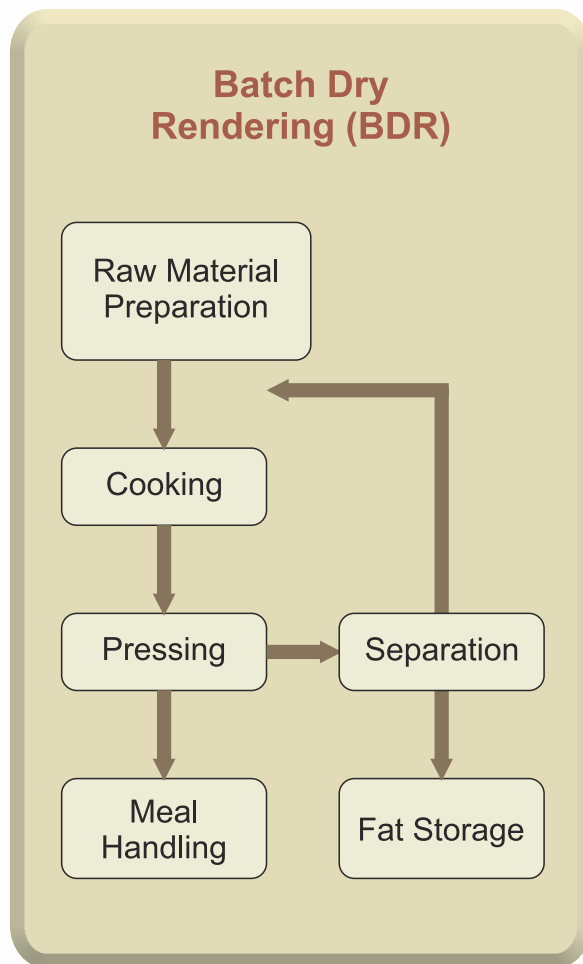
The entire plant is working on automatic mechanism in semi batch mode in 3 shifts. Slaughtering is carried out in night only due to lower visibility and activity of birds in night and other enforcing regulations from the Govt. The facility can process up to 48,000 birds in one batch but currently they are processing between the ranges of 16,000 to 18,000 birds per batch.

Before the birds are brought for slaughtering they are medically checked by veteran to ensure that they are medically fit for slaughtering. The sequence of slaughtering process starts from the dark room **Annexure 9**, where their visibility is further reduced. Then they are stunned and hanged upside down on a metallic hanger running in infinite loop.



Slaughtering process is Halal assured and blood is collected in a separate collection tank. After that feathers, skin, pawns, head, internal organs are separated one by one. All of these are collected in underground channels and they are moved to the rendering plant with the help of high capacity pump and water. Recycled water is also being used in this operation, majorly to keep up the flow.

### Cooker (Rendering Process):



Rendering is the next sequential operation after slaughtering is carried out. All the inedible and waste post slaughtering including blood is sent for the rendering process.

Slaughtering and Rendering process equipment are situated in two different building. Rendering process house is three stored building. Post slaughter waste is sent to the top of the rendering house with the help of high capacity pump and water.

The Godrej Tyson Foods prepares 3 different type of meals from the waste

- Feather meal (prepared from feathers and bones only)
- Meat meal
- Blood meal (prepared from blood)

The rendering operation is carried out in a cooker of 5 ton capacity. They were having two different cookers one for blood meal which was small in size and other was in larger size to prepare rest of the type of meals. It is 4-5 hour long process and steam at 135° C is utilized as a heating medium.

To produce steam furnace oil is being utilized. In the cooker along with other raw material two foreign ingredients are being added, one is DORB, which acts as a binding agent, and mold zap which functions to reduce moisture content to <10%.

One of the drawback of rendering process is its pungent smell after the process. There has been times when the locals have raised issues regarding the smell. To encounter this issue the authorities have taken several steps:

- Instead of releasing all the gas in one go, they maintain the outlet flowrate at such a level so that release of gas is spanned in 1-1.5 hour
- They have also started mixing pineapple flavor to reduce its pungent smell
- The management has planted flowering plants and green covers in the vicinity of the plant to reduce bad odor

## Final Product:

Final product after the 4-5 hour long rendering process is in powder form with moisture content <10%. As shown by the plant officials all the three products have following nutrition content:

Protein – 65%-75%

Fat – 5%

Moisture – <10%

The final product can be fat free, by imparting necessary fat extraction treatment. Removing fat content directly affects the life of final product.

The final product has a market price of 24-25 Rs /kg. According to figures provided by the plant operators, the facility produces 3 ton of meals every day and it's been transported to traders once in every 5 days.

## Hazardous waste

The facility has separate hazardous waste and plastic waste deposition center, at reasonable distance from the actual processing unit. Top of the center is covered with the shed and fencing surrounding the area. As per the information provided by the plant officials source of generations for this waste is packaging and repackaging as from preparation of sausages. All the hazardous waste is sent to authorize dealer.

## Air Emission

The facility has 1 chimney attached the boiler where furnace oil is used as a fuel, which is a sampling point for measuring particulate metal, SO<sub>x</sub>, NO<sub>x</sub> and other air pollutant.

## Water utilization and wastewater treatment

The Bengaluru facility is located on agriculture land. 100% of their water demand is fulfilled by underground bore well. Their daily demand of water is 2.5 lac liter out of which 10% is fulfilled by in house bore well and rest 90% is fulfilled by out sourcing.

Water is utilized basically in 3 purposes: steam generation, washing & cleaning and channelizing the solid and liquid waste to cooker.

The facility has in house effluent treatment plant of 1.2 MLD capacity **Annexure 10**. It is sequential batch reactor (SBR) type waste water treatment plant with primary, secondary and tertiary treatment.

As per the discussion with officials there is zero liquid discharge from the premises. Pollution control board visits twice in a year to monitor the efficiency & measure outlet of ETP. The officials mentioned that they get it checked periodically with accredited laboratories and their outlet norms are very much under the permissible limits.

Unused treated wastewater is collected in an artificial pond which also serves as a purpose of ground water recharging and rain water harvesting.

There is 4-5 acre land near the pond, which is dedicated for the agriculture purpose. The land is provided free of cost to the farmers, interested farmers can cultivate on this land without paying any charges for using land.

Sludge generated after imparting primary, secondary and tertiary treatment is rich in nitrogen, phosphorous and potash content, so they give it to the farmers without taking any charge and farmers are using it as a fertilizer blend due to its high nutrition value.

## Recommendations:

After consulting and discussing with various stakeholders & enforcing agencies and carrying out number of field visits, based on the experience CEE would like to cite few recommendations:

- Every poultry slaughter house shop must be registered under FSSAI and have a valid license and needs to be renewed. Though, most shop owners knew about it, they were ignorant about this matter and thus not registered under FSSAI.
- Awareness capacity building of all stakeholders in poultry business is required.
- Environment friendly disposal techniques and methods should be encouraged.
- Waste from slaughterhouses should be collected separately and this waste should be converted into various protein feed for cattle, dog and fish by imparting necessary treatment.
- To convert such waste into valuable product, centralized rendering plant should be established by municipal authorities or in a PPP mode.

## Annexures

### Annexure 1

#### Minutes of meeting: Stakeholder's workshop on Poultry slaughter waste management

Date: - June13, 2018

- Venue: Board room, CEE, Ahmedabad
- Time: 11am to 12 noon
- Members present:
  - 1) Javed Khambhatvala, A. J. Enterprises
  - 2) Dr. Pratapsinh Rathod, Assistant Superintendent, Slaughterhouse, AMC,
  - 3) Dr. Avinash Pagdhune, SCIB, National Institute of Occupational Health,
  - 4) Rajiv Gandhi, MD, Hester Biosciences,
  - 5) T. S. Raja Raman, Assist. Professor, Chem. Eng. Department, L.D.C.E.,
  - 6) Ronak Patel, Assist. Professor, Chem. Eng. Department, L.D.C.E.,
  - 7) Nehal D. Ajmera, R.O., GPCB,
  - 8) Darshana Patel, Environment Engineer, AMC,
  - 9) Kartikeya Sarabhai, Director, CEE,
  - 10) J. K. Vyas, Head, EMG, CEE
  - 11) Vipul Patel, APO, EMG, CEE
  - 12) Ketki Gadre, Project Coordinator, EMG, CEE
  - 13) Ketan Umaraliya, Project Officer, EMG, CEE

Mr. Sarabhai opened the workshop with a round of introduction of all stakeholders and the objective and importance of this project.

The workshop started with a presentation about the current scenario in poultry slaughter waste which was presented by Ketan. The presentation covered recent scenario and data from secondary as well as field sources in the poultry industry, details about the waste from the industry and possible solutions of the waste.

#### Highlights of Discussion:

After the presentation was over, Mr. Vyas asked Ms. Darshana Patel if the disposal of poultry waste is legal and if there is any regulatory & legal framework is available and also inquired about the guidelines for running of slaughter/ slaughterhouse. She said that guidelines for slaughter house waste needs to be looked at and shared that the carcass waste in Vadodara city is being utilized by converting into Biogas.

Mr. Sarabhai said that importance needs to be given for characteristic of the waste generated and the protein content present in it. He emphasized on building a circular economy in this field. He suggested the work plan at 2 levels:

- a) Investment in technology
- b) Mobilization and action to be taken immediately

He suggested that an immediate action possible could be segregation of slaughter poultry waste in differently coloured bags which could be distributed to the shop owners and separate collection mechanism. This would not be possible without the cooperation from slaughter house owners.

He suggested that the objectives of the project could be stated as:

- a) to build circular economy in poultry with employment generation
- b) Zero poultry waste from the city

Mr. Rajiv Gandhi, from the Hester Bio sciences, suggested 3 phase action plan for the project.

Phase – 1: Collection of slaughter poultry waste in different colored bag and send it for incineration. This is to get an estimate of waste generation.

Phase – 2: All the slaughter shops to be registered under the FSSAI – 2006 and waste to be collected from those shops for the rendering plant.

Phase – 3: Centralized slaughterhouse with state of the art facilities and technology to be build.

Mr Sarabhai then suggested that action plan from now onwards should be

- a) to collect database of the poultry slaughter shops per ward/ zone
- b) Shop owners should be approached for their cooperation in this project and educated to segregate the waste by collecting in different colored bag.
- c) And for encouraging the current registered slaughter shades as well as unregistered shades they could be branded as “zero waste shops”. The branding would contain a certificate which would have logos of AMC, Hester Biosciences, and CEE.

Mr. Kartikeya Sarabhai also suggested to calculate the financial implication of the project in the form of grant, subsidy, funding or sponsorships.

Dr. Rathod, Assi. Superintendent slaughterhouse, AMC, informed all about the FSSAI-2006 act, which is mainly for the poultry slaughterhouse and slaughter shades. His opinion was that registered & licensed shop's waste can go for the incineration.

Dr. Pagdune raised his concern for the quantity and quality waste water being generated, proper importance should be given.

Some recommendations from the workshop can be summarized as follows:

- Data collection about the slaughter shops.
- Exploring different and new possibilities of incineration
- If a table top is developed which automatically collects the blood could be set up for all shops.
- CEE's role for creating awareness about this project in the stakeholders
- Wholesale shop owners to be called for next meeting.

## Annexure 2

### Minutes of the meeting on Poultry Slaughter Waste management

**Date: - 26/09/2018**

**Venue: - CEE Board Room**

Following people attended the meeting

- Dr. Pratapsinh Rathod (Assist. Superintendent , AMC Slaughterhouse)
- Mr. Rajiv Gandhi (CEO & MD, Hester Biosciences Ltd.)
- Mr. Kartikeya Sarabhai ( Director, CEE)
- Ms. Ketki Gadre (Program coordinator, CEE)
- Mr. Ketan Umaraliya (Project Officer, CEE)

An invitation to attend the meeting was sent to Gujarat Pollution Control Board, National Institute for Occupational Health. But due to their busy schedule representatives from the above agencies were not able to join.

The presentation of work done so far, key findings from the one to one conversation with shop owners, lab analysis reports of the samples of waste generated was prepared and presented by Mr. Ketan Umaraliya.

#### **Inputs from Dr. Pratapsinh Rathod:**

- CEE should write a letter to commissioner asking for the help from the food department regarding the data of registered and unregistered poultry slaughter shops

#### **Inputs from Mr. Rajiv Gandhi:**

- We should also encourage people like Javedbhai to take it as a business venture and also serves our Socio-environ purpose
- We should arrange a meeting with people who are in the business of poultry slaughtering and develop their awareness and responsibility towards safe environment practice. So they can get the monetary as well as non-monetary benefits. Any veteran from the Hester Biosciences Ltd. can also join in this program
- With the help of 2-3 other people, We should carry out a survey using google location to identify the zones of the city with high number of poultry slaughter shops
- If possible, make a visit to slaughter house of Godrej located in Mumbai and interact with them regarding our objective.
- Try to visit chicken meat market at L.T. Road, Nr Novelty Cinema and observe what procedure those botchers follow to meet BMC standards
- We Should contact firms like Hi-Media Ltd., who are in business of production and selling of chicken serum and other media like that
- Mr. Javedbhai should invest in establishing the collection system as well as location and other needful equipment
- If a letter can be send to Mr. Rajiv Gandhi on CEE's letterhead briefing about the project and objective



### **Inputs from the Kartikeya Sarabhai:**

- To reconfirm the data, more field visits should be done with the help of google location so that we get the idea about the concentration of poultry slaughter shops in particular zone of the city
- Meet the firms who are in the business of making animal and fish meal from the waste
- Small shed/shop owners will not sacrifice different body parts unless they get any financial benefit
- From the survey we will be able to find a location within the city where this particular business is concentrated and then we can think about the establishing or we can request AMC for allotting waste collection system for pilot run of the project
- As per the press note, Kozhikode has been declared as 'Poultry Waste Free City', try to contact with Shriji from CEE-Kerala and get the latest information about it
- We can try to develop a small slaughter workstation for the small shop owners, which will have all the necessary arrangement and will be designed in a way that all the waste can be collected separately
- We can take help of IIM students to prepare small business report on this with identifying return on investment

### **Conclusion**

- We will be working on 4 different levels
  1. Shop level – main focus on hygiene issues and creating awareness and responsibilities towards environment
  2. Business model – need to prepare a business report with calculating return on investment
  3. Need to think about the viable solution for waste blood
  4. Location survey for establishing vehicle collection system and safe & best work practice scenario in India by visiting/contacting big firms and markets
- Mr. Rajiv Gandhi will make necessary arrangements for the visits of Godrej Slaughter house and Butcher at L.T Road market at Mumbai
- Mr. Rajiv Gandhi will also try to contact with Hi-Media and will arrange the meeting
- CEE will try to contact someone from Kerala office to check the latest status about Kozhikode, being Poultry Waste Free City

## Annexure 3


**Bhagwati  
Enviro Care Pvt. Ltd.**



MOEF Recognized Laboratory ■ Enlisted with GPCB ■ Environmental Consultants, Auditors & Analyst  
 ■ Specialized In REIA, EIA, EC, CPCB registration, WWTP, STP, APCM  
 ■ ISO:9001, ISO:14001, & OHSAS:18001 Certified Company

### TEST CERTIFICATE

Company Name and Address	
<b>M/s Center For Enviro Education</b> <b>Thaltej Tekra</b> <b>Ahmedabad</b>	Report No: BECPL/LAB/R/2018080603 Issue Date: 06/08/2018 Sample Ref No: BECPL/LAB/S/2018080305 Customer's Reference : Verbal

Description of Sample : Wastewater	Quantity/No of Sample : 500 ml / One
Date of Sampling : Not mentioned	Sampling Procedure : Grab Sample
Sample Receipt Date : 03/08/2018	Date of Performance of Test : 03/08/2018
Sample Submitted By : Client	Packing / Seal : Unseal
Test Parameter : As per Table	Date of Completion of Test : 06/08/2018
Analysis By : Nilesh	

No.	Test Parameters	Results	Test Method	Unit
1	pH	6.6	IS 3025 (Part – 11) 2017	---
2	Total Suspended Solids	600	IS 3025 (Part 17) 2017	mg/l
3	Total Dissolved Solids	4,528	IS 3025 (Part – 17)	mg/l
4	Oil & Grease	12.8	IS 3025 (Part 39) 2014	mg/l
5	Chemical Oxygen Demand	10,329	IS 3025 (Part 58) 2017	mg/l
6	Bio Chemical Oxygen Demand (3 day at 27°C)	4,320	IS 3025 (Part 44) 2014	mg/l


  
 Authorized Signatory  
 Date: 06/08/2018

Note: This report is subject to terms & conditions mentioned overleaf

**Corporate Office:-**  
 28,29,30, Parmeshwar Estate-II, Phase-I, Opp. AMCO Bank, GIDC Estate, Vatva, Ahmedabad-382445. Gujarat. India.  
 Tel: +91-79- 40083051/52, 25834567, 29295043, 29295133, Fax: +91 - 79 - 40083053  
 www.bhagwatienviro.in Email: shailesh@bhagwatienviro.com, amar@bhagwatienviro.com  
 CIN No: U84199GJ2003PTC43198



## Annexure 4



**Gujarat  
Laboratory**  
Since 1986

F-16,17, Madhavpura Market,  
Shahibaug, Ahmedabad-380004  
Ph : 079-25626040, 25624821  
Email : gujlab@gmail.com  
gujlab.info@gmail.com  
Web : www.gujaratlaboratory.com

### TEST REPORT


Report No.	GLC/180831022	Date of Receipt	31/08/2018
Sample Submitted By	Centre for Environment Education(CEE), (Established as Centre of Excellence of MOEFCC, Govt Thaltej Tekra, Bodakdev Road Ahmedabad 380 054.	Reference No.	NM
Sample Described as	Gujarat Poultry Waste	Batch No.	NM
Mode of Packing	Sample Packed in Plastic Bag	Mfg.Date	NM
Sample Condition	Satisfactory	Exp.Date	NM
Marking	Sample : Leg	Sample Qty.:	1 Nos
Analysis Date	31/08/2018	Report Date	04/09/2018

Sl.	Test Name	Results	Test Method
1	Protein gm / 100 gm	17.34	IS:7219:1973

**N.M.= Not Mentioned**

Date of Issue : 04/09/2018

For GUJARAT LABORATORY


  
Hemal Darji  
Autho. Signatory

\*\*\*End of Report\*\*\*

Note :  
 1. The Result refer only to the tested sample & applicable parameters, Endorsement of products is neither inferred nor implied.  
 2. Total liability of our institution is limited to the invoice amount/testing charges.  
 3. This report is not to be reproduced wholly or in part and cannot be used as an evidence in the court of law and should not be used in any advertising media without our special permission in writing.  
 4. Sample drawn & submitted by the party for analysis unless otherwise stated.  
 5. Gujarat Laboratory maintains strict confidentiality of all the analysis and test results and customer supplied product and will not reveal this information to third party unless required by the statutory or legal requirement.  
 6. Subject to Ahmedabad Jurisdiction.  
 7. Perishable samples will be destroyed after testing, others after three weeks from the date of issue of the report, unless otherwise agreed with the customer. Also retain sample will not be returned unless otherwise agreed in writing.  
 8. The sample is accepted by us subject to our general conditions of services which is displayed at reception notice board & is also available on request. Attention is drawn to the limitation of liabilities, indemnification and jurisdictional issues etc defined therein.  
 9. Customer requested for the above test only.

Testing Facilities for :

## Annexure 5



**Gujarat  
Laboratory**  
Since 1986

F-16,17, Madhavpura Market,  
Shahibang, Ahmedabad-380004  
Ph. : 079-25626040, 25624821  
Email : gujlab@gmail.com  
gujlab.info@gmail.com  
Web : www.gujaratlaboratory.com

**TEST REPORT**


Report No.	GL/C/180831023	Date of Receipt	31/08/2018
Sample Submitted By	Centre for Environment Education(CEE), (Established as Centre of Excellence of MOEFCC, Govt Thaltej Tekra, Bodakdev Road Ahmedabad 380 054,	Reference No.	NM
Sample Described as	Gujarat Poultry Waste	Batch No.	NM
Mode of Packing	Sample Packed in Plastic Bag	Mfg.Date	NM
Sample Condition	Satisfactory	Exp.Date	NM
Marking	Sample : Head	Sample Qty.:	1 Nos
Analysis Date	31/08/2018	Report Date	04/09/2018

Sl.	Test Name	Results	Test Method
1	Protein gm / 100 gm	16.82	IS:7219:1973

**N.M.= Not Mentioned**

Date of Issue : 04/09/2018

\*\*\*End of Report\*\*\*


For GUJARAT LABORATORY  
  
Hemal Darji  
Autho. Signatory

**Note :**


1. The Result refer only to the tested sample & applicable parameters, Endorsement of products is neither inferred nor implied.
2. Total liability of our institution is limited to the invoice amount/testing charges.
3. This report is not to be reproduced wholly or in part and cannot be used as an evidence in the court of law and should not be used in any advertising media without our special permission in writing.
4. Sample drawn & submitted by the party for analysis unless otherwise stated.
5. Gujarat Laboratory maintains strict confidentiality of all the analysis and test results and customer supplied product and will not reveal this information to third party unless required by the statutory or legal requirement.
6. Subject to Ahmedabad Jurisdiction.
7. Perishable samples will be destroyed after testing, others after three weeks from the date of issue of the report, unless otherwise agreed with the customer. Also retain sample will not be returned unless otherwise agreed in writing.
8. The sample is accepted by us subject to our general conditions of services which is displayed at reception notice board & is also available on request. Attention is drawn to the limitation of liabilities; indemnification and jurisdictional issues etc defined therein.
9. Customer requested for the above test only.

Testing Facilities for :

## Annexure 6



# Bhagwati Enviro Care Pvt. Ltd.



Certificate No: TC 6830

**MOEF Recognized Laboratory ■ Enlisted with GPCB ■ Environmental Consultants, Auditors & Analyst**  
**■ Specialized in REIA, EIA, EC, CPCB registration, WWTP, STP, APCM**  
**■ ISO:9001, ISO:14001, & OHSAS:18001 Certified Company**

*Nutan chicken shop.*

### TEST CERTIFICATE

Company Name and Address

<b>M/s Center For Enviro Education</b> Thaltej Tekra Ahmedabad	Report No: BECPL/LAB/R/2018090401 Issue Date: 04/09/2018 Sample Ref No: BECPL/LAB/S/2018090105 Customer's Reference : Verbal
--	---

Description of Sample	: Waste Water Of <b>Nutan Chicken</b>	Quantity/No of Sample	: 5.0 lit / One
Date of Sampling	: 01/09/2018	Sampling Procedure	: Grab Sample
Sample Receipt Date	: 01/09/2018	Date of Performance of Test	: 01/09/2018
Sample Submitted By	: Client	Packing / Seal	: Unseal
Test Parameter	: As per Table	Date of Completion of Test	: 05/09/2018
Analysis By	: Nilesh		

Sr. No.	Test Parameters	Results	Test Method	Unit
1	pH	7.1	IS 3025 (Part - 11) 2017	--
2	Total Suspended Solids	52	IS 3025 (Part 17) 2017	mg/l
3	Total Dissolved Solids	600	IS 3025 (Part 16) 2017	mg/l
4	Chemical Oxygen Demand	522	IS 3025 (Part 58) 2017	mg/l
5	BOD (27°C @ 3day)	153.3	IS 3025 (Part 44) 2014	mg/l
6	Oil & Grease	4.6	IS 3025 (Part 39) 2014	mg/l

*Mud*  
 Authorized Signatory  
 Date: *4/9/18*

Note: This report is subject to terms & conditions mentioned overleaf

**Corporate Office:-**  
 28,29,30, Parmeshwar Estate-II, Phase-I, Opp. AMCO Bank, GIDC Estate, Vatva, Ahmedabad-382445. Gujarat. India.  
 Tel: +91-79- 40083051/52, 25834567, 29295043, 29295133, Fax: +91 - 79 - 40083053  
[www.bhagwatienviro.in](http://www.bhagwatienviro.in) Email: [shailesh@bhagwatienviro.com](mailto:shailesh@bhagwatienviro.com), [amar@bhagwatienviro.com](mailto:amar@bhagwatienviro.com)  
 CIN No: U84199GJ2003PTC43198

## Annexure 7

### Poultry Slaughter Waste Management First Inspection Sheet

Sr. No.	Subject	Detail
1	Name of the unit and address:	
2	Name of the Owner:	
3	Contact details(1):	
4	Email ID:	
6	Contact detail(2):	
7	Current status: FSSAI registered: YES/NO	
A.	If yes, Date of issue:	
B.	License details	
C.	If no, Date of last renewal	
D.	Reason for not renewing the license	
8	Inspection point:	
A.	Quantity & types of raw material per day:	
B.	Quantity of water Consumption per day with its source:	
C.	Stages where water is used in the process:	
D.	Type of solid waste generated per day:	
E.	Quantity to solid waste generated per day:	
F	Current method of disposal of solid waste (AMC approved or not) :	
G.	Distance of final disposal site and location for solid waste:	
H.	Waste Water quantity per day and mode of reuse and final disposal (AMC approved or not)	
I.	Details of effluent treatment provided or proposed:	
J.	Safety measures, If any	

Sr. No.	Subject	Detail
9	If any Instruction Given before in writing or in any manner, by any inspecting authority : YES/NO	
A.	Name/Designation:	
B.	Date :	
C.	Given instructions:	
D.	Steps taken by you by them:	
10	NOC/Consent from GPCB obtained: If yes, its compliance	
11	Other Remarks:	

Name of the resource person from AMC:

Sign

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

Signature, name and date (resource person from the shop)

Annexure 8



## Annexure 9



## Annexure 10

