

***Proposed Development of Common Biomedical Waste
Treatment Facility & Recycling Facility***

at

Khasra No. 724

***Village Kunja (Bahadarpur), Tehsil – Bhagwanpur,
District – Haridwar, Uttarakhand***

Project Proponent

M/s ECON Waste Solution

***Village Kunja (Bahadarpur), Tehsil – Bhagwanpur,
District – Haridwar, Uttarakhand***

Environment Consultants

***Environment Management Division of
M/s India Glycols Limited, Kashipur, Udham Singh Nagar
(NABET, QCI Approved Accredited Consultant)
A- 1 Industrial Area, Bazpur Road, Kashipur, Uttarakhand.***

1. Introduction

M/s ECON Waste Solution is a private company proposes to setup a Common Bio-medical Treatment Facility (CBWTF) at Khasra No. 724, Village- Kunja (Bahadarpur), Tehsil Bhagwanpur, District Haridwar. The proposed project of setting up the Common Bio-medical Waste Treatment Facility (CBWTF) includes Incinerator with Air Pollution Control Device (APCD), Autoclave, Shredder and Effluent Treatment Plant. It is proposed to utilize 0.8320 Ha. of land for the proposed project.

1.2 Project Description

As per EIA Notification 2006, the project was earlier considered by MoEF &CC under Category “B1” Projects of activity 7d (a), namely Common hazardous waste Treatment and Disposal Facility. Subsequently in the amendment vide Gazette Notification dated 17 thApril 2015, separate entry has been made therein for Bio-medical Waste Treatment Facilities. Thus, all Projects of Bio-medical Waste Treatment Facilities now fall under “Category B” activity 7(da). As a part of above process, the application (Form-1 along with Pre-Feasibility Report) was submitted for setting up of Biomedical Waste Treatment Facility.

2.0 Project Proponent

Dr. Mahadev Semwal (Partner)

Dr. Pawan Tyagi (Partner)

M/s ECON Waste Solution

Village Khabarwala, P.O Jaintanwala, Garhicantt, Dehradun-248003

Mob. : 8126534344

Email: econwastesolution@yahoo.com

The brief description of the project is given below:

S.No.	Parameters	Description
1.	Identification of Project	The Proposed project of CBWTF falls under Category B-1, schedule (da) as per the EIA Notification 14th Sep, 2006 and subsequent amendments dated 1st December, 2009 & 17th April, 2015.
2.	Project Proponent	M/s ECON Waste Solution
3.	Brief description of nature of the project	Biomedical waste is generated from all health care institutions; nursing homes, clinics, dispensaries, veterinary institutions, animal houses, pathological laboratories, blood banks etc. The responsibility of collection, treatment and safe disposal of all types of solid wastes rests with the generator.

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

		<p>A Common Bio-medical Waste Treatment Facility (CBWTF) is proposed to be set up where bio-medical waste, generated from a number of healthcare units, will be suitably treated as per the prescribed procedure & norms laid down in the regulation.</p> <p>Proposed project of setting up of the Common Bio-medical Waste Treatment Facility includes Incinerator, Autoclave, Shredder and Effluent Treatment Plant. The present proposal is to utilize 0.4050 ha land for setting up of Biomedical Waste Treatment Facility.</p>																		
4.	Salient Features of the Project																			
5.	Proposed plant capacity	<p>Proposed Capacity of CBWTF:</p> <table border="1"> <thead> <tr> <th>Equipment</th> <th>Capacity</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Double Chambered Incinerator</td> <td>200 kg/hr</td> <td>1</td> </tr> <tr> <td>Autoclave</td> <td>1000 liters/Batch</td> <td>1</td> </tr> <tr> <td>Shredder</td> <td>200 kg/hr</td> <td>1</td> </tr> <tr> <td>Chemical Disinfection Tank</td> <td>1500 Ltr</td> <td>1</td> </tr> <tr> <td>Effluent Treatment Plant</td> <td>10.0 KLD</td> <td>1</td> </tr> </tbody> </table>	Equipment	Capacity	Number	Double Chambered Incinerator	200 kg/hr	1	Autoclave	1000 liters/Batch	1	Shredder	200 kg/hr	1	Chemical Disinfection Tank	1500 Ltr	1	Effluent Treatment Plant	10.0 KLD	1
Equipment	Capacity	Number																		
Double Chambered Incinerator	200 kg/hr	1																		
Autoclave	1000 liters/Batch	1																		
Shredder	200 kg/hr	1																		
Chemical Disinfection Tank	1500 Ltr	1																		
Effluent Treatment Plant	10.0 KLD	1																		
6.	Category of Projects	Category "B1" and Schedule- 7(da)																		
7.	Number of working days	365																		
8.	Total Plot Area	0.8320 Hactare																		
9.	Plot Number	Khasra No. 724																		
10.	Location	Village- Kunja (Bahadarpur), Tehsil Bhagwanpur, District Haridwar																		
11.	Latitude & Longitude	Latitude: 29°52'31.49"N Longitude: 77°47'6.12"E																		
12.	Nearest habituated area	Iqbalpur- 1.0 Km SE																		
13.	Nearest Main Public Road	Puhana Jhabrera Road: 0.95 Km																		
14.	Nearest Railway station/Airport	Iqbalpur Railway Station – 1.74 Km E Jolly Grant Airport – 52.0 Km NW																		
15.	Nearest water body	Ganga Canal – 9.62 Km E																		
16.	Water requirement	Water requirement for the proposed CBWTF project is 11.0 KLD.																		
17.	Source of water	Water requirement will be met through ground water.																		
18.	Wastewater Generation	Waste water generated from the treatment of Biomedical waste during autoclaving, washing of floors, etc. is 4.75 KLD and it shall be treated in effluent treatment plant and reuse in process																		
19.	Man Power	During Construction phase, the labors and workers will be hired from nearby villages. Total 20 persons are proposed to hire for plant operation including officers, skilled and unskilled workers.																		
20.	Air Pollution Control Device	Venturi Scrubber & Stack																		

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

21.	Nos. of Stack	2
22.	Power requirement	Total power requirement of will be around 65 KVA. DG Set of 65.0 KVA is proposed for the project and lines will be taken from the authorized electricity board. ~ 1% of the total power load will meet through solar energy.
23.	Alternative site	No Alternative site is examined
24.	Land form, Land use and land ownership	The land for project is located in Khasra No. 724, Village-Kunja (Bahadarpur) Tehsil Bhagwanpur, District Haridwar

2.1 Technology and Process Description

The health care facility shall be advised to segregate the waste and enable trained personnel to carefully pack the waste as it contains sharps, solid waste etc. The waste collected shall be endorsed by issuing a small manifest. It is also realized that the Bio-medical Waste shall be collected every day and not be delayed more than 48 hours as it has tendency to give out odour & deteriorate with long standing storage. The collection of the waste from hospital and its movement to the carrying vehicle shall be properly managed by avoiding any spillage in the path. It is intended to have 5 closed vehicles (E.g. dimension size of 14ft x 6ft x 5.5ft with carrying capacity 3000 kg) for collection and transportation of biomedical waste to CBWTF covering all the districts proposed to cater within 100 km radius.

2.2. CBWTF Operation Process

1. Collection of Biomedical Wastes from Different Health Care Establishments
2. Transportation of Wastes from HCES to Project Site
3. Segregation of Wastes
4. Waste Storage Room
5. Operation of Incinerator
6. Operation of Autoclave
7. Operation of Shredder
8. Air Pollution Control Devices
9. Vehicle Cleaning
10. Site Security
11. Fire Safety
12. Operation of ETP
13. Green Belt and Landscape Management

Treatment and disposal method are employed according to Bio-medical Waste Treatment Rules 2016

Category	Type of Waste	Type of Bag or Container to be used	Treatment and Disposal options
(1)	(2)	(3)	(4)

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

Yellow	<p>(a) Human Anatomical Waste: Human tissues, organs, body parts and fetus below the viability period (as per the Medical Termination)</p>	Yellow coloured non-chlorinated plastic bags	Incineration
	<p>(b) Animal Anatomical Waste: Experimental animal carcasses, body parts, organs tissues, including the waste generated from animals used in</p>		
	<p>(c) Solid Waste: Items contaminated with blood, body fluids like dressings, plaster caste, cotton swabs and bags containing residual or discarded blood and blood components.</p>		<p>Incineration deep burial* or Plasma Pyrolysis or In absence of above facilities, Autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent for energy recovery.</p>
	<p>(d) Expired or Discarded Medicines: Pharmaceutical waste like antibiotics, cytotoxic drugs including all items contaminated with cytotoxic drugs along</p>	Yellow coloured non chlorinated plastic bags or containers	<p>Expired cytotoxic drugs and items contaminated with cytotoxic drugs to be returned back to the manufacturer or supplier for incineration at temperature >1200 OC or to common bio-medical waste treatment facility or hazardous waste treatment, storage and disposal facility for incineration at >1200 OC or Encapsulation or Plasma Pyrolysis at 12000C. All other discarded medicines shall be either sent back to manufacturer or disposed by Incineration.</p>

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

	<p>(e) Chemical Waste: Chemicals used in production of biological and used or discarded disinfectants.</p>	Yellow coloured containers or non-chlorinated plastic bags	Disposed of by incineration or Plasma Pyrolysis or encapsulation hazardous waste treatment, storage and disposal facility.
	<p>(f) Chemical Liquid Waste: Liquid waste generated due to use of chemicals in production of biological and used or discarded disinfectants, Silver X-ray film developing liquid, Discarded Formalin, Infected Secretions, Aspirated body fluids, liquid from laboratories and floor washings, cleaning, house-keeping and disinfecting activities etc.</p>	Separate collection system leading to effluent treatment system	After resource recovery, the chemical liquid waste shall be pre-treated before mixing with other wastewater. The combined discharge shall conform to the discharge norms given in Schedule III.
	<p>(g) Discarded linen, mattresses, beddings contaminated with blood or body fluid.</p>	Non- Chlorinated yellow plastic bags or suitable packing material	Non- chlorinated chemical disinfection followed by incineration or Plasma Pyrolysis or for energy recovery. In absence of above facilities, shredding or mutilation or combination of sterilization and shredding. Waste to be sent for energy recovery or incineration or Plasma Pyrolysis.
	<p>(h) Microbiology, Biotechnology and other clinical laboratory waste: Blood bags, Laboratory cultures, stocks or specimens of micro-organisms, live or attenuated vaccines, human and animal cell cultures used in research, industrial laboratories, production of biological,</p>	Autoclave safe plastic bags or containers	Pre- treat to sterilize with nonchlorinated chemicals on-site as per National AIDS Control Organization or World Health Organization guidelines thereafter for Incineration.

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

	residual toxins, dishes and devices used for cultures.		
RED	Contaminated Waste (Recyclable) (a) Wastes generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles and fixed needle syringes) and vacutainers with their needles cut) and gloves.	Red coloured Non chlorinated plastic bags or containers	Autoclaving or micro-waving/ hydroclaving followed by shredding or mutilation or combination of sterilization and shredding. Treated waste to be sent to registered or authorized recyclers or for energy recovery or plastics to diesel or fuel oil or for road making, whichever is possible. Plastic waste should not be sent landfill sites.
WHITE (Translucent)	Wastesharps including Metals: Needles, syringes with fixed needles, needles from needle tip cutter or burner, scalpels, blades, or any other Contaminated sharp object that may cause puncture and cuts. This includes used, discarded and contaminated metal sharps.	Puncture proof, Leak proof, tampe	Autoclaving or Dry Heat Sterilization followed by shredding or mutilation or encapsulation in metal container or cement concrete; combination of shredding cum autoclaving; and sent for final disposal to iron foundries (having consent to operate from the State Pollution Control Boards or Pollution Control Committees) or sanitary landfill or designated concrete waste sharp pit.
BLUE	(a) Glassware: Broken or discarded and contaminated glass including medicine vials and ampoules except those contaminated with cytotoxic wastes	Cardboard boxes with blue colored marking	Disinfection (by soaking the washed glass waste after cleaning with detergent and Sodium Hypochlorite treatment) or through autoclaving or microwaving or hydroclaving and then sent for recycling.
	(b) Mettalic Body Implants	Cardboard boxes with blue colored marking	

3.0 DESCRIPTION OF ENVIRONMENT

Environmental Baseline Data Collection: Baseline data for the proposed project was collected during Pre monsoon Season (1st March 2023 to 31st May 2023) to assess the present scenario of the area.

3.1 AIR ENVIRONMENT

Wind speed and direction: The prominent seasonal wind direction is predominantly from West to East contributing more than/approximately 1.13 % of the total. The average wind speed is 3.31 m/s.

The following observations can be made:

Particulate Matter (PM10)

The maximum and minimum concentrations for PM10 were recorded as 84.6 µg/m³ and 60.10 µg/m³, respectively. The maximum concentration of PM10 was recorded at the (AAQ- 4) Iqbalpur Kalempur and minimum concentration was observed at (AAQ- 0) Project Site. The mean concentration ranges between 65.94 µg/m³ to 73.74 µg/m³. 98th percentile values for PM10 during study period range between 72.88 µg/m³ to 80.63 µg/m³.

Fine Particulate Matter (PM2.5)

The maximum and minimum concentrations for PM2.5 were recorded as 46.35 µg/m³ and 30.20 µg/m³ respectively. The maximum concentration was recorded at (AQ3) Puhana and the minimum concentration was recorded at (AAQ- 6) Molna. The mean concentration ranges between 36.05 µg/m³ to 50.2 µg/m³. 98th percentile values for PM2.5 during study period range between 40.61 µg/m³ to 49.97 µg/m³.

Sulphur Dioxide (SO₂)

The maximum and minimum SO₂ concentrations were recorded as 25.50 µg/m³ and 8.10 µg/m³. The maximum concentration was recorded at (AAQ- 4) Iqbalpur Kamelpur and the minimum concentration was recorded at (AAQ-3) Puhana. The mean values were observed from 10.29 µg/m³ to 20.83 µg/m³. 98th percentile values for SO₂ during study period range between 13.15 µg/m³ to 25.30 µg/m³.

Nitrogen Oxide (NO₂)

The maximum and minimum NO₂ concentrations were recorded as 26.30 µg/m³ and 16.30 µg/m³. The maximum concentration was recorded at (AAQ-6) Molna and the minimum concentration was recorded at (AAQ-3) Puhana. The mean values for NO₂ were observed in the range between 11.41 µg/m³ to 21.29 µg/m³. 98th percentile values for NO₂ during study period range between 24.40 µg/m³ to 25.85 µg/m³.

Carbon Monoxide (CO)

The maximum and minimum CO concentrations were recorded as 1.28 mg/m³ and 0.12 mg/m³. The maximum concentration was recorded at (AAQ-6) Makanpur and the minimum concentration was recorded at (AAQ-6) Molna. The mean values for CO were observed in the range between 0.143 mg/m³ to 1.068 mg/m³. 98th percentile values for CO during study period range between 0.24 mg/m³ to 1.301 mg/m³.

3.2 Water Environment

The baseline quality of water based on the results of the surface water quality monitoring within the study area, it is observed that,

3.6 Interpretation of Ground Water Quality

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

- pH was observed in the range of 7.70 – 8.76 with minimum at Solani River Upstream (SW-03) and maximum at Ganga Canal upstream (SW- 01).
- TDS was observed in the range of 148.0 – 154.0 mg/L with minimum at Solani River downstream (SW-04) and maximum at Ganga Canal Upstream (SW-01).
- COD was in the range of 7.6 – 8.9 mg/L with minimum at Solani Downstream (SW-4) and maximum at Ganga Canal Ustream (SW-01).
- BOD was in the range of 4.72 – 6.2 mg/L with minimum at Ganga Canal downstream (SW – 02) and maximum at Solani downstream (SW-04).

It is observed from the analysis of the surface water at 4 locations within the study area, which are compared with classes for designated use of River are suitable for “E class” i.e. irrigation, industrial cooling and controlled waste disposal.

Interpretation of Ground Water Quality

- All the samples were colourless meeting desirable norms (<5 Hazen).
- All the samples meet the desirable standards (pH ranges from 6.76 to 7.40).
- TDS in samples ranges from 245 mg/L to 296 mg/L. All the samples meet the permissible limit of 2000 mg/L.
- Total Hardness in the water ranges from 122.4 mg/L to 198 mg/L. All the samples meet the permissible limit of 600 mg/L.
- Calcium content in the water ranges from 10.5 mg/L to 62.4 mg/L all the samples meet the permissible limit of 200 mg/L.
- Magnesium content in the water ranges from 3.6 mg/L to 21.0 mg/L. All the samples meet the permissible limit of 100 mg/L.
- Sulphate content in the water ranges from 2.2 mg/L to 18.3 mg/L. The permissible limit of Sulphate is 400 mg/L for drinking water.
- Total alkalinity in the water samples ranges from 124.8 mg/L to 187.6 mg/L. All the samples are within the permissible limit of drinking water (600 mg/L).
- Chloride ranges from 12.5 mg/L to 18.4 mg/L. Which are below permissible limits (1000 mg/l).

3.3 Noise Environment

Eight monitoring locations were selected so as to represent the entire study area.

Observations

- The maximum and minimum concentrations for Noise were recorded as 63.0 dB (A) and 47.0 dB (A) respectively in day. The maximum concentration was recorded at NQ-04 (Iqbalpur Kamelpur) and the minimum concentration was recorded at NQ5 (Makanpur).

- The maximum and minimum concentrations for Noise were recorded as 50.0 dB (A) and 42.0 dB (A) respectively in Night. The maximum concentration was recorded at NQ-4 (Iqbalpur Kamelpur) and the minimum concentration was recorded at NQ-5 (Makanpur).

3.4 Soil Environment

Soil texture is sandy loam in most of the sites selected for monitoring. The pH is found in the range of 7.04 to 7.87. Potassium is 111.8 mg/kg found lowest at project site and maximum 138.0 mg/kg at Village Molna. Sodium 354 mg/kg found lowest at Village Puhana and highest 683 mg/kg at Village Salempur. SAR is 0.91 found lowest at Salempur Village and highest 47.4 mg/kg at Iqbalpur Kamelpur village.

3.5 Biological Environment

The biological study was under taken as a part of the EIA study report to understand the present status of ecosystem prevailing in the study area to compare it with past condition with the help of available data, to predict changes in the biological environment as a result of present activities and to suggest measure for maintaining its health.

A baseline survey was conducted to study floral and faunal diversity of the terrestrial and aquatic environment of the study area within in 10 Km radius of the plant site.

Interpretation of Flora and Fauna:

No Schedule I species was found in the core as well as buffer zone. No endangered or endemic species (as notified in IUCN Red Data Book) are located within the study area. No migratory birds breed in the study area. No Tiger Reserve/ Elephant Corridor/ Turtle breeding place is located within 10 Km radius of the study area. The present baseline floristic study has been carried out to inventories floral composition in the study area. Sampling stations were selected from project site and buffer zone of 10 km radial area around the core zone for carrying out vegetation surveys and an inventory of various floral species. In order to understand the composition of the vegetation, most of the plant species were identified in the field itself whereas the species that could not be identified a specimen was collected along with their photographs for identification later with the help of available published literature and floras of the region. The study area has no protected forest or national park or sanctuaries. Therefore, the biodiversity is medium in the study area due to dominance of anthropogenic activity in the study area. No schedule I wild life species or rare and endangered species have been recorded from the study area.

Flora

A floral survey was carried out in the core as well as buffer zone of the proposed project site.

Fauna

Faunal survey was carried out in the core as well as buffer zone of the proposed project site. No Schedule- I fauna as per (IWPA) Indian Wildlife Protection Act, 1972 was recorded in the study area during field survey.

3.7 Socio- Economic Environment

Socio-economic survey tools provide a means of improving understanding of local resource management systems, resource use and the relative importance of resources for households and villages.

Demographic structure of the study area

The Socio- economic and demographic details conditions prevailing in the 10 km radius was studied. Study area falls in Bhagwanpur Tehsil of Haridwar district in Uttarakhand. Haridwar is a district of Uttarakhand with its administrative headquarters located at Roshnabad, at a distance of about 12 km from Haridwar railway station. According to 2011 census, the district encompasses a geographical area of 53483 sq. km and has a population of 10,086,292 (persons) including 5,137,773 (males) and 4,948,519 (females). The district has a sex ratio of 963 (females for every 1000 males). The major religions in the district are Hindu (64.27%) and Muslim (34.28%) of the total population respectively. The literacy rate in the district is 73.43%. Main source of income in the district is from the agriculture sector and per capita income is Rs. 1,87,313. Total cropped area is 2,58,328 in hectares and the forest area is 431.79 in sq km (2019).

3.8 Traffic Survey and Projection for Common Biomedical Waste Treatment Facility, Haridwar

The seven days traffic survey has been conducted from 25.05.2023 to 31.05.2023 on the Metalled Road passing through adjacent to the project site. Average values have been used for traffic estimation. Manual of Standard & Specification for Two Laning of State Highways (IRC: SP:73-2007) has been used for traffic calculations and projections. A minimum 5% annual increase in the traffic is taken for the projection. Highest traffic volume however has been observed during working hours and returning hours i.e. 9:00-11:00 AM and 05:00-07:00 PM respectively due to movement of employees of the Mahalaksmi Sugar Mill. It is envisaged that the construction will be done in one year.

Types of Vehicle	No. Vehicles	PCU Factor	Equivalent PCU
Two Wheelers Scooter/Bikes	112	0.5	56
3 Wheeler Auto Rickshaw	40	0.5	20
Four Wheeler Car/Jeep	20	1.0	20
Six wheeler Buses/Truck	15	3.0	45
Heavy Vehicles	04	3.0	12
Total	192	-	153

Equivalent factor: recommended PCU factors for Various Types of Vehicles, The Indian Road Congress, 1990)

4.0 Anticipated Environmental Impacts and mitigation measures

The impacts and mitigation measures during construction and operation phases of the project are given below.

A. Construction Phase

Component	Emissions and Impact	Mitigation measures
Air	Emission due to site clearing, vehicles movement, hauling of materials, base course surfacing and moving of construction vehicle and activities like receipt, transfer and screening of aggregate, vehicular emissions Fugitive dust emission: aggregate processing operation.	Water sprinkling to keep dust under control. Reducing the speed of a vehicle to 20 km/hr Development of greenbelt. Proper covering to reduce dust in material handling. Pollution under control certificate for vehicles

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

Noise	Noise generation from earth moving equipment and material handling traffic.	Regular and proper maintenance of noise generating machinery and transport vehicles. Use of PPEs, mufflers, silencers
Water	No significant impact on surface and ground water during construction phase. Total water requirement during construction phase is 8 KLD. Water demand shall be sourced from the private tanker.	-- NA--
Land	As the project site is on non-agriculture land the impact on land use shall be of no significance.	Minimum disruption of current land Optimization of land requirement through proper site layout design
Biological	Fugitive emission will have slight impact on natural vegetation of the surrounding area.	Emission shall be within limit by incorporating EMP provisions. Development of greenbelt.
Occupational health & safety	Dust, noise, heavy equipment movement	First aid facilities Proper PPE , proper signboards All necessary precautions during work period
Soil & geology	Topsoil removal and compaction resulting in change in top soil structure	Necessary efforts will be made during preparation of site to minimize disruption of top soil.

B. Operation Phase

Component	Emissions & Impact	Mitigation measures
Ambient Air Quality	Air quality due to proposed project activities depends on the magnitude of handling of bio-medical waste, storage, treatment and transportation of wastes. PM10, PM2.5, SO2, NOx, HCl Emission from DG Dust generation Odours Fugitive emission due to shredding of treated waste for recycling or disposal.	Air Pollution Control Devices: High pressure venturi scrubber, Stack - 30 mtr height. Use of combustion control and emission monitoring system. Emissions from DG set containing PM, SO2 and NOx within permissible limit will be let-out through stack. Dust generation due to material handling and transportation shall be controlled by sprinkling water. Storage of waste in closed containers and its processing within the time limit. Development of greenbelt

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

		<p>Ambient air quality monitoring shall be carried out during operation phase. If monitored parameters are above the prescribed limits, suitable control measures will be taken.</p>
Noise	<p>Frequent vehicular movement for loading/unloading of waste and other transport are cause of adverse effect on noise environment.</p> <p>Equipment and machinery</p>	<p>Proper maintenance of the transport vehicles to maintain the low noise levels.</p> <p>Sufficient engineering control during installation of equipment.</p> <p>Acoustic insulation</p> <p>Proper and timely oiling & lubrication and maintenance of machineries.</p> <p>Personnel Protective Equipment (PPE)</p> <p>Adverse impact on occupationally exposed workers is not envisaged, as they will be provide with noise protection devices.</p>
Water	<p>Surface Water Resources</p> <p>No impact on surface water resources is anticipated during operational phase of the project, as there will no discharge of effluent.</p> <p>Ground water resources</p> <p>No impact on Ground water resources are anticipated during both construction as well as operational phase of the project as there is no with drawl of groundwater or effluent disposal on the land.</p> <p>Total water requirement during Operational phase is 11 KLD. The Water demand shall be sourced from Ground water supply.</p>	<p>Waste water generated during washing of area and scrubbing water(alkaline) bleed generated during cleaning of incineration gases will be treated in ETP.</p> <p>The treated effluent in ETP will be recycled or used for gardening.</p> <p>Adequate drainage system requiring channelization of runoff water will be made to avoid water logging. Therefore, no long term adverse impact on water quality (surface as well as ground) is anticipated during construction phase.</p> <p>Washings from the Laboratory will be treated in ETP.</p>

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

		<p>Wastewater generated from toilets will be diverted to septic tank followed by soak pit.</p> <p>Therefore, impact on water quality due to proposed activities would be insignificant</p>
Soil	<p>During the operational phase, of accidental spillage of waste on the routes through which waste would be transported and its adjoining areas if a vehicle carrying waste meets with an accident.</p>	<p>Biomedical waste will be transported only in closed containers.</p> <p>Emergency measures will take care of spillage of contaminants such as oil from equipment, fuel/chemicals spillage and etc. on the soil.</p> <p>Proper maintenance of equipment.</p> <p>Incineration ash, ETP Sludge from the Bio-Medical Waste Treatment Facility will be treated & disposed in the landfill of TSDF.</p> <p>Shredded plastic waste/needle & sharps shall be treated & disposed of in accordance with Biomedical Waste Management & Handling Rules.</p> <p>Municipal solid waste generated will be done as per MSW (M&H) Rule, 2000 as amended thereof.</p>
Ecology & Biodiversity (EB)	<p>There is no notified/protected ecologically sensitive area including national park, sanctuary, Elephant/Tiger reserves existing in the study area.</p> <p>The details of Flora/Fauna species and the wildlife habitat in the area covering 10 km radius have been collected to determine the existence of rare and/ or endangered species. There is no reserved forest, national park or sanctuary within 10 km radius of the plant.</p>	<p>Details of flora and fauna are attached.</p>
Socio Economic (SE)	<p>Property values are also affected by their proximity to a waste management facility. The</p>	<p>The CBWTF is coming up in a notified industrial area, its negative</p>

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

	other adverse impact includes stress arising from fear to risk to health, etc..	impact on local society would be minimal
Occupational health and safety	Handling, transportation, storage, disposal and transportation of biomedical wastes may cause health hazard if not handled properly.	During operation, periodic medical checkups of all the employees shall be done regularly. Workers will be provided with basic amenities like safe water supply, sanitation facilities, first aid, required personal protective equipment, etc.
Landuse/ Landcover	As the project site is on non-agriculture land its impact on land use shall be of no significance.	-- NA--

5.0 Environmental Monitoring Programme

The parameters and their respective frequency of monitoring as part of environmental monitoring plan for operation phases are tabulated below.

Table-Monitoring Schedule of Environmental Parameters

Sr. No.	Particulars	Duration of Sampling	Important Monitoring Parameters
1	Air Pollution and Meteorology		
	Air Quality		
	A. Stack Emission		
		Once in a every three month	Respirable Particulate Matter (PM10), Fine particulate (PM2.5) Sulphur dioxide (SO2), Oxides of nitrogen (NOx), Hydro Chloric acid (HCl).
	B. Ambient Air Quality		
	-	Once in a Six month	Respirable Particulate Matter (PM10), Fine particulate (PM2.5) Sulphur dioxide (SO2), Oxides of nitrogen (NOx)
2.	Water Environment		
	A. Ground Water		
	-	Once in a season	pH, Colour, TDS, TSS, Conductivity, Turbidity, TOC, Sulphates, Chlorides, Color, Total Hardness (as CaCO3), Total Alkalinity (as CaCO3), TKL, Chlorides (as Cl), Nitrate, (as NO3), Fluoride, Lead (as Pb), Cadmium (as Cd), Copper (Cu), total Chromium (as Cr), Mercury (as Hg), Nickel (as Ni), Cyanide (as CN), Manganese (as Mn), Iron (as Fe), Zinc (as Zn), BOD, COD, and Pesticides (Organo Chlorine, Organo Nitrogen, Synthetic Pyrethroid, Carbamates)

Proposed Establishment of Common Biomedical Waste Treatment Facility (CBWTF)

Project Proponent: M/s ECON Waste Solution

Sr. No.	Particulars	Duration of Sampling	Important Monitoring Parameters
	B. Surface Water		
	-	Once in a season	pH, Colour, TDS, TSS, Conductivity, Turbidity, TOC, Sulphates, Chlorides, Color, Total Hardness (as CaCO ₃), Total Alkalinity (as CaCO ₃), TKL, Chlorides (as Cl), Nitrate, (as NO ₃), Fluoride, Lead (as Pb), Cadmium (as Cd), Copper (Cu), total Chromium (as Cr), Mercury (as Hg), Nickel (as Ni), Cyanide (as CN), Manganese (as Mn), Iron (as Fe), Zinc (as Zn), BOD, COD, and Pesticides (Organo Chlorine, Organo Nitrogen, Synthetic Pyrethroid, Carbamates)
3	Noise Environment		
	Noise	Once in six month	Noise level in dB(A)leq
4.	Soil Environment		
	Soil at project site	Once in six months at project site	Analysis of pH, TDS, Conductivity, TOC, Fluoride, Lead (as Pb), Cadmium (as Cd), Copper (Cu), Total Chromium (as Cr), Mercury (as Hg), Nickel (as Ni), Cyanide (as CN), Manganese (as Mn), Arsenic (as As), Zinc (as Zn), Poly Aromatic Hydrocarbon (as PAH)

6.0 Project benefits

With the setting up of the CBWTF, there will be direct and indirect employment opportunities. In general, the project will have positive environmental impacts by biomedical waste management in the scientific manner that will reduce the future health hazard. Overall, this will have positive impact on socio-economic profile of the area.

- The proposed project will treat Biomedical Waste through scientific manner and help to mitigate the Bio medical waste generation.
- There should be positive impact on the socio-economic condition of the area in terms of direct and indirect employment due to the proposed project.
- Numbers of local trained persons are likely to find jobs.
- The project will spend 2.0 % of project cost under Corporate Social Responsibility (CSR).

7.0 Environmental Management Plan

- Collection of Segregated Biomedical waste and its transportation, storage, treatment and disposal in accordance to the Bio medical Waste Management and Handling Rules
- Compliances with statutory and environmental norms
- Develop concise waste management principles.
- Increase awareness on Occupational Health & Safety issues and waste minimization.

- Adopt policies and procedures to minimize the environmental impacts of waste treatment and disposal.
- Green belt development
- Corporate Social Responsibility

8. Summary and conclusion

The environmental status of the project site and study area of 10 km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment. Due to the proposed project activities, both positive and negative impacts identified on the study area. The impacts are caused by the construction activities as well as by the activities during the operation phases.

During the construction phase, transportation of material could have an impact on air, noise, biological environment. Adherence to the EMPs proposed during construction outlined above will ensure minimal environmental impact during construction phase.

During operation phase minor change in air quality is anticipated. With proper design of incinerator system and provision of high-pressure venture system for incinerator flue gas meeting the guidelines from MoEF/ CPCB this impact will be minimal. With provision for effluent treatment plant and with recycling/use of treated water no effluent discharge is envisaged from the facility.

Transportation of waste material, storage and handling can cause disturbances to the environmental variable which will be prevented by mitigation measures proposed under Environmental Management Plan (EMP).

Environmental Monitoring Program is also suggested to monitor the implementation of the environmental management plan to ensure the mitigations of adverse impacts.

Mitigation measures for various impacts identified during the study have been provided for a better environmental management.

With respect to occupational health, minimal impacts are anticipated on adhering to the operational safety practices outlined under EMP during operation.

The proposed common biomedical treatment facility is essential for effective treatment and disposal of biomedical wastes generated in the state. The proposed facilities for safe disposal of biomedical wastes may be considered non-polluting subject to the implementation of all the mitigation measures.