

Executive Summary

of

Draft EIA & EMP Report

FOR

**Proposed Common Hazardous Waste Treatment, Storage
and Disposal Facility (TSDF)**

AT

**Block No. / S. No. 75-A Paiki 2 Paiki, Khata No. 125, Block No./S. No. 75 B
Paiki Khata No. 124, Village Jamiyatpura, Taluka Balasinor, District
Mahisagar, Gujarat**

OF

M/s. Maurya Enviro Project Pvt. Ltd.

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1 INTRODUCTION

M/s. Maurya Enviro Project Pvt. Ltd. has proposed to set up Common Hazardous Waste Treatment, Storage and Disposal Facility (TSDF) will be located at Block No./S. No. 75-A Paiki 2 Paiki, Khata No. 125, Block No./S. No. 75 B Paiki Khata No. 124, Village Jamiyatpura, Taluka Balasinor, District Mahisagar, Gujarat. Proposed facility falls under Category B, 7 (d) Common hazardous waste treatment, storage and disposal facilities (TSDFs), as per EIA notification dated 14th September, 2006 & its subsequent amendments. M/s. En-vision Enviro Technologies Pvt. Ltd., situated at Surat, Gujarat has conducted EIA study, which is based on primary and secondary data collected during the study period.

2 PROJECT DESCRIPTION

2.1 PROJECT DETAILS

Maximum Capacity of the Land fill	9,70,912 MT Hazardous waste in two phases Phase-I 4,85,456 cu. m. and Phase-II 4,85,456 cu. m.
Land area	Total plot area is 1,13,817 m ² and land fill area is 53,267 m ²
Project cost	Rs. 55.0 Crore
Cost for EPCM	Capital Cost: Rs. 7.0 Crores & Recurring cost: Rs. 14 lacs Per Annum.
Cost for CSR activity	Rs. 1.37 Cr shall be utilized for first five years.

2.2 PROJECT REQUIREMENT:

Land requirement	The company has already acquired total land area of approximately 1,13,817.00 m ² .
Water requirement & its source	Total water requirement will be 130 KLD. Out of total water 5.0 KLD water will be utilized for the domestic purpose, 1.0 KLD water will be required for Laboratory, 10.0 KLD water will be required for the scrubber, 10.0 KLD water for other vehicle washing, 100 KLD for green belt development and 4.0 KLD for the dust suppression. Entire water will be sourced from ground water using bore well. For the withdrawal of ground water permission will be obtained from the Central Ground Water Authority before starting activity.
Electricity requirement & its source	Around 420 KVA electricity will be required for the proposed facility which will be sourced from State Electricity Board.
Manpower requirements	20 personnel will be employed. First preference will be given to local people.
Fuel requirement	Coal: 9.0 MTPD will be used for Hot air generator/Spray Dryer Diesel: 25 lit/hr will be required for the D. G. Set for emergency use.

2.3 WASTE WATER GENERATION

Around 26 KLD wastewater will be generated mainly from vehicle washing, domestic, laboratory, scrubber and from the landfill cell as leachate. Domestic waste water will be disposed through soak pit/well. Industrial waste water will be treated in proposed Effluent/leachate treatment plant. After treatment it will be evaporated by spray dryer.

2.4 AIR EMISSION & AIR POLLUTION CONTROL MEASURES DETAILS

The air emission from the proposed project will be landfill gas (VOC and H₂S), control system will be provided to collect and extract gas from the landfill and vent hole pipe network will be installed for the same. Air Emission from Spray Dryer/Hot air generator would be controlled by providing cyclone separator followed by wet scrubber as an APCM and air emission from D. G. set would be controlled by providing adequate stack height and acoustic enclosure during emergency only.

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2.5 DETAILS OF SOLID/HAZARDOUS WASTE GENERATION AND ITS DISPOSAL

Solid / hazardous waste i.e. Spent/used oil (25 Lit/Yr.) will be reused as a lubricant/ sent to recyclers. ETP Sludge (180 MT/Year) will be disposed to own landfill site. Fly ash (1 MT/Day) will be generated which will be disposed in own TSDF site.

3. DESCRIPTION OF THE ENVIRONMENT

3.1 INTRODUCTION

The baseline environmental quality of air, water, soil and noise has been assessed in a Pre-monsoon. March 2016 to May 2016 in a study area of 10 km radial distance from the project site along with socioeconomic and ecology status during study period.

3.2 ENVIRONMENTAL SETTING OF THE AREA

NO.	PARTICULARS	DISTANCE AND DIRECTION
1.	Nearest habitation	In village Bidna Muvada at around 0.6 km in North West direction
2	Nearest Town/ City	Balasinor at around 2.1 km in South direction
3.	Nearest State Highway	SH-141 at around 1.49 Km in South direction
4.	Nearest National Highway	NH-59 at around 4.1 Km in South direction
5.	Nearest Railway station	Sevaliya Railway Station at aerial distance of 19.64 km in South direction
6.	Nearest Airport	Vadodara Airport at a distance of 70 km in South direction
7.	Nearest water body	River: Mahi River around 10.2 km in South East direction Lake/pond/ Reservoir: Pond 1.96 km in East direction Sudarshan lake 2.78 km in South East direction
8.	Archeological Site	Dinosaur Fossil Park 7.5 km in north direction
9.	National Park/Wild Life Sanctuary	Jambugoda Wildlife Sanctuary at around 66 km in South South East direction
10.	Reserve Forests	RF1 - 0.8 km in East direction, RF2 - 8.15 km in North East direction
11.	Heritage site	Champner-Pavagadh at around 59.72 km in South South East direction

3.3 BASE LINE DATA

3.3.1 AMBIENT AIR QUALITY

The existing baseline levels within the study area with respect to (PM₁₀, PM_{2.5}, SO₂, NO_x, VOC, CO, CO₂ & Methane). During baseline monitoring, the arithmetic mean values of PM₁₀ varied between 43.75 – 59.00 µg/m³ while the 98th percentile values of PM₁₀ ranged between 51.54 – 65.54 µg/m³. The arithmetic mean values of PM_{2.5} varied between 13.29 – 20.08 µg/m³ while the 98th percentile values of PM_{2.5} ranged between 16.54 – 23.54 µg/m³. The arithmetic mean value for SO₂ was 8.00 – 11.29 µg/m³ and the 98th percentile of SO₂ was 9.54 -14.54 µg/m³. The arithmetic mean values of NO_x varied between 12.00 – 19.19 µg/m³ while the 98th percentile of NO_x ranged from 15.54 – 24.91 µg/m³. The arithmetic mean values of CO₂ varied between 0.30 – 0.37 mg/m³ while the 98th percentile of CO₂ ranged from 0.44 – 0.61 mg/m³. The arithmetic mean values of CO varied between 0.68 – 0.91 mg/m³ while the 98th percentile of CO ranged from 0.85 – 1.25 mg/m³. The values of VOC are observed to be below detectable limit.

From the above mentioned studies, it is observed that PM₁₀, PM_{2.5}, SO₂, NO_x, CO₂, CO, VOC and Methane concentrations were found well below the stipulated standards of CPCB.

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3.3.2 GROUND WATER QUALITY MONITORING

Groundwater samples from different villages in the study area were collected and analyzed during 1st March, 2016 to 31st March, 2016. The pH varied in the range of 7.30 – 7.80, Turbidity 0.2 - 0.4 NTU, Total Hardness 290 - 380 mg/l, Total Alkalinity 225 - 270 mg/l, Dissolved Solids 1130 - 1220 mg/l, Conductivity 1.7 – 2.4 ms/cm, Chloride 204 - 270 mg/l, Sulphate 49.9 – 83 mg/l. The Nitrate in the form of nutrient was present in the range of 22.1 – 28.5 mg/l. Heavy metals concentrations were observed to be below Indian standard/specification for drinking water IS 10500-1992.

3.3.3 SURFACE WATER QUALITY MONITORING

The physico-chemical characteristics of surface water during study period. The pH varied from 7.6 – 7.7, the turbidity varied from 0.8 – 0.9 NTU, the total dissolved solids varied from 433 - 447 mg/l, Conductivity varied from 2.2 – 2.3 ms/cm. The total alkalinity varied from 163 - 169 mg/l, the total hardness varied from 85 - 88 mg/l, calcium varied from 11.2 – 11.6 mg/l, chloride varied from 60 – 62 mg/l, and the sulphate varied from 63.2 – 66.2 mg/l.

The results indicated that the nutrient values in the form of nitrate varied from 26.1 – 26.7 mg/l. The values for demands parameters like DO and BOD varied from 4.3 – 4.5 mg/l and 8.9 – 15.8 mg/l. The levels of heavy metals viz. Nickel, Chromium, Cadmium, Copper, Lead, Iron, Manganese and Zinc were found within permissible limits.

3.3.4 BACKGROUND NOISE LEVEL

Background noise levels were measured at eight locations. The proposed facility, at the project site the maximum noise level was found 67.5 [46.8] dBA in daytime [night time]. The noise levels varied in the residential area of the study area during day time [night time] in the range of 35.8– 55.1 [31.5 – 44.9] dBA.

3.3.5 SOIL QUALITY

Total of eight nos. of samples have been collected from the study area and tested in the laboratory. The bulk density of soils in the region was in the range of 1.39 – 1.52 gm/cm³, which is considered as moderate.

Soil porosity is a measure of air filled pore spaces and gives information about movement of gases, inherent moisture, and development of root system and strength of soil. The water holding capacity of soils was in the range of 20 – 30% and Magnesium showed in range 20.2 – 25.6 gm/kg.

3.3.6 LAND USE PATTERN

Land use within 10 km radius of the study area has been determined with the help of satellite imagery, and broadly consists of settlements, Industrial, Mining, Tank / River / reservoir, Single crop, double crop, land with scrub, land without scrub area and predominant land use is Single crop.

3.3.7 SOCIO-ECONOMIC STUDY

The PIA for the concerned project comprises 36 major villages and urban areas in 10 km radius around the proposed project in Jamiyatpura village, Balasinor taluka of Kheda/Mahisagar district. Total population in the study area was 1,27,246 as per census 2011 respectively with a sex ratio of 937 in census 2011. In the study area total literacy rate as per census 2011 was found 70.3%.

3.3.8 BIOLOGICAL ENVIRONMENT

There is only one park i.e. Dinosaur Fossil Park present within 10 km radius of the proposed facility along with two reserved forest.

3.3.8.1 FLORAL DIVERSITY OF THE STUDY AREA

The dominant trees in the study area were generally planted either as homestead plantation or along the road side plantation. Farmland plantation is very limited. Otherwise natural tree cover is very less in this part of Mahisagar district. Dominant tree species in the farmland was dominated *Prosopis cineraria* (Khyigdo), *Azadirachta indica* (Limbad) *Ailanthus excelsa* (Aurdso). Homestead plantation was dominated by *Ficus benghalensis* (Vad), Road side Plantations were dominated by *Delonix regia* (Gaulmor), *Casuarina equisetifolia* (Sharu), *Azadirachta indica* (Limbad), *Acacia leucophloea* (Hermobaval), *Acacia nilotica* (Baval), *Leucaenaleucocephala* (Pardesi Baval), *Prosopis cineraria* (Khyigdo), *Ficus religiosa* (Piplo), *Ailanthus excels* (Aurdso). Among the enumerated flora in the study area, no rare and endangered flora was observed.

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3.3.8.2 FAUNAL BIODIVERSITY OF THE STUDY AREA

For the documentation of the faunal biodiversity of the study area with respect to birds, reptiles, amphibians, and butterfly species, a detailed survey had been conducted. None of the sighted animal species can be assigned endemic species category of the study area.

4 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

4.1 IMPACT ASSESSMENT

An effort has been made to identify various environmental, social and ecological impacts due to proposed project during construction and operation phases considering present environmental scenario as baseline. The corresponding mitigation measures to take care of the adverse impacts are also discussed in following sections.

4.2 IMPACTS DURING CONSTRUCTION PHASE & ITS MITIGATION MEASURES

Dust will be the main pollutant affecting the ambient air quality of the surrounding area during the construction phase. Impact during construction phase on air quality is limited to fugitive dust generated by earth moving activities, hauling of materials, base course surfacing and moving of construction vehicles. Motor vehicle transportation (to, from and around the site) particularly the traffic of trucks at the site, material movement into the site will introduce particulates and other exhaust gases into the local ambient air and there is some likelihood that during the construction period local air quality may be temporarily affected by these emissions. To reduce air pollution during this phase following mitigation measures will be implemented.

- Suitable surface treatment to ease the traffic flow and regular sprinkling of water to be carried out to control dust/fugitive emission.
- To reduce fugitive dust emission, construction activity shall be covered
- Construction material to be stored in covered shed.
- Condition of all vehicles, generators and compressors to be maintained and regularly serviced.

4.3 IMPACT DURING OPERATION PHASE & MITIGATION MEASURES

4.3.1 AIR ENVIRONMENT

The concentration of PM₁₀, PM_{2.5}, SO₂, NO_x, CO₂, CO, VOC and Methane are measured in existing environment. No additional emission of above gaseous and particulate matter due to land filling operation of industrial hazardous waste. During decomposition of hazardous waste, VOC and H₂S shall be generated but preventive measures will be taken by installation of gas control facility, which collects and extracts gas from the top of the landfill. D.G. Set of 175 will be installed as standby to be used during emergency only, regular maintenance of D.G. set will be carried out to reduce air emission.

cyclone and Wet scrubber will be provided to the spray dryer/hot air generator for control the air emission. Moreover, dust from landfill operations is mainly a problem during periods of dry weather but can arise from dusty waste as it is tipped and transportation activities of wastes. To prevent this dust, proper management should be carried out like; limiting vehicle speed, spraying roads with water, spraying water on powder type waste and covering powder type waste with daily soil cover within the site.

4.3.2 NOISE ENVIRONMENT

The noise pollution management will be taken up in the following manner;

- All vehicles entering into the project will be informed to maintain speed limits, and not blow horns unless it is required. The noise level within facility would be kept less than 75 dBA.
- Acoustic enclosures will be provided to D. G. sets to reduce the noise level.
- Further, Greenbelt will help to reduce the noise level within the facility.

By these measures, it is anticipated that noise levels in the facility will be maintained below 75 dBA.

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4.3.3 WATER ENVIRONMENT

Installation of trenches, cells, etc. and proper leachate collection and control system shall not cause any contamination of surface water as well as ground water. Waste water will be generated from the domestic activities, scrubber, vehicle washing and laboratory work which will be added in generated leachate for the dilution and it will be treated through proposed Effluent Treatment Plant (ETP). Treated water will be spray dried. Thus facility will maintain Zero Discharge Concept. Moreover, the company will adopt rain water harvesting to store rain water for future use, which will reduce impact on ground water table.

4.3.4 SOIL ENVIRONMENT

The proposed activity will be located on almost flat terrain topography. The main source of impact on land and soil environment will be due to solid waste generated during construction activity and industrial hazardous waste disposal during operation activities. In addition to this accidental spillage of hazardous waste and effluent can also degrade the soil environment. In case of such condition entire contaminated soil will be removed and disposed within land fill cell to reduce impact.

4.3.5 BIOLOGICAL ENVIRONMENT

As per ambient air quality modelling study there will be negligible impact on reserve forests. About 33 % of total project area (37,559.61 m²) shall be developed as green belt at facility boundary, road side, around offices & buildings. In Green belt area about 1,000 trees per acre of land (as per norms) shall be planted.

4.3.6 SOCIO-ECONOMIC ASPECT

Impact on Socio-Economic aspect will be mainly on population, migration, culture, economic status, health, education, drinking water facility, drainage facility, primary infrastructure, etc. Due to proposed facility, impact on socioeconomic environment will be nominal. However, proposed CSR activities will improve socioeconomic status of the area.

5. ENVIRONMENTAL MONITORING PROGRAMME

5.1 ENVIRONMENTAL MONITORING

Regular monitoring of environmental parameters like air, water, noise and soil as well as performance of pollution control facilities and safety measures in the facility are important for proper environmental management of any project. The following routine monitoring programme will be implemented.

- Flue gas emission for the parameters like PM, SO₂, and NO_x, once in a month.
- Vent Gases monitoring for the parameters like VOC and H₂S Once in a month till designed life span of the TSDF or as per consent of PCB, during active and post closure period.
- Liquid effluent monitoring once in a month.
- Ground water and soil quality monitoring once in a year.
- Noise monitoring once in a month.

6 ADDITIONAL STUDIES

6.1 RISK ASSESSMENT

The management is very much aware of their obligation to protect all persons at work and others in the neighbourhood who may be affected by an unfortunate and unforeseen incidence occurring at the works. Any hazard either to employees or others arising from activities at the facility shall, as far as possible, be handled by the management of the company and prevented from spreading any further.

7 PROJECT BENEFITS

7.1 PHYSICAL INFRASTRUCTURE

As a project M/s. Maurya Enviro Project Pvt. Ltd. will adopt CSR activities which will improve status of existing socioeconomic scenario of the area.

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7.2 CORPORATE SOCIAL RESPONSIBILITY (CSR)

Funds to the extent of Rs. 1.37 crores which will utilize for the CSR activities for the first five years after that the company will utilize the fund as per regulations for CSR activities.

Company will carry out the CSR activities in the field of Drainage facility, Safe Drinking Water Facility, Construction of Low cost latrines, Health Care Facility, New techniques in Agriculture, Awareness Programmes, Construction of Rain Water Harvesting, Promoting Education, Development of village schools, Plantation, Park / Playground, Sports etc.

8 ENVIRONMENTAL MANAGEMENT PLAN

8.1 ENVIRONMENTAL MANAGEMENT PLAN (ADMINISTRATIVE ASPECTS)

Environmental monitoring of different parameters will be done regularly and the activity will be coordinated by the Environmental Management Cell (EMC). Mitigation of environmental impact has to be implemented according to the suggestions and will be monitored regularly to prevent any lapse. The EMC will be under the overall supervision of the Manager (Environment). The cell will report on a regular basis to the management. The EMC will prepare a formal report on environmental management and mitigation at six month intervals. The company will undertake various training programme for improving the performance of the working personnel. Special training will be arranged in regular intervals to combat emergency scenarios that may occur during the operation.

9 CONCLUSION

Company has committed to implement all the pollution control measures to protect the surrounding environment and hence there will be negligible impact on the same.