EXECUTIVE SUMMARY

OF DRAFT EIA REPORT

FOR

Proposed Unit for Manufacturing of Solvents & Chemicals

OF

M/s Hindco Solvo Chem LLP

Village Jeoli, Tehsil Derabassi,
District, SAS Nagar Mohali (Punjab)

EIA Consultant

Chandigarh Pollution Testing Laboratory- EIA Division
(QCI/ NABET Certificate No: NABET/EIA/2225/RA/0250)
Address: E- 126, Phase- VII, Industrial Area, Mohali, Punjab
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EXECUTIVE SUMMARY

Project Name, Location

M/s **Hindco SolvoChem LLP** has proposed to set up a new manufacturing facility for the manufacturing of Solvents and Chemicals at Village Jeoli, Tehsil Derabassi, Dist. S.A.S Nagar Mohali (Punjab). The proposed products are covered under schedule 5(f) of EIA Notification, 2006 (amended from time to time) as 'A' category project.

Products and capacities

DETAILS OF PROPOSED PRODUCTS

S. No.	Product Name	Quantity
1(a).	Ethyl Acetate	80 TPD
1(b).	Methyl Acetate OR Butyl Acetate OR Propyl Acetate	10 TPD
2.	Hydrocarbon based industrial solvents, fuel oils and allied products	40TPD
3.	Formaldehyde	80TPD
4.	Reducers/ Retarders/ Thinners/ Organic composite solvents	10 TPD

Cost of the project The estimated project cost is about Rs 6.1Crores.

Raw Material Requirement

DETAILS OF RAW MATERIALS

Sr. No.	Name of Raw Material	Quantity	Source
1.	Denatured Ethyl Alcohol/ Industrial Alcohol/SDS	53.30 TPD	Domestic Market/Import
2.	Acetic Acid	64.00 TPD	….do…
3.	Methanol	42.32 TPD	….do…
4.	Propanol	06.37 TPD	….do…
5.	Butanol	05.88 TPD	….do…
6.	Heavy petroleum products/Crude Mixture of Hydrocarbons	40.00 TPD	….do…
7.	Organic solvents like Isopropyl alcohol, acetone, Denatured Ethyl Alcohol, Mix xylene etc. for blending/ formulations	01.50 TPD	….do…

Water Requirement

- The requirement of water shall be approx. 130 KLD and the same will be sourced from in house tube well to be provided with permission of competent authority or reuse of treated waste water.
- The entire waste water will be recycled/reused within the industry.
- The complex is zero liquid discharge.

Power Requirement

Maximum power requirement for the plant will be 250 KW (Total connected load). The power will be sourced from PSPCL (Punjab State Power Corporation Limited). Solar panel for outer lighting, LED lights for inner lighting will be used as power saver.

The industry shall provide 2 No. of DG sets each of capacity 175 & 125 KVA

Manpower Requirement

The proposed project shall generate direct employment for 30 persons.

S.No	Manpower	No.
1	Plant Manager	1
2	Purchase office	1
3	Plant operator	3
4	Storekeeper	1
5	Accountant	1
6	Labour/Gate keeper/Watch Man etc.	19
7	Waste Management Team	4
Total man power		30

MANUFACTURING PROCESS

Esterification Reaction Products

Esterification is the reaction between **Carboxylic acid (RCOOH) with an alcohol (ROH) to form an ester (RCOOR)** and water; or a chemical reaction resulting in the formation of at least one ester product. This compound has a sweet smell. The compound obtained is called ester. The chemical reaction occurring in the formation of the ester is known as an esterification reaction.

Majorly, we aim at manufacturing Ethyl Acetate at Hindco Solvo Chem LLP at a production of 80TPD. In addition to this we also aim at manufacturing Methyl Acetate OR Butyl Acetate OR Propyl Acetate at a rate of 10 TPD as per the market requirement.

Process for Ethyl Acetate

Chemical Equation is as below: -

$$CH_3CH_2OH + CH_3COOH === CH_3COOCH_2CH_3 + H_2O$$

Step I

Ethyl Alcohol (Industrial Grade) and Acetic Acid in equivalent quantities are fed in reaction column. Mixture is refluxed in closed system till acidity of the product is neutral (pH.7.0-7.5) which means reaction is complete and mixture is free from Acidic contents.

Step II

This crude product is fed into purification column. Here product is refluxed till moisture in final product is as per requirement of application/customer. Final product is then separated and ready for sale. It is packed in marketable quantities & dispatched.

Step III

Azeotropic mixture consisting of minimal water quantity, which has been generated in process & product, is fed into trap column to separate the water from the product. The product is sent to step-I for reprocessing and water is stored for use in cooling tower/boiler.

Solvent Recovery Unit

The crude product formed in step I is taken to purification Colum no.2 through a closed system and controlled by Rota Flow meters, where the purified product is separated and sent to Finished storage tank. Fraction containing water of esterification and traces of materials are sent to the Column 3 for recovery of any traces of solvents. Thus obtained mixture of solvents is reused/recycled in reaction kettle and water is recycled in cooling tower after the treatment.

In the whole process, all the columns i.e. Reaction Column, Purification Column and Stripper Columns, are used for distillation under atmospheric & no vacuum or additional pressure is maintained at any stage. All the process Columns are provided with double condensers i.e Primary Condenser and Secondary Condensers. Condensers have been provided with Sufficient Heat Transfer Area (HTA) and residence time so as to achieve maximum efficiency. In addition, vent condensers with chilled water will be provided to arrest any losses of vapours through Condenser's vents to atmosphere. For Cooling the hot water from Process condensers efficient cooling tower has been provided.

FRACTIONAL DISTILLATION OF HEAVY PETROCHEMICAL PRODUCTS AND MIX HYDROCARBONS TO MANUFACTURE ORGANIC COMPOSITE SOLVENTS OF MIXED HYDROCARBONS

In this section of the proposed project Fractional Distillation of heavy petroleum products (40 TPD) will be carried out. These heavy petroleum products will be procured from steel industry and Refineries. Different fractions of mixtures of different Aromatic and Aliphatic solvents will be separated depending upon their boiling point and rate of evaporation will be fractionated as per requirement of the end usage products. These products are widely used in major process consists of fractional distillation. Products are to be tailor made as per specifications of Industrial customers which differs from case to case.

Manufacturing Process of Formaldehyde

The commercial production of Formaldehyde is manufactured from oxidation- dehydrogenation using a silver catalyst involving either the complete or incomplete conversion of methanol.

Methanol is vaporized and mixed with air and steam and it is then passed over a thin bed of silver catalyst at 650°C. Formaldehyde is formed by the dehydrogenation of methanol.

The heat required for the endothermic reaction is obtained by burning hydrogen content in the off gasses, produced from the dehydrogenation reaction.

Unit Process:

The basic raw material for the manufacturing of Formaldehyde is Methanol. Controlled oxidation of methanol forms Formaldehyde as per the following reaction

$$CH_3OH + 1/2\ O_2 \longrightarrow HCHO + H_2O$$

Silver Granules are used as catalyst in the reactor. The catalyst is exhausted in 3 to 4 months' time which is regenerated & reused in the process after reactivation.

Unit Operations:

1). Firstly, methanol is subjected to methanol vaporizer, where the compressed air is fed into the bottom of the methanol vaporizer. The ratio of the methanol and air is maintained between 35%-45%.
2). this mixture is heated to the reaction temperature with the help of pre-heaters, before entering into the silver catalyst reactor.
3). The catalyst reactor is a fixed bed type filled with silver catalyst. The production stream is sent to the rectification and recovery station. Unreacted methanol is fed back to the process to methanol vaporizer.

4). Recycled stream contains 15% unreacted methanol, which is fed into methanol vaporizer as started above.
5). The Striping column is used to separate Formaldehyde. The product is stored in aqueous form in the storage tank.

Manufacturing of Retarders/ Reducers/ Thinners/ Organic Composite Solvents:
Manufacturing of various organic composite solvents/ Retarders/ Reducers will be carried out for various industrial applications by distillation/blending etc. These will be used in the coating industries and is conducted by physical blending in blenders wherein SDS/Denatured ethyl alcohol (70%-80%) will be blended with other organic solvents like Isopropyl alcohol, n-Butanol, acetone etc. as per requirement of the application. Used in printing inks, Marking colour, stripping, cleaning etc.

DESCRIPTION OF THE ENVIRONMENT

Study area

This chapter incorporates the description of existing environmental status in an area encompassed within 10 km radius around the proposed project of new unit for manufacturing of Chemicals at Village-Jeoli, Tehsil Derabassi, Dist. S.A.S Nagar Mohali (Punjab). Land area of the project is 2.32 acres or 9376 Sq. meter of M/s Hindco Solvo Chem LLP.

Study Period

The environmental monitoring for the EIA study, for the proposed new unit for manufacturing of Chemicals, has been conducted for the winter season. Initially, a reconnaissance survey of the study area was carried out and then field monitoring for measuring meteorological parameters, ambient air quality, water quality, soil quality and noise levels was carried out from 15th January, 2023 to 15th April, 2023. In addition, certain aspects like land area, socio-economic status, past meteorological conditions, etc., have been analyzed based on secondary information available from sources like district census reports, district gazetteers, Indian meteorological department, etc.
The methodologies for various environmental facets are as follows:
Primary data has been collected by monitoring & surveying of various environmental components/ parameters in the core zone during the study period, details of which are given in **Table - 3.1.**

Table-3.1 - Primary Data

<table>
<tr><th>S. No.</th><th>Parameters</th><th>Description</th></tr>
<tr><td>1</td><td>Meteorology</td><td>
<table>
<tr><th rowspan="2">Month</th><th colspan="2">Temperature</th><th>Humidity</th></tr>
<tr><th>Max</th><th>Min</th><th>Max</th></tr>
<tr><td>Mid-Jan.,23 to Mid-Feb., 23</td><td>22ºC</td><td>4ºC</td><td>88%</td></tr>
<tr><td>Mid-Feb.,23 to Mid-March, 23</td><td>29ºC</td><td>7ºC</td><td>76%</td></tr>
<tr><td>Mid-March,23to Mid-April, 23</td><td>31ºC</td><td>14ºC</td><td>77%</td></tr>
</table>
Monthly average Temperature (ºC) & Rainfall (mm)
<table>
<tr><td colspan="2">RAINFALL:</td></tr>
<tr><td>Normal Annual Rainfall</td><td>1061 mm</td></tr>
<tr><td>Normal Monsoon Rainfall</td><td>848 mm</td></tr>
<tr><td>Number of rainy days</td><td>49</td></tr>
<tr><td colspan="2">TEMPERATURE:</td></tr>
<tr><td>Mean Maximum</td><td>40.40 °C (May & June)</td></tr>
<tr><td>Mean Minimum</td><td>7°C (December-January)</td></tr>
</table>
</td></tr>
<tr><td>2</td><td>Ambient Air Quality</td><td>Ambient air quality monitoring (24 hourly), twice a week. Parameters are PM10, PM2.5, SO2, NO2 & CO.
No. of Locations: 8 locations in core and buffer zone.</td></tr>
<tr><td>3</td><td>Noise Quality</td><td>Noise level monitoring (Day & Night time), once in a season.
No. of Locations: 8 locations in core and buffer zone.</td></tr>
<tr><td>4</td><td>Water Quality</td><td>Ground water sampling, once in a season.
No. of Locations: 8 locations in core and buffer zone.
Tested for physical and chemical parameters.</td></tr>
<tr><td>5</td><td>Soil Quality</td><td>Soil sampling, once in a season.
No. of Locations: 8 locations in core and buffer zone.</td></tr>
<tr><td>6</td><td>Ecological & Biodiversity Factors</td><td>Biodiversity survey, once in a season.
Location: Core and buffer zone.</td></tr>
<tr><td>7</td><td>Socio-economic Environment</td><td>Socio-economic survey, once in a season.
Location: Core and buffer zone.</td></tr>
<tr><td>8</td><td>Geology</td><td>Collection of Secondary Data</td></tr>
<tr><td>9</td><td>Land Use</td><td>The land use/ land cover map has been generated on 1:50,000 scale using Satellite imagery and ground truth information</td></tr>
</table>

3.4 Ambient Air Quality

The ambient air quality monitoring was done to assess the current status of air quality in the study area. Monitoring was carried out at eight stations for 15.01.2023 to 15.04.2023.

Ambient Air Quality Abstract

Locations	PM_{10} µg/m^3			$PM_{2.5}$ µg/m^3			SO_2 µg/m^3			NO_2 µg/m^3			CO mg/m^3		
	Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.	Max	Min	Avg.
Project site	80.0	79.2	79.6	39.4	37.6	38.5	6.8	6.6	6.7	12.8	12.4	12.6	0.42	0.40	0.41
Bijanpur	81.2	80.4	80.8	40.2	38.8	39.5	6.8	6.2	6.5	13.0	12.8	12.9	0.48	0.44	0.46
Punsar	82.1	81.4	81.75	40.8	39.4	40.1	7.2	6.8	7	14.4	13.6	14	0.56	0.51	0.53
Aganpur	80.4	79.6	80	38.8	36.2	37.5	6.6	5.8	6.2	12.6	11.8	12.2	0.44	0.42	0.43
Toffapur	81.8	79.2	80.5	39.2	38.0	38.6	7.6	7.0	7.3	14.8	13.2	14	0.61	0.57	0.59
Jaula Kalan	83.6	81.2	82.4	41.4	40.2	40.8	7.2	6.8	7	14.2	13.0	13.6	0.63	0.60	0.61
Tarrak	82.6	80.0	81.3	40.8	39.6	40.2	6.9	5.9	6.4	12.8	11.8	12.3	0.56	0.52	0.54
Bhukhri	81.6	80.0	80.8	39.9	38.1	39	6.7	6.5	6.6	13.0	12.4	12.7	0.34	0.28	0.31
P98	**83.1**			**40.8**			**7.4**			**14.5**			**0.59**		
CPCB Standards	**100**			**60**			**80**			**80**			**4**		

The observations based on a perusal of the results for the study period are summarized below:

Respirable Particulate Matter (PM_{10}):
A maximum value of 83.6µg/m^3 was observed at Jaula Kalan (AAQ6) and minimum value of 79.2µg/m^3 was observed at Project Site & Toffapur (AAQ1 & AAQ5). The average values were observed in the range of 79.6 to 82.4µg/m^3.

Particulate Matter ($PM_{2.5}$):
A maximum value of 41.4µg/m^3 was observed at Jaula Kalan (AAQ6) and minimum value of 36.2µg/m^3 was observed at Aganpur (AAQ4). The average values were observed to be in the range of 37.5 to 40.8µg/m^3.

Sulphur Dioxide (SO_2)
Maximum concentration of SO_2 is observed to be 7.6 µg/m^3 at Toffapur (AAQ5) and minimum value of 5.8 µg/m^3 observed at Aganpur (AAQ4).The average values were observed to be in the range of 6.2 to 7.3µg/m^3. P98 remained 7.4 during this period

Nitrogen Dioxide (NO_2):
The various forms of Nitrogen in NO, $NO_2$and N_2O are collectively called as Oxides of Nitrogen. Maximum concentration of NO_x is observed to be 14.8 µg/m^3 at Toffapur (AAQ5) and

minimum value of 11.8 µg/m^3 observed at Aganpur and Tarrak (AAQ4 & AAQ7). The average values were observed to be in the range of 12.2 to 14.0µg/m^3.

Carbon Monoxide (CO):

The anthropogenic source of CO is incomplete combustion of carbon-containing fuels, such as gasoline, natural gas, oil, coal, and wood. The largest anthropogenic source of CO is vehicle emissions. Maximum concentration of CO is observed to be 0.63 mg/m^3 at Jaula Kalan (AAQ6) and minimum value of 0.28 mg/m^3 observed at Bhukhri (AAQ8). The average values were observed in the range of 0.31 to 0.61 mg/m^3. P98 remained 0.59 during this period.

The descriptive statistics of the monitoring results at all the locations are indicating that pollution levels w.r.t PM10, PM2.5, So2, NOx, CO at Project Site does not exceed the standards prescribed by the CPCB.

Water Environment

Water Quality

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess water-use in construction, drinking, cooling and horticulture purpose. The water quality at the site and other locations within the 10 km impact zone was monitored during 15 January to 15 April, 2023.

Surface water quality results are summarized below:

- pH of the surface water collected ranged from 7.78 – 7.89
- TDS was found to be 366-389 mg/l. The tolerance limit is 1,500 mg/l as per IS:2296
- Total hardness was found to be 283-298 mg/l.
- Nitrate was found 1.6-1.8 mg/l.
- Total Coliform in water was 28000-33000 MPN/100ml. The likely source of bacteriological contamination may be due to the proximity to residential area
- All the heavy metals were not detectable.

Conclusion: -

The surface water results of upstream & downstream of Ghaggar River compared with Water Quality Criteria prescribed by CPCB for different classes of water. Based upon the perusal of analytical values-

- The surface water of Ghaggar River can be categorized as Class "B" indicated that all the parameters were found to be within the prescribed limits of designated best uses of water.

Ground Water

Groundwater has been found as an important source for the local needs of water consumption for various purposes, mainly domestic and agriculture. Keeping in view the importance of groundwater to the local population, samples of ground water were collected from the study area for the monitoring and assessment of groundwater quality.

The Results above shows that the pH of all the ground water samples was within the prescribed

standards following in the range of 7.25-7.68

The concentration of heavy metals like Total Chromium, Mercury, Selenium, and Cadmium were not detected. Along with that Zinc, Manganese were also found not detected. Iron was observed in the Range of 0.10 to 0.18 which illustrates that it lies below permissible limit accordance to IS: 10500:2012.

Total Hardness of the entire ground water samples were found to be 274-290 mg/l which is exceeding acceptable limit but below permissible limit at all location, on the other hand, concentration of Total Dissolved Solids ranged between 337- 387 mg/l which demonstrate all the ground water location may less contaminated from anthropogenic activity.

Noise Environment

Noise is one of the most undesirable and unwanted by-products of our modern life style. It may not seem as insidious or harmful as air and water pollutants but it affects human health and wellbeing and can contribute to deterioration of human well-being in general and cause neurological disturbances and physiological damage to the hearing mechanism in particular. It is therefore, necessary to measure both the quality as well as the quantity of noise in and around the site.

Table 3.11 - Noise Level Results Leq dB (A) in & around Project Area

S. No.	Location No.	Day Time (Hourly Equivalent)	Noise Standards	Night Time (Hourly Equivalent)	Noise Standards
1.	Project site	66.2	75	54.6	70
2.	Bijanpur	42.2	55	33.4	45
3.	Punsar	41.6	55	30.8	45
4.	Aganpur	43.4	55	31.6	45
5.	Toffapur	44.1	55	31.8	45
6.	Jaula Kalan	43.6	55	32.4	45
7.	Tarrak	42.2	55	33.4	45
8.	Bhukhri	44.3	55	32.6	45

The day time noise level at the project premises was observed to be 66.2dB (A), and during night time the noise level was recorded to be 54.6dB (A). It should be noted down that the noise levels during the day time as well as night time were estimated to be under the prescribed standards by Central Pollution Control Board.

3.7 Soil Quality

Soil is generally considered as the upper layer of the earth that is dug or ploughed, especially the loose material in which plants grow. It is generally unconsolidated material composed of soil particles produced by disintegration of rocks. The void spaces between the particles may contain Air, Water or both.

The analytical results of the soil samples collected during the study period are summarized below.
The pH of the soil is an important property; vegetation cannot grow in low and high pH value soils. The normal range of pH in the soils is 7.14 to 8.43. The pH values in the study area are varying indicating that the soils are falling in slightly alkaline to moderately alkaline.
Based on the electrical conductivity, the soils are classified into four groups (Normal, Critical for germination, Critical for growth of the sensitive crops, Injurious to most crops). The electrical conductivity in the study area is varying from 326 to 368µmhos/cm. This is good for germination.
The other important parameters for characterization of soil for irrigation are the primary nutrients – Nitrogen, Phosphorus and Potassium (N, P, K) and the secondary nutrients Calcium, Magnesium and Sulphur (Ca, Mg, S). The primary and secondary nutrient elements are known as major elements. This classification is based on their relative abundance, and not on their relative importance.
Nitrogen encourages the vegetative development of plants by imparting a healthy green color to the leaves. The available Nitrogen as N in the study area is varying from 2.54 to 6.31 kg/hectare. Phosphorus influences the vigor of plants and improves the quality of crops. In the study area available Phosphorus was found in varying quantities of 3.12 to 6.84 kg/ha.
Potassium enhances the ability of the plants to resist diseases, insect attacks, cold and other adverse conditions. The available potassium in the study area varies between 32.2 to 79.6 Kg/hac. This is deficient for crops.
Organic Carbon in the study area ranges from 0.36 to 0.77 %. This is average to sufficient for the crops.
As per physical data, the soils in the study area are coarse to modularity fine texture, having modulated build density and impressively modulate water holding capacity. As per physical characteristics, the soils are rated as moderately to good for agriculture. Based on the observation during field visit of 10km buffer zone from the boundary of cement plant, the soils are sandy loam predominantly. These soils can be classified as modularity good soil with traces or gentle slopes and is modulate land for sustained agriculture practices.

Hydrogeology

S.A.S Nagar district is located in the eastern part of the Punjab state and lies between North latitudes of 30°21’00” and 30°56’00” and East longitudes of 76°30’00” and 76°55’00” covering a geographic ambience of 1189 sq.km. The district is bounded by Patiala and Fatehgarh Sahib District in the south-west, Ropar district in the northwest, Chandigarh and Panchkula in the east and Ambala district of Haryana state in the south.
The Ghaggar River and its tributaries form the natural drainage system on Derabassi block of the district. While north-eastern part is drained by Siswan Nadi, Jainti Devi Ki Rao and Patiali Rao, which emerge from the Siwalik Hills. The Siswan Nadi drains the northern part of the district and finally converges with Sutlej River in the Ropar district. While Jainti Devi Ki Rao and Patiali Rao drains in NE-SW direction and joins the Ghaggar River.
The land use pattern of an area depends largely on climatological and physiographic features. Net area sown in the district is 750 sq.km, which constitute about 73% of the total area. Irrigation in the district is mainly by means of tube wells. The area irrigated under tubewells constitutes about 67%

of the gross irrigated area. Paddy constitutes the main Kharif crop whereas wheat is the main Rabi crop.

Land Environment

The objective of assessing the land use details of the area is to know the existing land use pattern of the area and enable one to know about the land that can be used for the proposed development activities in the study area. It also enables to envisage the scenario emerging due to the increase in demand for land with increase in population and the impacts arising due to the interface with the various project activities.

The study area comprises of agricultural land of about 15556.70ha (48.70%) including agricultural fallow land 9026.89 ha (28.26%). Built up land in the study area cover an area of 4496.96ha (14.08%) approximately. Open land of about 926.01 ha (2.90%) and Forest of about 463.03 ha (1.45%). Vegetation and Riverbed of about 1231.40ha (3.85%) and 242.51ha (0.76%).

Industries within study area (10km radius)

A list of Industries within 10 Km radius of the Project site is provided at Table 3.16 of the EIA report.

MITIGATION MEASURES

AIR POLLUTION CONTROL

- All the exhaust gas emissions will be channelized all through the process and will be reused for various purposes like heating & remained chemical utilization remaining gas will be exhausted through a chimney after treatment in APCD.
- Multi-Cyclone Separator with Boiler as an air pollution control measures to control the emission of particulate matter the flue gas emission will remain well within gaseous emission norms prescribed by the CPCB.
- Two Stage alkali scrubber will be installed for control of emissions in case Pet Coke is used as fuel.
- To control the air emissions from D.G. Set, stack height of 4.0 m(AGL) shall be provided
- Green belt will be developed on 33% area of the total project area which will help in attenuating the pollutants emitted by the plant.
- Adequate measures for control of fugitive dust emissions will be taken.

WASTE WATER TREATMENT

- Liquid effluents- Proposed project is based on ZERO discharge. Waste water to the tune of 40.5 KLD will be generated and 50 KLD capacity ETP will be provided for treatment of the same.

NOISE MANAGEMENT

Green belt development (plantation of dense trees across the boundary) will help in reducing noise levels in the plant as a result of attenuation of noise generated due to plant operations, and transportation.
Personal protective equipment like ear plugs and ear muffs will be provided to employees working in the noise prone areas.
Time to time oiling and servicing and O and M of machineries will be done.
Acoustic enclosure for heavy machines/equipment/D.G. sets would be used.

ODOUR MANAGEMENT

- Scrubber will be installed for scrubbing the residual gases from any product stream
- Cascade system to be used for less exposure.
- Temperature will be kept under control during operation phase.

Solid & Hazardous Waste Generation and Disposal

All the Solid & hazardous waste generated, will be collected, stored separately and disposed off as per the guidelines issued by CPCB &Punjab Pollution Control Board.

Solid waste

Category	Type of Waste	Color of Bins	Disposal Method	Total Waste (Kg/day)
Bio Degradable	Organic Waste	Green	Recycler	9.5
Non- Biodegradable	Recyclable Waste	Blue	Recycler	5.5
	Total			15

Hazardous waste

Used oil from machineries/D.G. Set will be carefully stored in HDPE drums in isolated covered facility. The used oil will be sold to vendors authorized by Central/State Pollution Control Board for the treatment/recycling of the same. Suitable care will be taken so that spills / leaks of used oil from storage could be avoided. The ETP sludge will be sent to TSDF Nimbua and drums/ other containers will be sold to registered recycler.

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Breakup of EMP cost of the proposed project is given in the Table below: -

Sr.No.	Details	Capital Cost (In Lacs)	Recurring Cost (In Lacs/annum)
1.	APCD	10	0.7
3.	ETP/STP	20	1.5
4.	Green belt development with maintenance plan for 3 years	7.5	1.5
5.	Rain Water Harvesting	8	0.5
6.	Environment Monitoring	0.2	0.3
7.	Solid Waste Management	1.5	0.3
8.	Energy Conservation	0.8	0.2
9.	Disaster and Risk Management	5	2.5
10	Miscellaneous	2	1.0
Total		55	8.5

CER Activities (Corporate Environmental Responsibility)

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on Financial and Social benefits will be given to the local people. The Firm has separately earmarked **Rs. 55 lakhs** towards the Environment Management Plan (EMP) and the following Corporate Environment Responsibility (CER) Activities shall be carried out as per MoEF&CC Office Memorandum dated 25th Dec. 2021.

Sr.No.	Activities as per OM dt. 01.05.2018	Cost (Rs. Lacs)	Timeline	
			Start Date	End date
1.	**a).** Provision of Rainwater Harvesting in Village Jandli Tehsil Lalru District SAS Nagar. **b).** Liquid & solid waste management in the Government Elementary Smart School Village Ambshapa Tehsil Lalru District SAS Nagar .	6.1	April, 2024	March, 2027
Total		6.1		

GREEN BELT DEVELOPMENT

- Out of the total project area 33% will be utilized for green belt development.
- Plantation will be done as per Central Pollution Control Board (CPCB) Norms & in consultation with the DFO/DM.
- The plantation in and around the project site will help to attenuate the pollution level.
- Native species will be given priority for plantation.
- The periphery will be devoted of green belt area.
- The plantation would start along with the start of the construction activities of the proposed unit.