

EXECUTIVE SUMMARY

for

PROPOSED PESTICIDE MANUFACTURING PROJECT

at

Khasra Number 529/2 (3-15), 530/2(5-15), 531/1(0-10), Sub Tehsil-Ghanour, Tehsil-Rajpura, Village-Hassanpur, District -Patiala, Punjab

Type of Project	Greenfield Project
Total Plot Area	8417.46 m ²
Cost of Project	Rs. 8.95 Crores
Category as per EIA Notification 2006 and its amendments:	5(b), Category- A (Pesticides industry and pesticide specific intermediates (excluding formulations))
Proposed Production Capacity	Insecticides- 1100 MT/Annum Fungicides- 300 MT/Annum Herbicides- 800 MT/Annum Advance Specific Pesticide Intermediates- 1000 MT/Annum Research and Development based Products- 300 MT/Annum Total Production Capacity- 3500 MT/Annum (excluding formulations) Pesticides Formulations- 5000 MT/Annum
ToR Details	TOR Letter No. IA-J-11011/239/2021-IA-II(I)
Monitoring Season	December 2020 - February 2021
NABET Acc. No.:	NABET/EIA/1922/RA0197 valid till 23.11.2022.

Project Proponent

M/s SAFE AGROCHEMICALS LLP

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UID No.: EQMS/EIA/SACLLP/5(b)A/PR640/15052021

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ENVIRONMENTAL CONSULTANT:



(Approved Consultant)



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EXECUTIVE SUMMARY

INTRODUCTION

M/s Safe Agrochemicals LLP deals in Manufacturing of chemicals and chemical products. The organization has proposed to setup a "Pesticide Manufacturing Project" at Khasra Number 529/2 (3-15), 530/2(5-15), 531/1(0-10), Sub Tehsil-Ghanour, Tehsil- Rajpura, Village-Hassanpur, District -Patiala. The project will be involved in production of insecticides, herbicides, fungicides, advanced pesticide specific intermediates and research & development-based products. The total capacity of the plant will be **3500 MT/Annum (excluding formulation)**. The plant also proposes **formulation unit with a total capacity of 5000 MT/Annum**.

Details of proposed products are mentioned below in **Table 1.1**.

Table 1.1 : Details of Proposed Production Capacity

Sr. No.	Name of Product	Proposed capacity (MT/Annum)	CAS No.
INSECTICIDE GROUP			
1	Lambda Cyhalothrin	1100	91465-08-6
2	Bifenthrin		82657-04-3
3	Profenofos		41198-08-7
4	Thiamenthoxam		153719-23-4
5	Imidacloprid		138261-41-3
6	Diafenthiuron		80060-09-9
7	Chlorpyrifos		2921-88-2
8	Dinotefuran		165252-70-0
9	Pymetrozine		123312-89-0
10	Pyproxifen		95737-68-1
11	Acetamiprid		135410-20-7
12	Chlorantraniliprole		500008-45-7
13	Flubendiamide		272451-65-7
14	Fipronil		120068-37-3
FUNGICIDE GROUP			
15	Pyraclostrobin	300	175013-18-0
16	Azoxystrobin		131860-33-8
17	Tebuconazole		107534-96-3
18	Difenoconazole		119446-68-3
19	Metalaxyl		57837-19-1
HERBICIDE GROUP			
20	Penoxsulam	800	219714-96-2
21	Glyphosate		1071-83-6
22	Pretilachlor		51218-49-6
23	Clodinofof Propargyl		105512-06-9
24	Quizalofop Ethyl		1071-83-6
25	Metribuzine		21087-64-9
26	Cloquintocet Mexyl		99607-70-2
ADVANCED PESTICIDE SPECIFIC INTERMEDIATES			

Sr. No.	Name of Product	Proposed capacity (MT/Annum)	CAS No.
27	1,2,4 Triazole	1000	288-88-0
28	2- Chloro 5- Chloromethyl Thiazole (CCMT)		105827-91-6
29	1,2,4 Triazinone		33509-43-2
30	Meta Phenoxy Benzaldehyde (MPBD)		39515-51-0
31	Phosphonomethyliminodiacetic Acid (PMIDA)		5994-61-6
32	2,2-Dimethylcyclopropanecarboxylic acid (Lambda cyhalothric acid)		68127-59-3
	Research and Development Based Products		300
	TOTAL	3500	
	Pesticide Formulations	5000	

*** No banned pesticides shall be manufactured**

***As per season, the demand of products pattern changes and accordingly products will be manufactured. All the products will not be manufactured at a time. The likely production capacities of the products will depend upon demand but limited to the sanctioned capacity.**

TERMS OF REFERENCE

The application for the scoping of the project was submitted to the Expert Appraisal Committee (EAC) Industry 3, MoEF&CC, New Delhi and the standard ToR was granted to the project vide **F.No. IA-J-11011/239/2021-IA-II(I) on 15th June, 2021.**

PROJECT CATEGORIZATION

As per the Government of India (Ministry of Environment, Forests & Climate Change (MoEF&CC),) EIA Notification 2006 and further amendments, the proposed project involves production of "Pesticide and pesticide specific intermediates" and hence falls under **Activity 5(b); Category "A"**. Thereby, the project requires environmental clearance from MoEF&CC, New Delhi. Also, the proposed project falls within 5 km radius of inter-state boundary i.e., **Haryana (4.6 km, E).**

PROJECT LOCATION

The proposed project will be coming up at Khasra Number 529/2 (3-15), 530/2(5-15), 531/1(0-10), Sub Tehsil-Ghanour, Tehsil- Rajpura, Village-Hassanpur, District -Patiala, Punjab. The establishment of pesticide manufacturing unit will be done over a total land area of 8417.46 m². The coordinates of center of the site are **Latitude: 30°23'58.69"N and Longitude: 76°39'14.04"E.**

PROJECT DESCRIPTION

The project will be involved in production of insecticides, herbicides, fungicides, advanced pesticide specific intermediates and research & development-based products. The total capacity of the plant will be **3500 MT/Annum (excluding formulation)**. The plant also proposes **formulation unit with a total capacity of 5000 MT/Annum**. Since, environmental clearance has been exempted for formulation units as per EIA Notification, 2006 and further amendments, formulation capacity for the plant has not been added. Capacity of different pesticides are given in **Table 1.2.**

Table 1.2 : Capacity of Manufacturing Plant

S.No.	Type	Quantity (MT/Annum)
1.	Insecticides	1100
2.	Fungicides	300

Proposed Pesticide Manufacturing Project
Sub Tehsil- Ghanour, Tehsil- Rajpura, Village- Hasanpur, District- Patiala, Punjab
By M/s Safe Agrochemicals LLP

3.	Herbicide	800
4.	Advanced Pesticide Specific Intermediates	1000
5.	R&D product	300
	Total	3500
	Pesticide Formulations	5000

Salient features of project are given below in **Table 1.3**.

Table 1.3 : Salient Features of Proposed Project

S. No.	Particular	Details			
1.	Name of the Proponent	M/s Safe Agrochemicals LLP			
2.	Project Status	New (Green Field)			
3.	Products to be manufactured & Capacity	Product- 3500 MT/ Annum Pesticide Formulations- 5000 MT/Annum			
4.	Total Plot Area	8417.46 m ²			
5.	Green belt area/Tree Plantation area	2801.33 m ² (33.28% of plot area)			
6.	Water Requirement	Total water requirement- 110 KLD Proposed Freshwater requirement- 75 KLD Source: Ground Water			
7.	Wastewater Generation	38 KLD (Domestic Sewage- 3 KLD, Industrial Effluent- 35 KLD)			
8.	Wastewater Treatment Unit	ETP Capacity: 10 KLD MEE Capacity: 50 KLD STP Capacity: 10 KLD			
9.	Power Requirement	Proposed: 1000 KVA Source: Punjab Power Corporation Limited (PBPCCL) Power Backup- DG Set: 1x380 kVA and 1x500 kVA			
10.	Manpower Requirement	Construction Phase: 50 no. of local Labours Operation Phase: 65 permanent employees and 50 temporary employees			
11.	Project cost including Environmental controlling equipment	Rs.8.95 Crores			
12.	No. of Boilers/TFH/Furnaces/DG sets etc. with capacities	Particular	Capacity	Type of Fuel	Quantity
		Steam Boiler	2 TPH, 3 TPH	Agro Waste Briquette	250 MT/month
		DG Set	1x380kVA, 1x500 kVA	HSD	140 Litre/hr

DESCRIPTION OF THE ENVIRONMENT

Site Characteristics

The proposed project will be located at Khasra Number 529/2 (3-15), 530/2(5-15), 531/1(0-10), Sub Tehsil-Ghanour, Tehsil- Rajpura, Village-Hassanpur, District -Patiala, Punjab over a total land area of 8417.46 m². The coordinates of center of the site are Latitude: 30°23'58.69"N and Longitude: 76°39'14.04"E. The site is located about 10 km from the Ambala city and the state

boundary of Haryana at a distance of 4.60km, SE. The site is well connected with National Highway-1 (4.87 km, NNE direction) via interconnecting roads surrounding the project site. Local Road adjacent to the project site in the north direction of project connected to 10 m Patiala-Ghanaur-Shambhu road leads to National Highway-1. Nearest Railway station is Ambala City Railway Station which is located at 10.8 km in ESE direction from the Project Site. Nearest Airport from the project site is Ambala Air Force Station located at 15 km in ESE direction and nearby civil airport is Chandigarh International Airport (32 km, NNE direction). Nearest City is Ambala (10 km E) and nearest village is Kaboolpur (0.83 km, W) from the Project site.

Ghaggar River is flowing at 5.10 km (SE) from the project site. There is no National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes/ wildlife corridor exists within 10 km radius around the Project site. There are no defense installations present in the study area.

Topography and Meteorology

The topography of the proposed site is flat terrain and the elevation of the site ranges between 265 to 266 m above the sea level. Topography around 10 km area of the proposed site is slightly undulating and ranges between 251 to 289 amsl.

Temperature—Annual Average mean minimum temperature varies from 2.7°C (Jan) to 22.2°C (August) while mean maximum temperature varies from 24.1°C (Jan) to 42.8°C (June). The highest monthly average temperature is 42.8°C in June where lowest monthly average temperature is 2.7°C in the month of January. January is the coldest month.

Relative Humidity—Relative Humidity at 8:30 hr varies from 50% (May) to 87% (January) while at 17:30 hr it ranges from 28% (April) to 72% in (August). During the monsoon season relative humidity generally varies between 76% to 84% in the morning and 51% to 72% in the afternoon.

Rainfall— The monsoon starts in the Last week of Month May and normally condition up to September and the trend of maximum average rainfall recorded in the area identifies the period between June to September. Total annual mean rainfall was observed to be 898.2 mm. Highest monthly average rainfall is 264.7 mm in the month of July whereas lowest monthly average rainfall is 4.5 mm in November.

Wind Direction—The wind pattern of the region shows that the predominant wind direction is NW for most of the months

Soil Quality

As per the grain size distribution the percentage of Sand in all sampled soil was found varied from 52.7% to 63.4%, Silt varied from 19.2 to 29.8% and Clay from 15.8% to 23.1% during Winter season. Thus, the soil texture is Sandy Loam. The soil pH ranges were observed from 7.69 to 8.04 during study season, thereby indicating the soil is varied from Slightly alkaline to Moderately alkaline in nature. The Organic Carbon content of sampled soil during study varied from 0.59% to 0.83%, thereby implying that soil is having Medium to High organic content. Available nitrogen content in the surface soils ranges between 218 kg/ha to 342 kg/ha thereby indicating that soil is having Low to Medium available nitrogen content. Available phosphorus content ranges between 15.9 kg/ha to 22.1 kg/ha thereby indicating that soil is having Medium available phosphorus. Available potassium content in these soils ranges between 187 kg/ha to 242 kg/ha thereby indicating that the soil is having Medium potassium content.

Water Quality (Ground Water & Surface Water)

Eight ground water samples were collected from different locations around the site during study period. The water samples were examined for physicochemical parameters and bacteriological parameters.

The analysis results indicate that the pH ranged between 7.09 to 8.19, which are well within the specified standard of 6.5 to 8.5 limit. Total hardness was recorded to range from 94 to 820 mg/l, which is within the permissible limit 600 mg/l at all locations except at Village Pipal Mangauli &

Mardanpur. The Total Dissolved Solids (TDS) concentration recorded ranged between 240 to 1895 mg/l and was within the permissible limits (2000 mg/l) at all locations. Chlorides was recorded to range from 60 to 518 mg/l, which is within the permissible limit 1000 mg/l at all locations. Sulphates at all the locations were within the permissible limits (400 mg/l) as it ranged between 26 –142 mg/l. Bacteriological studies reveal that no coliform bacterial are present in the samples. The heavy metal contents were observed to be in below detectable limits.

All physical and general parameters were observed within the permissible limit as per IS10500:2012 (Second Revision) except Total hardness at Village-Pipal Mangauli & Mardanpur. Thus, it is recommended that water be **filtered and disinfected prior to be given for drinking water requirements**.

Five surface water samples were collected from different locations around the site during study period. The water samples were examined for physicochemical parameters and bacteriological parameters. Comparing the values of pH, DO, BOD and Total Coliforms with 'Use based classification of surface waters' published by Central Pollution Control Board; it can be seen that the analyzed surface waters is moderately polluted and classified as "**Class 'C'**" and can be used as Drinking water source after conventional treatment and disinfection. Thus, all the analyzed parameters were within the limits specified for suitable for meeting "**Drinking water requirement after conventional treatment and disinfection**".

Air Quality

AAQ monitoring was done at eight locations within the study area considering dominant wind direction, populated area and sensitive receptors. The maximum concentration of PM₁₀, PM_{2.5}, SO₂, NO_x, CO, NH₃, VOC, Methane & Non-Methane was 87 µg/m³, 48 µg/m³, 16.2 µg/m³, 24.5 µg/m³, 1.21 mg/m³, <20 µg/m³, <0.1 µg/m³, <0.5 ppm & <0.2 ppm respectively.

Particulate Matter (PM₁₀): The PM₁₀ values ranges from **42 µg/m³ to 87 µg/m³** in the study area. The **Maximum** PM₁₀ values i.e. 87 µg/m³ were observed to be at **Rajpura industrial Area (AAQ-8, 9.19km, NW)** and **minimum** i.e. 42 µg/m³ was observed to be at **Nanheri (Government School (AAQ-7, 4.21 km, SE))** under residential area in downwind direction. The results show the values within the NAAQS limit at all the Location. The highest pollution levels are observed in the **Rajpura industrial Area (AAQ-8)**. In **Rajpura industrial Area** value were observed due to Industrial activities & vehicular traffic emission in nearby highway NH-64 & NH-1.

Particulate Matter (PM_{2.5}): The PM_{2.5} values ranges from **18 µg/m³ to 48 µg/m³** in the study area. The **maximum** PM_{2.5} values i.e. 48 µg/m³ were observed to be at **Rajpura industrial Area (AAQ-8, 9.19km, NW)** in Upwind direction and **minimum** i.e 18 µg/m³ was observed at **Nanheri (Government School (AAQ-7))** at distance of 4.21 km-SE in residential in the Downwind direction. The results show the values Within the NAAQS limit at all the locations. The highest pollution levels are observed in the **Rajpura industrial Area (AAQ-8)**. In **Rajpura industrial Area** value were observed due to Industrial activities & vehicular traffic emission in nearby highway NH-64 & NH-1.

Sulphur Dioxide (SO₂): The SO₂ values ranges from **5.6 µg/m³ to 16.2 µg/m³** in the study area. The **maximum** SO₂ values i.e. 16.2 µg/m³ were observed to be at **Rajpura industrial Area (AAQ-8, 9.19km, NW)** and the **minimum** SO₂ values were observed to be at **Project Site (AAQ-1)**. The results show the values were within the NAAQS permissible limit (80 µg/m³). The sources of the higher concentration in the area might be vehicular traffic emission in nearby highway NH-1 & NH-64 and industrial activities in area to some extent.

Oxides of Nitrogen (NO_x): The NO_x values range from **7.5 µg/m³-24.5 µg/m³** in the study area. The **maximum** NO_x values i.e. 24.5 µg/m³ were observed to be at **Rajpura industrial Area (AAQ-8)** located at distance of 9.19 km, NW in upwind direction and **minimum** values i.e. 7.5 µg/m³ were observed to be at **Project Site (AAQ-1)**. The results show the values were within the NAAQS

permissible limit ($80 \mu\text{g}/\text{m}^3$) and the higher pollution levels are observed in the Industrial Area due to Burning of fuel like coal, diesel, etc to some extent.

CO: The CO values ranges from **$0.32 \text{ mg}/\text{m}^3$ - $1.21 \text{ mg}/\text{m}^3$** in the study area. The **maximum** CO values i.e. $1.21 \text{ mg}/\text{m}^3$ were observed to be at **Rajpura industrial Area (AAQ-8)** and **minimum** values i.e. $0.32 \text{ mg}/\text{m}^3$ was observed to be at Ullana, (Government School) (**AAQ-6**), which is a residential area. The results show the values were within the NAAQS permissible limit ($4 \text{ mg}/\text{m}^3$). The sources of the higher concentration in the area might be due vehicular traffic emission in nearby Highway NH-1 & NH-64.

The NH_3 , VOC, Methane & Non-Methane values was **$<20 \mu\text{g}/\text{m}^3$, $<0.1 \mu\text{g}/\text{m}^3$, $<0.5 \text{ ppm}$ & $<0.2 \text{ ppm}$** respectively observed in the study area.

Noise

Noise was monitored at eight locations in the study area. The noise level at Patiala to Ghanaur Road & Pipal Mangauli location was observed to be exceeding the ambient CPCB noise limit. The major source of the noise in the Patiala to Ghanaur Road & Pipal Mangauli is due to community activity in residential area and nearest road Patiala to Ghanaur Road and all other location of the study area is found within the prescribed National Ambient Noise Quality Standards.

Ecology and Biodiversity

Flora: The proposed project located at Khasra Number 529/2 (3-15), 530/2(5-15), 531/1(0-10), Sub Tehsil-Ghanour, Tehsil- Rajpura, Village-Hassanpur, District -Patiala, Punjab. There is no forest in the study area and the vegetation is restricted along roadside and other open areas along the agriculture fields. The core zone of the project is mainly having agriculture land use. No major vegetation is present in the core zone. The vegetation is restricted along agriculture field boundary, roadside and other open spaces. Trees species observed in core zone include *Acacia nilotica*, *Acacia arabica*, *Ailanthus excels*, *Ficus religiosa*, *Acacia catechu*, *Azadirachta indica*, and *Delbergia sissoo*. The herbs and shrubs includes *Calotropis gigantea*, *Tribulus terrestris*, *Parthenium hysterophorus* and *Datura metel* were observed in the core zone. Among the grasses species *Cynodon dactylon* and *Saccharum munja* observed in the core zone. The major land use in 10 km area is agriculture and settlement. There is no forest area present within the 10 km area. The tree species observed in 10 km area *Acacia nilotica*, *Acacia arabica*, *Ailanthus excels*, *Ficus religiosa*, *Acacia catechu* *Prosopis cineraria*, *Acacia leucophloea*, *Ailanthus excels*, *Ficus religiosa*, *Azadirachta indica* and *Delbergia sis* etc.

In the study area, no rare and endangered plant species was observed (Source: Red Data Book of Indian Plants, N.P Nayar and A. P. K. Sastry, B.S.I. 1988).

Fauna: No tree/ vegetation is present within the core zone hence no wildlife exists within the core zone. However, the presence of commonly found reptiles and amphibian species has been reported by the local people. Common avifaunal species has also been observed in the core zone. Wildlife in the study area is restricted to commonly found mammal species this is mainly due to the urbanisation and industrialization of the area.

No significant carnivorous and herbivorous wild animals are found in the area blue bull (*Boselaphus tragocamelus*), Mongoose (*Herpestes edwards*) and Jungle Cat (*Felis chaus*) are the common mammals observed in the area. However, the presence of fox and hare has also been reported in the area by the villager during public consultation.

Amphibian & Reptiles (*Herpetofauna*)

Frog, Indian bull frog, snake like Indian cobra (*Naja naja*); Dhaman (*Lycodon aulicus*), and lizard is encountered at various places in study area

Avifauna

Avifauna is an important part of the ecosystem playing the various roles as scavengers, pollinators, predators of insect, pest, etc. They are also one of the bio indicators of different status of environment and affected by urbanization, industrialization and human interference. They can be used as sensitive indicators of pollution and malfunction of ecosystem. Due to presence of the favorable habitats for avifauna, wide range of resident avifauna observed in the study area

Threatened and Endangered Mammals: The listed fauna found in study area has been cross-checked with Red Data Book of Indian Animals (Zoological Survey of India). There is no endangered or Schedule-I faunal species present in the study area.

Socio-economic Environment

As per the census records 2011, the total population of 10-km radius study area was recorded as 125607 persons with 66287 males and 58873 females. The data reveals the sex ratio as 888 females for every 1000 males in the study area. Total literates' population was recorded as 81666 (65.01%) in the study area with 46835 males (37.28%) & 34831 females (27.73%).

In the study area the Main and Marginal Workers population was observed as 36240 (28.85%) and 5506(4.38%) respectively of the total population (125607). Thus, it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in aplenty. The 'Main Workers' were observed as 36240 persons (28.85%) to the total population of the study area and its composition is made-up of Casual laborers as 9099 (25%), Agricultural laborers as 3955 (11%), Household workers 1095 (3%) and other workers as 22091 (61%).

Traffic

The site is accessible through Patiala to Ghahaur to Shambhu Road which passes across 1.28 km South-East of project site. The transportation of material will be through Patiala to Ghahaur to Shambhu Road (near project site) which is further connected to the NH-1. The transportation of raw material and finished product will be through Road only. As per the study conducted, no major traffic is present at this road. During the study period maximum traffic in study area was observed during evening. Less traffic movement is found during early morning hours. With the operation of proposed project, the traffic volume would increase further. However, the incremental will be very less in comparison to the carrying capacity of the road. Thus, no major impact is anticipated in the nearby road due to the proposed project.

ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Air Environment

During Construction Phase, air quality may get impacted in the area during construction/installation phase due to various project activities including excavation and filling, Transportation and storage of raw materials & debris, movement of construction vehicle, Operation of construction machinery & equipment and Operation of DG sets. To mitigate the same, water sprinkling shall be done. Raw materials/debris/excavated muck shall be properly stacked and stored under covered conditions at designated areas/storage yards. Debris/muck will be regularly removed from the site for regular storage/disposal. Locally available raw material will be preferably used. Construction workers shall be provided with mask.

During Operation Phase,

There are different sources of air pollution during operation phase of the project which could directly and indirectly affects the atmosphere. The major continuous source of emission from the project identified are PM₁₀, PM_{2.5}, NO_x, CO, SO₂, HCl, HBr, Cl₂. The proposed project shall lead to minor increase in GLC due to the proposed activities. Nearest locations in the upwind direction are Kaboolpur Village which is 1.28 km in WSW direction from the project site and Salempur which is 1.63 km in NW direction, nearest locations in the downwind direction are Mirzapur which is 1.42 km in E direction from the project site and Nanheri which is 4.21 km in the SE direction from the

project site. Measures like APCS such as Bag Filter with cyclone and Wet Scrubbers, appropriate stack heights, covered trucks, loading and unloading during day time, water spray, green belt development, PPE to workers etc. are proposed as the mitigation measures. Hence no major impact of proposed project expansion is predicted on the nearby habitat.

Noise Environment

During Construction Phase, source of noise during the construction phase of project will be from construction activities such as site levelling, foundation; operation of construction machinery such as machinery and other activities. Also, there will be noise generation from movement of vehicles carrying material, loading & unloading activities, operation of DG set, etc. It is proposed that beside the barricading of Boundary wall, the following control measures will be adopted at the points near to the source of noise to keep the ambient noise levels. The construction activity will be carried out mostly during daytime. Proper maintenance of noise generating transport vehicles. Regular maintenance of heavy earth vehicles may be adopted to reduce noise levels. Noise level from loading & unloading of material will be reduced by usage of various types of cranes & placing material on sand or sandy bag beds.

During Operation Phase, the main sources of noise generation in the proposed project are various types of ID fans, Boiler, pumps & compressors, DG sets, etc, which generates noise. This may create nuisance among the people living nearby the project. Mitigation measures to be followed will include: using equipments meeting noise standards, acoustic enclosures and mufflers at required locations, vibration pads and foundation at heavy machinery areas, insulation of noise generating units like machinery area with enclosed doors, provision of separate cabins and use of earmuffs, well developed roads, proper & timely maintenance of roads and provision of green belt.

Water Environment

During Construction Phase, facilities like drinking, sanitation shall be provided to labour during the installation/construction purpose. Water will be required for domestic purpose of construction workers and staff and for carrying out construction activities, curing of structures, material mixing etc. max 50 local labour will be employed daily. Utilization of water may impact the water demand of the vicinity. Construction will be continued only for 1-2 Years; thus, the impact is anticipated to be short term. No wastewater will be discharge to surface or ground water. Thus, no impact on Water Quality is envisaged during construction phase. However, all standard practice shall be maintained at site to maintain water quality.

During Operation Phase,

The proposed project scheme is based on the zero liquid discharge scheme. Hence no wastewater shall be discharge outside the plant boundary. Storm water from roof tops shall be channelized in a rain water harvesting tanks. Roof top rain water will be collected in tanks and reused after filtration as per requirements. This shall lead to reduction in freshwater demand. Thus, there shall be no major impact on the water environment due to proposed project.

Measures taken for water quality will include provision of STP for domestic wastewater treatment and complete reuse of treated water, MEE and ATFD for High COD/High TDS waste water, ETP and RO for Low COD/Low TDS waste water treatment and complete reuse of treated water maintaining "Zero Liquid Discharge", regular maintenance of wastewater/effluent treatment system, provision of solvent recovery plant, online monitoring of treated water and connectivity with PPCB & CPCB servers and separate storm water and effluent lines.

Waste Management

During Construction Phase, generation of sand, gravel, concrete, stone, bricks, wood, metal, glass, polythene sheets, plastic, paper etc. as waste. Various operations during the construction activities lead to the varied compositions in the total solid waste stream and affect the site. Thus, this waste is required to be collected, segregated and disposed in manner that it does not mixes or polluting air, water and soiling environment. Excavated topsoil shall be used for backfilling/ greenbelt

development & plantation. Municipal waste will be minimal as most of construction workforce will come from near areas and no construction camp is proposed. The waste generated will be collected and segregated and will be disposed off suitably. Hence impacts will be insignificant and for short duration only. These impacts will be confined to the construction site only and no adverse impact on the surroundings is anticipated. As soon as the construction will be over, all wastes from the site will be cleared with due care, meeting regulatory requirement, if any.

During Operation Phase, there will be generation of different kind of Industrial hazardous and non-hazardous wastes from production process and other activities. Waste which are hazardous may cause harm if come into contact with skin and sludge and may cause nuisance if not maintained properly. Due to proposed plant, there will be generation of STP and ETP sludge, MEE salts, used oil generation due to operation of DG sets and Fly ash generation. Separate paved storage area for Hazardous/Non-Hazardous/Municipal will be provided within the plant area. The Hazardous waste will be sent to CHWTSDF site while other solid wastes are segregated in recyclable/salable and non-salable/non-recyclable waste. Salable/recyclable waste will be sold to approved recycler/vendor and Non-salable/non-recyclable waste shall be sent to CHWTSDF. Waste will be disposed as per Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2021. The ETP sludge and MEE salt will be temporarily stored at site in separate room and sent to the TSDF for disposal. Solvent recovery plant shall be installed to reduce the waste generation. Waste oil will be collected and stored in leak proof steel drums. Same will be disposed as per the Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2021. Biodegradable waste will be disposed off in MSW disposal pit to get converted to manure for horticulture purposes, Recyclable waste will be sold off to authorized vendors, Solid Waste Management (Amendment) Rules, 2020 shall be followed. Bio-medical waste from Health center will be given to approved Bio-medical waste handler. Fly ash will be given to Brick Manufacturer. Measures will be adopted to minimize the waste. Waste audit shall be conducted annually at site. Hence there shall be no major impact on the surrounding environment due to proposed project.

Land Environment

During Construction Phase, the land use of the project site has been changed and considered in industrial land use zone of notified master plan, Rajpura vide memo no. 1060-STP(P)/SP-327 dated 15.04.2021. The land cover will change from vacant land to industry. As the land is devoided of any structure or trees thus no clearance of land is required. Impacts may include land use/land cover change, Site Clearance and removal of vegetation, Site Clearance and removal of vegetation, Land use/Land cover change outside the plant area if labour camp will be established, Generation of Construction waste Debris, Scraps, excavated soil, used bags and steel waste, Generation of Dust from vehicular and construction equipment movement.

During Operation Phase,

Surroundings of project site is residential, agriculture, industrial and mixed use. There is generation of waste which could pollute the land. Environmental Impacts may include: Impact from handling, storage, use or spillage of hazardous materials on to the land, from discharge of sewage or other effluents to water or the land, Generation of Municipal & Hazardous wastes, Generation of Sewage sludge or other sludge from effluent treatment.

Mitigation Measures:

- Labor will be hired from nearby villages. However, temporary camp sites will be provided with minimum requirement of drinking and sanitation facilities for workers during working hours.
- Solid Waste Management (Amendment) rules, 2020 and Construction and Demolition (C&D) Waste Management Rules, 2016 shall be adhere.
- Hazardous waste generated in the Plant shall be disposed as per Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2021.
- All precautions shall be taken to avoid spillage from storage.

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- All PPCB/MoEF&CC norms are maintained during use of treated water in horticulture.
- Spillage shall be managed by detection of leaks in the first place from structures or vessels. Spillage during loading unloading will be channelized properly to drains.
- Paved area will be provided near the process area to avoid soil contamination
- The loading unloading activity will be done within a safe zone defined and in a marked safe area
- There are no trees shrubs present on the site so no clearance work is involved in the proposed project.
- Treated water will be reused within the plant after proper sewage treatment and “Zero Liquid Discharge” will be maintained.

Soil Quality

During Construction Phase, soil may get contaminated, if sewage is disposed of on the soil, littering of municipal waste, e-waste and spillage of HSD, oil and fuel. Excavation or digging will be required to provide Underground tanks and foundation. Movement of construction vehicles and equipment will lead to compaction of soil. There may be the erosion of top fertile layer of soil. Measures proposed will include reuse of top fertile layer in landscaping, storage of HSD on paved surface in covered condition and provision of drains around such surface to drain out spillage and prevent mixing from soil, collection of municipal waste and disposal through local agency on daily basis, best management practices to be adopted to avoid the contamination of soil. Solid Waste Management (Amendment) rules, 2020 and Construction and Demolition (C&D) Waste Management Rules, 2016 shall be followed.

During Operation Phase, spillage of material like effluent, chemical, Hazardous waste, used oil and fuel may contaminate the soil. Due to improper disposal of solid waste & liquid waste includes the leaching from biodegradable waste and effect on flora from spillage of waste on soil. Improper disposal of Effluent during shutdown may encounter soil and contaminate. Also, there are chances of soil erosion. Thus, mitigation measure measures are required to be taken to prevent the soil pollution which are given below

Mitigation Measures

- Liquid effluent shall be collected through closed loop channel to treatment scheme. Only treated water shall be used for gardening after assuring standards norms of irrigation. No untreated water will be discharged on the land.
- All underground tanks will be provided with extra prevention to avoid leakage. Sensors will be provided to detect leakage.
- Hazardous waste will be managed, transported and disposed as per Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2021. Separate room with paved area will be provided at plant for storage of Hazardous waste.
- Solid waste collection and disposal area will be paved area to avoid contamination of soil through leachate.
- Water less cleaning will be adopted wherever spill occurs to avoid runoff
- No area shall be left excavated or open after any repair & maintenance works
- Used oil shall be stored in ISO certified drums to reduce leakage chances and sent to recycler or TSDF
- Drains will be provided near machinery area to collect spillage or leakage and channelized to the treatment scheme.
- Dry absorbent will be used.
- All sensors and manual checking shall be done to check leakage.
- 33.28% plot area shall be developed as green area.

Ecology and Biodiversity

During Construction Phase, Excavation and filling up operation may result in fugitive dust emission. The dust deposition on pubescent leaves of the surrounding vegetation may leads to temporary

reduction of photosynthesis. Such impacts would however be confined mostly to the initial period of the construction phase and would minimize through paving of roads, surface treatment, regular water sprinkling in dust generating areas and greenbelt development. The impact on the ecology of the surrounding area during the construction stage will be insignificant in nature. Greenbelt development along the plant boundary, further development of gardens and lawns near admin building will mitigate the residual impact on natural resources.

During Operation Phase, the impact on the surrounding ecology of the project will mainly occur from the deposition of air pollutants. The incremental emission of air pollutants is not likely to induce any significant changes in the ecology, because during operation of proposed project the ambient air quality is likely to remain within the national ambient air quality standards. The deposition of small amount of pollutants may also affect the surrounding ecosystem.

Mitigation Measures

- The project is planned with most efficient air pollution control systems for achieving air emissions norms, so that the impact on nearby ecosystem is minimized.
- Water sprinkling / dry fog type system will be used to suppress the generation of fugitive dust.
- No wastewater shall be discharge outside the plant premises. The treated effluent shall be recycled and re-utilized within the premises for de-dusting and maintenance of green belt.
- All the solid and hazardous waste shall be disposed as per the norms.
- Green belt and boundary wall will be provided to reduce the impact of air and noise. M/s Safe Agrochemicals LLP will develop a dense greenbelt in about 2801.33 sq.m (33.28%) area within the plant. On an average about 700 trees/shrubs along with, garden, herbs shall be planted within the premises as a greenbelt. Generally local/indigenous fast-growing trees/ shrubs will be planted. 6 m wide green belt is proposed all over the boundary wall. Green belt planning shall be done as per guideline laid by CPCB.

Socio-Economic Environment

During Construction Phase, construction activities have their impacts on surroundings like unpleasant view, increased population, increased traffic, increased noise, emissions, waste generation & piling of waste etc. All these have impacts on the society. However, construction phase will generate employment options for skilled and unskilled labour. Thus, measures are necessary to be adopted to overcome these impacts. As per the skills, preference to local people shall be given in employment. All basic facility like sanitation, toilets, canteen, camps shall be provided within the plant area. Suitable dust suppression techniques will be adopted, such as water sprinkling will be taken during construction period. PPE shall be given to all labour working in noisy and risky area. Health and safety officer shall be deputed all the time during construction phase.

During Operation Phase, there will be requirement of the skilled and unskilled labour. Proposed project leads to the employment generation of 115 employee's (permanent & temporary) during operation phase. Indirect employment opportunities will also be generated in various activities like raw material and final products transportation, contractual manpower for non-critical activities at the plant (canteen, gardening, housekeeping etc.). The industrial growth of the region will help in infrastructure development in the area. The proposed production will increase the indigenous production of Pesticides and reduce the Demand-supply gap and also will ease the availability of Pesticides to farmers. It will also generate income for government through taxes. Overall, the project will have positive impacts on socio-economic environment. Through CER activity company management will be committed to improve infrastructural facilities for the local people in field of Environmental, Medical, and Transportation etc.

However, due to operation & maintenance there may be various risks for the staff and other nearby people. The risks associated are accidents of people, collapse of structures, fall/slip while working, electrical shocks, electrical fire, fire in DG sets & fuel tanks, health impact due to air & noise pollution etc. Various safety measures are proposed to be followed which should be taken to prevent the accidents. Also, improper storage and disposal of waste may decrease the aesthetic value, lead to risk of disease may occur foul smell which will cause nuisance in staff and nearby

area. At the extent all possible measures will be adopted by the M/s Safe Agrochemicals LLP to reduce impact on staff and nearby area.

Mitigation Measures

- Adequate stack height and proper pollution control equipment will be provided for all flue gas stacks and the ambient air quality will be maintained as per PPCB/CPCB norms.
- Proper waste water treatment will be done and treated water will be completely reused to maintain "Zero Liquid Discharge".
- Solid Waste Management Rules, 2016 shall be followed.
- All the chemicals and substances will be handled as per the MSIHC rules and the hazardous waste rules 2008 and amendment, if any.
- Greenbelt development around the proposed new project area will help to mitigate gaseous pollution within and around the project area.
- More income to Government through more tax's revenue on higher amount of production.
- All the workers will be continuously trained for proper handling and transportation of hazardous materials as per Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2021
- PPE's will be provided to workers.
- Apart from Plant utility and manufacturing area, R&D lab, Canteen, admin, drinking water, Water treatment, etc facilities will be provided within the plant.

PROJECT BENEFITS

The proposed project shall help in improvisation of nation's GDP and make a mark of country in the Agrochemical Market. It will increase the indigenous production capacity of pesticides. M/s Safe Agrochemicals LLP will develop green belt area of 33.28% of plot area. The project shall follow the concept of "Zero-liquid Discharge Concept" by installation of Treated Water Recycle System to recycle the treated effluent back into the premises. The proposed expansion will lead to direct and indirect employment to total 115 persons for facilities like transportation, contractual labour for loading/unloading of materials and unskilled labours.

ENVIRONMENT MANAGEMENT PLAN

EHS policy is adopted by the plant for sustainability. A separate EMP cell, Fire & Safety cell and Occupational Health Centre will be provided in the plant for compliance of Environmental Management Plan and OHSAS guideline.

The total cost of the proposed project will be **Rs. 8.95 Crores. Rs.180 Lacs** of capital cost & **Rs. 65 Lacs/year** of recurring cost will be spent on Environment Management Plan.

CONCLUSION

Thus, it can be concluded on a positive note that after implementation of the mitigation measures and Environment Management Plan, the operation of the project will have no major impact on environment.