EXECUTIVE SUMMARY

for

EXPANSION IN EXISTING UNIT
FOR
"PROPOSED TECHNICAL GRADE PESTICIDE MANUFACTURING UNIT"

at

Khata No. 130/137, 131/138, 132/139, 133/140,& H.B no 150 VillageJaspalon, Tehsil Khanna, District-Ludhiana, Punjab- 141421

Type of Project	Brown Field Project
Category as per EIA notification 2006 and its amendments:	Schedule **5(b);** Pesticides industry and pesticide specific intermediates (excluding formulations) **Category A**
TOR Details	**TOR Letter No**.IA-J-11011/374/2023-IA-II(I) dated 17th October 2023
Production Capacity after Expansion	**Existing Formulation:** 9000 MTPA **After Expansion production Capacity:** 19620 MTPA (Technical Pesticide: 18000 MTPA, By-products: 1620 MTPA)
Cost of Project	**Existing project cost** : Rs. 5.90 Crores; **Proposed project Cost**: 4 Crores **Total Cost after expansion**: 9.9 Crores
Monitoring Season and Laboratory:	**March-2023 to May-2023** (Advanced Environmental Testing And Research Lab)
NABET Acc. No.:	**Certificate no.: NABET/EIA/2225/RA 0303 valid till 23.11.2025**

Project Proponent

M/s AcufineLifesciences Private Limited

Khata No. 130/137, 131/138, 132/139, 133/140, & H.B no 150 Village Jaspalon,
Tehsil Khanna, Ludhiana, Punjab-141421

Email:acufinelifesciences@gmail.com**Phone No**: - 9872659000

ENVIRONMENTAL CONSULTANT:

(Approved Consultant)

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EXECUTIVE SUMMARY

1. INTRODUCTION

M/s AcufineLifesciences Private Limited currently has Formulation unit installed at Khata No. 130/137, 131/138, 132/139, 133/140 & H..B no 150 Village Jaspalon, Tehsil Khanna, Ludhiana, Punjab with plot area of 9955.18sq.m and consent to operate has been taken on the said plot for **Formulation of pesticide facility with installed and sanctioned capacity of 9000 MTPA**. however operation of the unit has not been started yet due to current market scenario for the formulation products. Now the unit after market survey proposes to expand and pivot towards manufacturing of the technical pesticide. Therefore, Accufine Life Sciences has also purchased additional adjacent land for the proposed expansion project, identified as plot number H.N. 150, covering an area of 17,874.91 sqm. After expansion, the total land area will be 27,830.09 sqm.

Now, AcufineLifeSciences has planned to expand their existing unit. The project will involve in production of Technical Grade Pesticides and pesticide specific intermediates. **The total production capacity of the plant after expansion will be 19620 MTPA (excluding formulation) (Technical Pesticide: 18000 MTPA and By-product: 1620 MTPA).** 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.

As per the Government of India (Ministry of Environment, Forests & Climate Change (MoEF&CC),) EIA Notification 2006 and further amendments, the proposed expansion project for introducing the production of technical grade pesticide will be covered under **Activity 5(b);Category A** and hence requires environmental clearance from MoEF&CC, New Delhi.

The proposed project site is not located in a Notified Industrial Area. **Therefore, Public Hearing has been applicable for this project.**

Details of products and By-products are given below in **Table 1.1.** Salient features of the projects are given below in Table **1.2.**

Table 1.1 : Details of Products and By-product

Proposed Products			
S. No.	**Product**	**CAS NO**	**Quantity (MT/Annum)**
A	**HERBICIDE GROUPS**		18000
1	2,4-D Sodium Salt	2702-72-9	
2	2,4-D Acid	94-75-7	
3	2,4-D Amine	2008-39-1	
4	2,4-D Ethyl Ester	533-23-3	
5	ClodinafopPropargyl Chloride	114420-56-3	
6	Glyphosate	1071-83-6	
7	Pretilachlor	51218-49-6	
8	Atrazine	1912-24-9	
9	Imizathypr	81335-77-5	
10	Sulphosulphron	141776-32-1	
11	Metsulphron	74223-64-6	
12	Metribuzin	21087-64-9	
13	Quizalafop-p-ethyl	100646-51-3	
14	Oxyflurofen	42874-03-3	
15	Pendimathalien	40487-42-1	
16	Bispyribac Sodium	125401-92-5	
17	Butachlor Technical	23184-66-9	
18	Chlorimuron ethyl technical	90982-32-4	
19	Cloquintocet-mexyl Technical	99607-70-2	
20	Fenoxaprop-p-ethyl Technical	71283-80-2	
21	Glufosinate Ammonium	77182-82-2	
22	Oxadiargyl Technical	39807-15-3	
23	Pyrazasulfuron Ethyl	93697-74-6	
24	Paraquat	1910-42-5	
25	Safener		
26	Clodinofop	105512-06-9	
27	Penoxsulam	219714-96-2	
28	Pinoxaden	243973-20-8	
29	Mesosulfuron-Methyl	208465-21-8	
30	Topramezone	210631-68-8	
31	Fluomioxazin	103361-09-7	
32	Propaquizafop	111479-05-1	
33	Tetflupyrolimet	**2053901-33-8**	
34	Indaziflam	950782-86-2	
35	Thienocarbazone Methyl	317815-83-1	
36	Halauxifen Methyl	943831-98-9	
37	Isoxaflutole	141112-29-0	
38	Pyroxasulam	422556-08-9	
B	**INSECTICIDE GROUPS**		
39	Lambda Cyhalothrin Technical	91465-08-6	
40	Diafenthiuron	80060-09-9	
41	Acetamiprid	135410-20-7	

Proposed Products			
S. No.	**Product**	**CAS NO**	**Quantity (MT/Annum)**
42	Thiamethoxam	153719-23-4	
43	Cypermethrin	52315-07-8	
44	Permethrin	52645-53-1	
45	Delta Cypermethrin	52918-63-5	
46	Buprofezin	69327-76-0	
47	Fipronil	120068-37-3	
48	Emamectin benzoate	155569-91-8	
49	Bifenthrin	82657-04-3	
50	DDVP	62-73-7	
51	Chlorpyriphos	2921-88-2	
52	Indoxacarb	144171-61-9	
53	Novaluron	116714-46-6	
54	Fenpyroximate	134098-61-6	
55	Imidacloroprid	138261-41-3	
56	Acephate Technical	30560-19-1	
57	Chlorantraniliprole Technical	500008-45-7	
58	Dichlorvos Technical	62-73-7	
59	Dinotefuran Technical	165252-70-0	
60	Etoxazole Technical	153233-91-1	
61	Profenofos Technical	41198-08-7	
62	Propargite Technical	2312-35-8	
63	Pymetrozine Technical	123312-89-0	
64	Thiocyclam Oxalate Technical	31895-22-4	
65	Triazaphos Technical	24017-47-8	
66	Malathion	121-75-5	
67	BPMC	3766-81-2	
68	Monocrotophos	6923-22-4	
69	Delta Methrin	52918-63-5	
70	Alpha Cypermethrin	67375-30-8	
71	Carbofuran	1563-66-2	
72	Ethiprole	181587-01-9	
73	Flonicamide	158062-67-0	
74	Spiropidion	1229023-00-0	
75	Sulfoxaflor	946578-00-3	
76	Chloropyriphos	2921-88-2.	
77	Bifenthrin P and Liquid	82657-4-3	
78	Difenthurion	80060-09-9	
C	**FUNGICIDE GROUPS**		
79	Thiophenate methyl	23564-05-8	
80	Azoxystrobin	131860-33-8	
81	Tricyclozole	41814-78-2	
82	Hexacanazole	79983-71-4	
83	Mancozeb	01-07-8018	
84	Metalexyl	57837-19-1	

Proposed Products			
S. No.	**Product**	**CAS NO**	**Quantity (MT/Annum)**
85	Diafenaconzole	119446-68-3	
86	Propiconazole	60207-90-1	
87	Tebuconazole	107534-96-3	
88	MPBD	39515-51-0	
89	Carbendazim Technical	10605-21-7	
90	Carboxin Technical	5234-68-4	
91	Cymoxanil Technical	57966-95-7	
92	Isoprothiolane Technical	50512-35-1	
93	Myclobutanil Technical	88671-89-0	
94	Propineb Technical	12071-83-9	
95	Trifloxystrobin Technical	141517-21-7	
96	Captan	133-06-2	
97	Difenoconazole	119446-68-3	
98	Prothioconazole	178928-70-6	
99	Pyraclostrobin	175013-18-0	
100	Picoxystrobin	117428-22-5	
101	Mandipropamid	374726-62-2	
102	Cyflufenamid	180409-60-3	
103	Benzovindiflupyr	1072957-71-1	
104	Fluxapyroxad	907204-31-3	
105	Flupicolide	239110-15-7	
PLANT GROWTH REGULATOR			
106	Ethephon Technical	16672-87-0	
107	Fluoxastrobin Technical	361377-29-9	
Sub-Total			**18,000**
BY- PRODUCTS			**Quantity (MT/Annum)**
108	Sodium hypochlorite	7681-52-9	360
109	Sodium chloride	7647-14-5	108
110	Sodium sulfate	7757-82-6	72
111	Hydrochloric acid	7647-01-0	1080
Sub-Total			**1620**
Total Production			**19620**

Table 1.2 : Salient Features of the Project

S .No.	Particular	Details
1.	Plot/Survey/Khasra No	Khata No. 130/137, 131/138, 132/139, 133/140& H. B no 150
2.	Village	Jaspalon
3.	Tehsil	Khanna
4.	District	Ludhiana
5.	State	Punjab
6.	Latitude	30°46'27.85"N
7.	Longitude	76° 4'39.21"E

S .No.	Particular	Details
8.	Land Area	Land belongs to M/s AcufineLifesciences Private Limited The total land area is **27830** m^2. 33.14% of total land is allocated for green area development.
9.	Land use and Land cover	Land Use- Industrial Land Cover- Industrial
10.	Defense Installations	None
11.	Ecological Sensitive Areas / Protected Areas as per Wildlife Protection Act 1972)National Parks /Wildlife sanctuaries /bio-sphere reserves /tiger reserves(	None
12.	Reserved /Protected Forest	None
13.	State Boundary	None
14.	Water Bodies	None
15.	Nearest National Highway/ Other Road	• National Highway-44 - 0.54 km, SW
16.	Nearest Rail Head	• Jaspalon Railway Station -1.05 km, NNE
17.	Nearest Airport	• Ludhiana Airport - 14.11 km, NW
18.	Nearest Residential Area	• Jaspalon – 1.05 km, NNE • Barmalipur - 1.87 km, S
19.	Nearest Educational Institute	• Everest Public School (1.72 km, NNE)
20.	Nearest Hospital	• Charitable Hospital, Jaspalon (1.63 km, NNE)
21.	Seismicity	• Seismic Zone-IV (High Risk Zone)

2. DESCRIPTION OF THE ENVIRONMENT

Site Characteristics

The project site is located at Khata No. 130/137, 131/138, 132/139, 133/140, **& H. B. no 150** Village-Jaspalon, Tehsil-Khanna, District-Ludhiana, Punjab-141421. The site is located near Jaspalon (1.05 km NNE from the project site) and well connected with National Highway-44 located at (0.54 km, SW). The nearest Railway station is Jaspalon Railway Station, which is located at 1.05 km in NNE direction from the Project Site. Nearest Airport from the project site is Ludhiana Airport located at 14.11 km in North-West direction. It is a brown field project having a total plot area of **27830.09Sqm**after expansion. The coordinates of center of the site are **Latitude: 30°46'27.85"N and Longitude:76° 4'39.21"E.**

There are no environmentally sensitive components such as National Park, Wildlife Sanctuary, Elephant / Tiger Reserve, migratory routes of fauna and wet land present within 10 Km radius of plant site.

Topography and Meteorology

The project site is undulated and elevation of site ranges between 291 to 296 amsl. The topographical levels of the 10 Km area vary from 282 to 312 amsl.

Temperature– The Annual mean minimum temperature of around 2 ^{0}C and annual mean maximum temperature of around 43.9^{0}C. May is the hottest month with daily mean maximum temperature at 43.9 ^{0}C and January is the coldest month with daily mean minimum temperature of 2 ^{0}C.

Relative Humidity– Mornings are more humid than evenings; highest relative humidity is recorded as 93% in Months of January.

Rainfall– Total annual mean rainfall was observed to be 791.1 mm. Around 79% of total rainfall occur in the months of June to Sep. The maximum total monthly rainfall is 217.1 mm and minimum monthly rainfall during monsoon is 3.9 mm.

Wind Speed–Mean wind speed was observed from 2.3 kmph (November) to 6.6 kmph (June).

Baseline Period

The baseline environmental data generation has been done for the period of **March-2023 to May-2023**. The study area within a 10-km radius around the proposed plant site has been considered as impact zone for EIA study. Primary and secondary data has been collected for 10 Km radius of the project site.Advanced Environmental Testing and Research Lab along with EQMS Team carried out sampling and testing.

Site Specific Met Data

Temperature– Maximum temperature of the area varied from 40 ^{0}C to 45 ^{0}C. The minimum temperature varied from 14 ^{0}C to 19 ^{0}C.
Relative Humidity–During the study periods, highest relative humidity was observed 99.26 %.
Wind Speed & Wind Direction: The wind direction in the study area is SE and Wind speed is observed 2.78 m/s.

Soil Quality

Eight locations were monitored for checking soil Quality in study area. Based on Nutrient Index Value for N, P & K, the soils of study area fall into "***LOW to* MEDIUM *FERTILITY STATUS"***. Soils have medium organic carbon and are capable of *moderately supporting agriculture*. The soils of study area and project site is **neutral to Slightly alkaline** in nature as pH value of soils in all analyzed samples is less than 8.5 and simultaneously the value of EC is less than 1 dS/m (1000 µmhos/cm).

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. As per the study conducted, overall the parameters in ground water sample were well within the permissible limit of Indian Standard IS: 10500-2012. The Water Quality Index based on weighted average of 11 parameters (Total Hardness as $CaCO_3$, Calcium, Alkalinity, Chloride, Magnesium, TDS, Sulphate, Fluoride, pH, Iron, Nitrates) has been found to range between Excellent to poor water.

One sampling locations of surface water near the project were selected Within 10 km study area. 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 classified as **"Class 'B'"** and can be used as Outdoor bathing (Organized).

Air Quality

AAQ monitoring was done at Nine locations within the study area considering dominant wind direction, populated area and sensitive receptors. The ambient air quality monitoring during Summer Season (March-2023 to May-2023) was conducted, on 24- hourly twice a week basis for PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO (1 hr), NH_3, VOC & HC for a season. The maximum concentration of PM_{10}, $PM_{2.5}$, SO_2, NO_X& CO was 94 µg/m^3, 53 µg/m^3, 9.6 µg/m^3, 16.8 µg/m^3& 0.35 mg/m^3 respectively. On the criteria of AQI the AQI Category for each of monitoring station has been found **satisfactory** for all locations.

Noise

The noise level is within the prescribed limit in all the monitoring stations. The major source of the noise in the study area is the community noise, Railways Line and vehicular movement.

Traffic

The site is accessible through NH-44. Site is well connected to 10 m wide industrial road through entry/exit. The transportation of material will be through industrial Road which is further connected to the NH-44. During the study period maximum traffic in the study area was observed during evening. Less traffic movement is found during early morning hours. With the operation of the proposed project, the traffic volume would increase. However, the incremental will be very less in comparison to the carrying capacity of the road. At Maximum the expected PCU/hr from the site will be 37 PCU/day which is 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.

Socio-Economic

As per the census records 2011, the total population was recorded as 156907 persons of 80 revenue villages/town in, Ludhiana East (11), Payal(24),Khanna(14) and Samrala(31) in Ludhiana districts of Punjab States.Total number of 'Households' was observed as 31193 in the study area. Male-Female wise total population in the study area was recorded as 83563 males and 73344 females respectively. The 'Sex Ratio' was observed as 877 females per 1000 males in the study area. The 'Scheduled Castes' population was observed as 58700 persons consisting of 30972 males and 27728 females respectively in the study area which accounts as 37.41 % to the total population of the study area. 'No Scheduled Tribes' population was observed. Total literates' population was recorded as 1,14,096 persons (72.71%) in the study area. Male-Female wise literates are observed as 63,732 & 50,364 persons respectively, implies that the total 'Literacy Rate' is recorded as 72.71% against the national literacy rate of 74.04%. Male-female wise percentages being 76.26% & 68.66 % respectively. The total illiterate's population was recorded as 42811 persons (27.28%) in the study area. Male-Female wise illiterates were 19831 (23.73%) and 22980 (31.33%) respectively.

Ecology & Biodiversity

The study area of 10 km falls under cultivation and settlement. There is no forest present in the study area and most of the land is under cultivation. No national park, Wildlife sanctuary, Biosphere reserve is present within 10 km radius of the proposed project site The vegetation in study area is mainly present in the form of strip plantation along the roadside, near waterbodies, along the rail line etc

Flora: The study area of 10 km falls under cultivation and settlement. There is no forest present in the study area and most of the land is under cultivation. No national park, Wildlife sanctuary, Biosphere reserve is present within 10 km radius of the proposed project site The vegetation in study area is mainly present in the form of strip plantation along the roadside, near waterbodies, along the rail line etc. The general appearance of the vegetation is entirely dominated by one species i.e. Acacia nilotica. Its main associates are Cassia Auriculata, Prosopis cineraria, Acacia leucophloea, Ailanthus excels, Ficusreligiosa, Azadirachtaindica and Delbergia sis etc. Shisham, Kikar, Siris, Neem, BakainGultmohar. Parkinsonia and Eucalyptus, etc. have been planted along rail, road and canal strips and in other private areas. Eucalyptus and populus is also planted in agricultural and under farm forestry scheme.

Fauna: No national parks, wildlife sanctuary, biosphere reserve is present within 10 km area of the project site. The information on fauna was collected by visual observations, random survey at different locations and discussion with the local people. The secondary data from different Govt. Sources and available literature was also referred in this study. The fauna study is carried for core zone as well as for buffer zone i.e. 10 km area around the project site, which is describes in following sections.

A. **Fauna in Core zone**: Being an industrial area no major wildlife exists within the core zone. However, the presence of commonly found reptiles and amphibian species has been reported by the local people in surrounding area of the site. Common avifaunal species has also been observed in the core zone.

B. **Fauna in Buffer Zone:** Wildlife in the study area is restricted to commonly found mammal species this is mainly due to the urbanisation and lack of forest area.

Mammals: No significant carnivorous and herbivorous wild animals are found in the area Blue bull (Boselaphustragocamelus), Mongoose (Herpestesedwards) and Jungle Cat (Felischaus) 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: Frog, Indian bull frog, snake like Indian cobra (Najanaja); Dhaman (Lycodonaulicus), and lizard are encountered at various places in study area.

3. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Air Pollution

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. All these activities have potential to generate fugitive dust emissions. Major pollutants will be dust, SO_2, NO_2 & CO. Operation of DG sets, construction equipment/machinery and vehicles may also generate exhaust which affects the air quality of the area. Increased PM level and dust generation may cause respiratory problems to the workers and other people in the area. There is no habitation located within 1km from the project site. As per the baseline data assessment, it has been found that PM_{10}, $PM_{2.5}$, SO_2, NO_x, CO, NH_3, HC is well within the permissible limit. Existing highways shall be used for transportation and present road conditions are reasonably good. Minimal impact is being anticipated with respect to proposed facility to nearby habitation. However, mitigation measures will be adopted to further reduce the pollution level.

During operation phase, the proposed expansion is in the existing unit. As per the baseline data assessment, it is found that all the parameters monitored, i.e., PM (10), PM (2.5), SO2, NOx, CO, VOC and Hydrocarbon are well within the permissible limit. However, cumulative and continuous emissions from existing and proposed industries in an area may increase the pollutant level in the air. Thus, use of efficient mitigation measures and air pollution control systems is required.

Increased pollutant level may cause respiratory problems or carcinogenic diseases to the workers and other people in the area. The nearest Residential area Jaspalon city is situated towards NNE side at about 1.05 km, which is in crosswind direction of the project site which may have minor impact due to emission from the industry. Spillage of Diesel used oil, chemicals may result in emission of VOCs in the air environment which may cause irritation in eyes, nose and throat, difficulty in breathing and nausea. These emissions are generally from solvents with other associated matters. These fugitive emissions usually spread in the process plant posing a threat to the health of the workmen and safety of the plant. Thus, proper collection, conveyance, treatment and disposal become highly necessary.

Efficient fuel and Conventional methods will be used in the plant to reduce the emission. All sources of emission shall be provided by appropriate air pollution control system and stack height as per CPCB norms to maintain the emission norms given by CPCB/MoEF&CC/PPCB. A continuous online Ambient Air quality Monitoring system and stack monitoring system will be installed at the plant to monitor the parameters within the

limit.Various mechanisms have been planned in plant to control the emission. AcufineLifeSciences will have defined systems in place at each step of plant, process, and packing. These systems consist of Dust collector's, Air Handling Unit's, close Reactor systems, etc.

Noise Pollution

There will be noise generation during construction phase in the project site due to construction activities such as site levelling, foundation; operation of construction machinery such as machinery and other activities. Also, there will be noise generation from the movement of vehicles carrying material, loading & unloading activities, operation of DG set, etc. However, magnitude of the impact will depend upon the type and nature of the machinery, time schedule of operations, construction method and management practices followed during activities. The construction activities will be limited, to the extent possible, to day hours only

During Operation Phase, Noise may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure of the human. The plant has various machines like dryers, blowers, vacuum pumps, process pumps, compressors, etc. along with DG sets, which generates noise. These machines are already inbuilt with appropriate control measures to maintain the noise levels within limits. The equipment like Compressors, blowers, fans and various drums are provided with Vibration pad/ Acoustic enclosures to limit the noise level as per the standard. Noise level at Boundary Fence is controlled by providing green belt throughout the boundary wall of plant.

Water Pollution

***During Construction* Phase,** the total water requirement during construction phase will be 7.25 KLD (Domestic- 2.25 KLD, Construction- 5 KLD) which will be sourced from nearby private tanker. 1.8 KLD domestic sewage will be treated in septic tanks followed by soak pits.

All existing facilities like drinking and sanitation shall be used during the installation/construction purpose. No additional facility will be required for the additional workforce. The existing supply of water shall be used for meeting the requirements of labour. No wastewater will be discharged to the surface or ground. 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 Opertional Phase, total water requirement of the Formulation plant is **15.14** KLD. After expansion, total water requirement shall increase to **142.99 KLD** out of which **55.73 KLD** freshwater requirement shall be met through Borewellafter getting additional water requirement permission from concerned authority i.e. PWRDA and rest **87.26 KLD** from in-house treatment schemes i.e., ETP, MEE & STP. Currently unit has water withdrawal permission of 19 KLD from the Punjab water regulation and Development Authority (PWRDA) vide permission no PWRDA/I/09/2023/L1/137 dated 29.09.2023.

Effluent management

The effluent generation from the formulation plant is 2.35 KLD. Domestic effluent is sent to a septic tank. After passing through the septic tank, the water is sent to gardening.

After expansion, the effluent generation will increase to 102.22 KLD (Domestic: 3.72 KLD + Industrial: 98.5 KLD). The source of effluent will be Domestic use, Process, scrubbers, washing, Boiler and cooling towers. Domestic sewage shall be treated in STP of capacity 5 KLD and industrial effluent shall be treated in ETP followed by MEE.

Treated water shall be reused in Gardening ,Process, Washing, Scrubber, and Cooling Tower. The project will be a "Zero-liquid Discharge" Project.

Waste Management

During Construction Phase, Construction activities lead to 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. Improper storage and disposal of waste may enhance the risk of microbial contamination and enhance the risk of disease occurrence and cause foul smell. Thus, this waste is required to be collected, segregated and disposed off in a manner that it does not mix or pollute air, water and soil in environment. Excavated topsoil shall be used for backfilling/ greenbelt development & plantation. Municipal waste will be minimal as most of the construction workforce will come from nearby areas. 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 is generation of different kind of Industrial hazardous wastes from production process and other activities. Industrial hazardous wastes such as used or spent oil, spent carbon or filter medium are sold to recyclers. Chemical sludge generated from wastewater treatment is disposed off at TSDF site, while other solid wastes are segregated in salable and non-salable waste. All waste is disposed as per The Hazardous & Other Waste (Management and Transboundary Movement) Amendment Rules, 2023.

The site will take valid membership of TSDF operated by M/s Punjab Waste Management Project located at Village Nimbua, Post-Office Rampur sainia (Derabasi), District Mohali, Punjab.

The municipal solid waste generation at the project site which is being segregated in biodegradable waste and recyclable waste. Recyclable waste is being sold off to different authorized vendors. Biodegradable waste is being sent to solid waste site. After expansion, municipal solid waste generated in the plant area will be disposed as per existing practices.

Land Environment

The Land has been given on lease to M/s AcufineLifeSciences Private Limited by Suresh Soodand Change in Land use has been obtained from the competent authority. The Department of Town and Country Planning, Punjab, has changed the land use of the existing project site from agricultural to industrial, as per letter memo no. DOFPB00022565 dated 05.01.2024. Additionally, an application for the change in land use for the proposed additional project area has been submitted under application no. E-3198905 dated 20.05.2024.

During Construction Phase: The proposed expansion shall be undertaken within the existing site of the project and the present land use of the existing site is industrial and for the change of land use of additional land area application has been submitted to Department of Town and country planning, Punjab. There will be no physical changes outside the project boundary or any development of labour colony outside the project site. The majority of the labor will be hired from nearby villages and if required housing or shelter facilities required for construction workers will be provided at the site. Only Minor

Digging shall be done in the plant area. Solid Waste Management Rules, 2016 and Construction and Demolition Waste Management Rules, 2016 shall be adhered.
During Operation Phase, there will be generation of waste which could pollute the land. Hazardous waste generated in the Plant are disposed as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and its subsequent amendments.

Soil Quality

During Construction Phase, Soil erosion may happen if open areas are left without paving or plantation. Thus, it is required to either pave or green the open areas. 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. No major excavation is proposed in the plant during the proposed project, only minor digging shall be done.

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. Liquid effluent will be collected through closed loop channel to treatment scheme. Only treated water will 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. 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.

Ecology and Biodiversity

During Construction Phase: No tree cutting shall be required for the proposed project, hence the direct impact on terrestrial ecology (loss of flora and fauna) is likely to be insignificant. As the site is devoid of natural as well as manmade forest, the overall impact on terrestrial ecosystem will be negligible. No RET species, reserve and protected forest, wildlife sanctuary, national park etc. are present in the study area. Hence, the impact of such is not anticipated. However, the excavation and filling up operation during construction period may result in fugitive dust emission. The dust deposition on pubescent leaves of the surrounding vegetation may lead to temporary reduction of photosynthesis. Though such impacts would however be confined mostly to the initial period of the construction phase only.
During Operation Phase, The impact on the surrounding ecology during the operation of the project will mainly occur from the deposition of air pollutants. Air pollution affects the biotic and abiotic components of the ecosystem individually and synergistically with other pollutants. Chronic and acute effects on plants and animals may be induced when the concentration of air pollutants exceeds threshold limits.
No national park, wildlife sanctuary, biosphere reserve exists within 10 km area of the project. No endangered or rare or threatened plant or animal species was observed within 10 km area of the project site. There are two r Schedule-I faunal species present in the study area. The impact on the surrounding ecology during the operation of the project will mainly occur from the deposition of air pollutants.
Air pollution affects the biotic and abiotic components of the ecosystem individually and synergistically with other pollutants. Chronic and acute effects on plants and animals may be induced when the concentration of air pollutants exceeds threshold limits. Particulate emissions and other gaseous emissions from the proposed plant are the major pollutant that may affect the ecology of the area. The incremental emission of air pollutants is not

likely to induce any significant changes in the ecology because the national ambient air quality standards will remain within the limits. The incremental GLC of PM, SO_2, CO and NOx generated from the proposed plant will be very less and overall incremental GLC will remain within the NAAQS. The proposed plant is zero liquid discharge basis, so no wastewater will be discharged. All solid waste and hazardous waste shall be disposed as per norm. Therefore, the impact of emission on the surrounding vegetation will be insignificant.

Socio-Economic Environment

The proposed land is in the possession of AcufineLifeSciences and no R&R is applicable to the site. Project development involves transportation of material and construction activities. Construction activities have their impacts on surroundings like unpleasant views, increased traffic, increased noise, emissions, waste generation & piling of waste etc. All these have impacts on society. However, the construction phase will generate employment options for skilled and unskilled labour. The livelihood activities of this increased human population during construction period may contribute to the local environmental impacts in terms of collecting firewood and food as well as enhancing recreational activities. Accident and Noise problem in the plant are also the concern for local labour. Accidents may cause disability or life loss and working in noisy areas may cause speech interference, annoyance, hearing impairment, increase in heartbeat/ blood pressure of the human. Thus, measures are necessary to be adopted to overcome these impacts.

During Operation Phase, there will be requirement of the skilled and unskilled labour. 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 production of pesticide and reduce the Demand-supply gap. 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 the field of Environmental, Medical, and Transportation etc.
However, due to operation & maintenance there may be various risks for the staff and other nearby people. Thus, all the workers will be continuously trained for proper handling and transportation of hazardous materials as per the rule. All staff will be provided with personal protective equipment like ear plugs/mufflers, masks, gloves, etc as required. Workers medical Tests will be unFdertaken periodically. OHSAS guidelines will be followed in the plant.

Environmental Monitoring Programme

Environmental monitoring plan will be implemented as per regulatory requirement to comply the necessary compliances. As per the MoEF&CC guideline, Environment monitoring report and compliance of conditions mentioned in the environment clearance will be submitted to the RO-MoEF&CC, SPCB, MoEF&CC online portal i.e., parivesh and shall be uploaded on company's website. Compliances will be submitted in month of June and December for the period of October to March and April to September respectively. Third party laboratory (approved MoEF&NABL laboratory) shall be appointed for carrying out the monitoring. Also, self-environmental audit, Health & safety audit and Energy audit shall be conducted annually.

Additional Studies

Risk assessment study has been undertaken to identify the Hazard and preparation of mitigation. All measures will be adopted as per the guideline.

- Sulphuric acid is highly corrosive acid capable of causing severe chemical pain/burns. It should be handled very carefully with hand gloves, apron and other PPE's.
- In case of hot acid use breathing apparatus in addition of other PPE's to avoid inhalation of vapors.
- Large spills or leaks: contain and soak up spill with absorbent that does not react with spilled product. Dike spilled product to prevent runoff. Remove or recover liquid using pumps or vacuum equipment. Place used absorbent into suitable, covered, labelled containers for disposal. Store recovered product in suitable containers that are: corrosion resistant. Contaminated absorbent poses the same hazard as the spilled product.
- Preventive maintenance will be planned and carried out as per plan to avoid the failure of flanges, pipelines and other components of transferring line. The leakage/spillage will be confined to the dyke area underneath the vessel.
- In case of leakage/spillage outside the Dyke wall/in plant, try to control its spreading by putting temporary barrier of sand/other neutral/non-soluble-reactive material. Try to reclaim the material as much as possible. Dispose of the barrier material safely.
- The resultant splash of such chemicals will result in exposure of toxic chemicals to employees.

4. PROJECT BENEFITS

- It will fulfil the demand supply gap of pesticides and related intermediates.
- It is expected to improve the profitability of AcufineLifescience and contribute to growth of economy of Country.
- It will maintain stability in Indigenous / domestic market for pesticides.
- It will ease the dependency of import of pesticides within the country and contribute to the Vision of Make-in-India.
- There will be temporary employment generation during construction phase.

EHS policy will be 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 with the Environmental management plan and OHSAS guideline. Acufine will implement all guidelines laid down by PPCB, CPCB and MoEF&CC.

The cost of the project is estimated to be about **Rs 9.9Crores**. Rs**4.95 Crore of capital cost**&Rs. **0.7079 crore/year of recurring cost** will be spent on the Environment Management Plan.