CHALLA CHLORIDES PVT.LTD.

PLOT NO. F2, MIDC CHINCHOLI, MOHOL TALUK, SOLAPUR DISTRICT, MAHARASHTRA

EXECUTIVE SUMMARY

SUBMITTED TO
MAHARASHTRA POLLUTION CONTROL BOARD,
SUB-REGIONAL OFFICE, SOLAPUR

EXECUTIVE SUMMARY

Introduction

Pharmaceutical Chemicals are used for the benefit of human and animal health. The scale of manufacturing of active pharma ingredients is less compared to other synthetic organic chemicals, which are used for the manufacture of consumer products, dyes etc. India is a major producer of active pharma ingredients contributing to wellbeing of both human and animal population of the world.

M/s. Challa Chlorides Pvt. Ltd. (CCPL) proposes to establish a synthetic organic chemical (mainly bulk drugs and intermediates) manufacturing unit in an area of 4 acres at Plot no. F2, MIDC Chincholi, Mohol taluk, Solapur district, Maharashtra. The capital cost for the project is Rs. 4.5 crores. The cost estimate form environment management is Rs. 2 crores with annual recurring expenditure of Rs. 1.54 crores. Prior environmental clearance is mandated for synthetic organic chemical manufacturing activity vide SO 1533, dated September 14, 2006 issued by Ministry of Environment, Forest and Climate Change (MoEFCC), Government of India. The project proponent could not obtain the prior environmental clearance due to various reasons, and had inadvertently commenced construction of the project, based on a consent to establish order vide letter no. BO/RO-Pune/ AS (T) / EIC - PN-11344-11/E/Gen-32 dated 16.05.2012 from Maharashtra State Pollution Control Board. Currently the unit has stopped construction activity, and is yet to initiate erection and commissioning of the equipment.

The MoEFCC vide SO 804 dt. 14.3.2017 has notified the process for appraisal of projects for grant of terms of reference and environmental clearance, which have started the work on site, expanded the production beyond the limit of environmental clearance or changed the product mix without obtaining prior environmental clearance as mandated under the Environment Impact Assessment Notification, 2006. Accordingly, the proponent obtained the terms of reference for the environmental impact assessment studies, for the project which started construction without prior environment clearance vide letter no. F.No. 23-120/2018-IA III (V) dated 24.04.2019 as part of environmental clearance process.

Location of the Project:

The plant site of 4 acres is located at Plot no. F2, MIDC Chincholi, Mohol taluk, Solapur district, Maharashtra. The site is located at the intersection of 17°46'22" (N) latitude and 75°48'03" (E) longitude. The site is surrounded by vacant industrial plots in all directions except in south, which has the internal MIDC road connecting the site. The main approach road is NH 204 (Pune – Solapur) passing at a distance of 2.8 km in southwest direction. The nearest habitation from the plant site is Chincholikati village at a distance of 0.9 km in south direction. The nearest town is Solapur at a distance of 13.7 km in northwest direction. The nearest railway station is Pakani railway station at a distance of 5.6 km in southwest direction and the nearest airport is at Shamshabad located at a distance of 285 km in southeast direction. Ujjani left bank canal is at a distance of 2.8 km in southwest direction, flowing from northwest to southeast, Nanaji odha a seasonal stream is at a distance of 3.2 km in west direction flowing from northwest to southwest, Sina river stream is at a distance of 6.2 km in southwest direction. A reserve forest is at a distance of 6.6 km in northeast direction. The Great Indian Bustard sanctuary is at a distance of 2.4 km in NNE direction. There is no national park, interstate boundary and critically polluted areas within 10 km from the site.

11.2 Product Profile

The manufacturing capacity of proposed products and by-product is presented in following tables;.

Manufacturing Capacity

S.No	Name of Product	Capacity	
		TPM	Kg/day
1	Metformin Hydrochloride	50.4	1680
2	Lumefantrine	3	100
3	Aluminium Chloride	36.15	1205
4	Ibuprofen	23.6	786.67
5	Ambroxol Hydrochloride	10.75	358.33
6	Amlodipine Besylate	2	66.67
7	Folic acid	2	66.67
8	Oxyclozanide	2	66.67
9	Cinnarizine	1	33.3
	Total	**130.9**	**4363.3**

List of By-products

S.No	Name of the Product	Stage	Name of By Product	Quantity (Kg/Day)
1	Ibuprofen	II	Hydrogen Chloride (20%)	2050.8
			Aluminium hydroxide	292.5
		III	Sodium carbonate	432.4
		IV	Chromic sulphate	498.5
			Sodium sulphate	180.6
2	Amlodipine Besylate	IV	Spent Acetic Acid (80%)	312.5

Manufacturing Process

Chemical synthesis produces majority of bulk drugs and intermediates currently in the market. Chemical synthesis consists of four process steps - reaction, separation, purification, and drying. Large volumes of solvents are used during chemical synthesis as medium, extractions, and solvent interchanges. The manufacturing process of the above-mentioned molecules involve various types of reactions like acetylation, protection, deprotection, hydrolysis etc. The manufacturing process of all the compounds, reactions involved, material balance are presented in chapter 2 of EIA report.

Utilities

It is proposed to establish coal/bagasse fired boiler of capacity 1 x 2 TPH to meet the steam requirement for process, SRS and ZLD system. The DG sets required for emergency power during load shut down is estimated at 250 kVA and accordingly 1 x 250 kVA capacity DG set is proposed. The list of utilities is presented in following table;

List of Utilities

S.No	Utility	Unit	Capacity
1	Coal/Bagasse Fired Boiler	TPH	1 x 2
2	DG Set*	kVA	1 X 250

**DG sets will be used during load shut down period by MSEB.*

Water Requirement

Water is required for process, scrubbers, washing, cooling tower makeup, steam generation and domestic purposes. The required water shall be drawn from MIDC water supply (Industrial supply) in addition to reuse of treated wastewater. The fresh water consumption is optimized by reusing treated wastewater to an extent of 38 KLD, thus reducing fresh water consumption to 43.1 KLD during operation. The water balance for daily consumption presented in following table;

Water Balance

Purpose	INPUT (KLD)		OUTPUT (KLD)	
	Fresh Water	**Recycled Water**	**Loss**	**Effluent**
Process	23.6			24.2*
Washings		2.5		2.5
Scrubber		3		3
R&D and QC Lab	1			1
Boiler Feed	5	7	10	2
Cooling Tower	3	25.5	25	3.5
DM/RO plant	2.5			2.5
Domestic	3		0.2	2.8
Gardening	5		5	
Gross Total	**43.1**	**38**	**37.5**	**41.5**
Total	**81.1**		**81.7**	

** Process Effluents contains unreacted raw materials, water formed in reaction, soluble solvents, by-products etc.*

Baseline Environmental Data

The baseline data was collected in the study area during March - May 2019. The baseline data includes collection of Samples of ground water, surface water and soil, monitoring of ambient air quality, noise levels, ecological status and meteorological parameters. The analytical results show that the values are within the prescribed limits for air quality. The ground water quality is observed to be above the limits for potable purpose when compared to the prescribed standards of IS: 10500 – 2012 at few locations.

Identification and Quantification of Impacts

The impact assessment report has identified various sources of pollution and quantified the pollution loads due to proposed project. The sources of pollution are air emissions from utilities and process; liquid effluents from process, utilities and domestic usage; solid wastes from process, treatment systems and utilities; and noise pollution from utilities, and process equipment. A detailed impact assessment was made using rapid impact assessment matrix method. The salient features are presented as follows.

Impacts on Air quality: The impacts on air quality shall be due to the emissions from, coal/bagasse fired boiler and standby DG set. The incremental concentrations are quantified using ISC-AERMOD model based on ISCST3 Algorithm. The results indicate marginal increase in ambient air quality concentration. The predicted values for PM_{10}, $PM_{2.5}$, SO_2 and NO_x are 0.58, 0.23, 0.10 and 1.33 $\mu g/m^3$ respectively and the maximum values are observed at a distance of 0.4 km in northeast direction, and the cumulative

values of baseline air quality combined with predicted values are found to be within the prescribed limits of National Ambient Air Quality Standards. The mitigative and control measures of air pollution shall ensure that the impact on air quality is local – within the site area and its surroundings. The fugitive and diffuse emissions were quantified and a box model was used to predict air borne concentrations, and the results indicate work room concentrations, less than threshold limit values (TLV) for various solvents.

Impacts on Water: Water is essentially used for process and utilities and domestic purposes. The required water is drawn from ground water/reuse of stored runoff, in the order of 43.1 KLD in addition to reuse of treated wastewater in the order of 38 KLD. No impact on water quality is expected due to discharge of effluents as zero liquid discharge is envisaged, which ensures reuse of treated wastewater for cooling towers, boiler makeup, washings and scrubbers. There is no usage of treated wastewater for on land irrigation.

Impacts on Noise quality: The noise levels may increase due to motors, compressors, DG set and other activities which emit noise levels of above 82 dB (A) at a reference distance of 1m from the source. The predicted cumulative noise levels (as calculated by the logarithmic model without noise attenuation) ranged between 47 and 65 dB (A). The increase in noise levels shall have impact restricted to the site area.

Impacts on Soil: The solid wastes generated from process, utilities and effluent treatment plant may have significant negative impacts if disposed indiscriminately. The total solid waste will be stored separately in Hazardous waste storage area. Solid waste will be sent to cements plants for co-incineration based on calorific value or sent to CHWTSDF. The operational phase impacts observed to be negative, shall be neutral after mitigation due to effective implementation of management measures in handling, storing and transferring of solid waste, effluents and chemicals, and development of green belt.

Impacts on Flora and Fauna: There are no rare or endangered or threatened (RET) species within the impact area, the project does not pose any direct threat to the survival of any rare species. The proposed project activity is unlikely to pose any additional threat to REET species in the impact area.

The impact due to proposed project on fauna will have negative change/ impacts due to loss or alteration of habitat availability, fragmentation of habitat, and reduced habitat connectivity, increased morality risk and reduce abundance/ diversity.

Environmental Monitoring Programme

It is proposed to monitor Ambient Air Quality (AAQ) for PM_{10}, $PM_{2.5}$, SO_2 and NO_X, work room for VOC concentrations, stack emissions of boiler and DG sets for PM, SO2 and NOx, noise levels on quarterly basis. Water, treated wastewater are monitored on daily basis, while Soil analysis is done once in a year.

Alternatives

The proposal is for establishment for bulk drug and intermediates manufacturing unit and unit had done partial construction at site and hence there is no requirement of assessment of alternative sites or additional site area. However it may noted the current site is acquired from MIDC.

Additional Studies - Risk Assessment

Risk assessment was conducted and the heat radiation damage distances of pool fire in the tank farm was limited to 16 m for a heat radiation of 4 KW/m^2, and the same was within the plant premises.

Project Benefits

The proposed project will provide employment to 70 people. The proposed project will also generate indirect employment to the locals during construction phase in the order of 30 people for a period of 12-18 months. The project shall have positive impact on socioeconomic environment due to provision of employment both direct and indirect and proposed CER activities.

Environment Management Plan

The management plan is drawn in consultation with project proponents and technical consultants after evaluating various mitigation and control measures to address the impacts identified, predicted and monitored. The impacts during construction stage are

temporary and less significant, the management plan for impacts identified during operation stage is described as follows;

Liquid Effluents

The effluent generated from the proposed project is mainly from process, washings, scrubbers, R&D Lab, cooling towers and boiler blow downs, RO/DM rejects from pre-treatment of water and domestic wastewater. Effluents generated from Process, washings, Scrubbers, DM/RO Rejects are considered as High COD/TDS. Blow downs from boiler, cooling towers, wastewater from R & D activity and domestic wastewater are considered as Low COD/TDS stream. It is proposed to treat HTDS effluents from process and washing in stripper followed by MEE and ATFD, and MEE and ATFD in the case of effluents from RO/DM backwash and scrubber. All LTDS effluent along with condensate from MEE and ATFD shall be treated in biological treatment followed by RO system. RO Rejects are sent to MEE and permeate is used for cooling towers, boiler make up, washings and circulation in scrubbers. Salts from ATFD are disposed to TSDF. Sludge from various units of Biological treatment are thickened in sludge handling system and sent to CHWTSDF located at Ranjangaon MIDC Maharashtra. Total Effluent generated and mode of treatment presented in following table;

Total Effluent Generated and Mode of Treatment

Description	Quantity (KLD)	Mode of Treatment
HTDS Effluents		
Process	24.2	Sent to stripper. Stripper condensate shall be disposed to cement industries for co-processing/TSDF. Stripper bottom is sent to MEE followed by AFTD. Condensate from MEE and ATFD shall be sent to biological treatment plant followed by RO. RO rejects are sent to MEE and permeate is reused in cooling towers, boiler make-up, washings and scrubbers.
Washings	2.5	
Scrubber Effluent	3	
RO/DM Rejects	2.5	
Total - I	**32.2**	
LTDS Effluents		
Wastewater from R &D Lab	1	Sent to biological treatment system followed by RO. RO permeate reused for cooling towers, boiler make-up, washings and scrubbers. RO rejects are sent to MEE.
Boiler Blow downs	2	
Cooling Tower Blow downs	3.5	
Domestic	2.8	
Total - II	**9.3**	
Grand Total (I+II)	**41.5**	

Air Pollution

The sources of air pollution are proposed 1 x 2 TPH coal/bagasse fired boiler and standby DG set of 1 x 250 kVA capacity. The proposed air pollution control equipment for 1 x 2 TPH coal/bagasse fired boiler is multicone cyclone separator. DG sets shall be provided with effective stack height based on the CPCB formula.

Process emissions contain Hydrogen chloride, carbon dioxide, hydrogen, Sulphur trioxide and sulphur dioxide. Hydrogen chloride, Sulphur trioxide and sulphur dioxide are sent to scrubber. Sodium chloride from Hydrogen chloride scrubbing, sodium sulphate from Sulphur trioxide and sodium hydrogen sulfite salt from Sulphur dioxide scrubbing are sent to ETP. Carbon dioxide is let out into atmosphere following a standard operating procedure. Hydrogen is let out into atmosphere through water column by following standard operating procedure.

Emissions are also released from various operations of manufacturing like centrifuge, drying, distillation, extraction etc. These emissions mainly contain volatile contents of the material used for processing. It is proposed to provide vent condensers in series to reactors, distillation columns, driers and centrifuge etc. to mitigate VOC emissions release. Other vents are connected to common headers and scrubbers.

Solvent Use and Recycle

Solvents are used for extraction of products and as reaction medium. Used solvents are recovered by distillation for reuse. Residues from distillation columns and mixed solvents shall be sent to CHWTSDF for incineration or cement plants for co-incineration. If any of the distilled spent solvents are not reused due to statutory reasons the same shall be sold to end users.

Solid Waste

Solid wastes are generated from process, solvent distillation, effluent treatment system, DG sets and boilers. Stripper distillate, process residue and solvent residue are sent to cement plants for co-incineration based on acceptability as the same contain significant calorific value and are predominantly organic in nature. If these wastes are not suitable for co-incineration, the same are sent to CHWTSDF facility located at Ranjangaon MIDC

Maharashtra. The evaporation salts from ATFD, and sludge from ETP are sent to CHWTSDF for landfill. Waste oil and used batteries from the DG sets are sent to authorized recyclers. Other solid wastes expected from the unit are containers, empty drums which are returned to the product seller or sold to authorized buyers after detoxification. Ash from boiler is sold to brick manufacturers.

Noise Pollution

Noise is anticipated from motors, compressors, centrifuges and DG set. DG set shall be provided with acoustic enclosure. Engineering controls like acoustic enclosures, barriers, shields, and anti-vibrating pads will be provided to ensure reduction of noise levels and vibration. Employees working in noise generating areas shall be provided with appropriate personnel protective equipment.

Occupational Safety and Health

Direct exposure to chemicals or its raw materials may affect health of employees. Direct exposure to hazardous materials is eliminated by providing closed handling facilities. Personal Protective Equipment (PPE)i.e., hand gloves, safety goggles, safety shoes, safety helmets, respiratory masks etc. are provided to all the employees working in the plant. Company has a policy of providing PPEs to all personnel including contract workers. Periodic medical checkup in addition to checkup during recruitment is adopted to monitor health status of employees.

Prevention, maintenance and operation of Environment Control Systems

The pollution control equipment, and the effluent treatment system is monitored periodically to estimate their efficiency and performance potential as part of adoptive management. Proactive maintenance and monitoring program for all equipment and machinery is adopted to identify the problems/under performance of the equipment. Necessary measures will be adopted to rectify the identified problems/defects. The management agrees that the results of monitoring will be reviewed periodically to adopt new measures if necessary, for efficient pollution control.

Transport systems

All the raw materials and finished products are transported by road. Dedicated parking facility is provided for transport vehicles. There will be 3-4 truck trip per day to the factory for transporting raw materials and products. Traffic signs will be placed in the battery limit. The drivers of vehicles will be provided with TREM cards of chemicals and materials to be transported, and will be explained the measure to be adopted during various emergencies

Reduce, Recycle and Reuse

A number of measures are proposed to achieve high yields and reduce generation of wastes. It shall be endeavor of the R&D team to improve yields through constant research and development activities. The solvents shall be recycled for reuse in the process after distillation. Mother liquors from the first crop shall be reused for process. Treated wastewater from ZLD system is reused for cooling towers, boiler make-up, washings and circulation in scrubbers. It is also proposed to explore recovery of various salts from MEE salts, and from process effluents to reduce effluent loads, and quantity of solid waste. Proposed rainwater harvesting system shall have a storage capacity of 750 m^3, and the stored run off will be used for plant operation for approximately 27 days.

Green Belt Development

It is proposed to provide green belt in an area of 1.35 acres, covering the boundary of the site as part of environment management plan. Native species shall be identified for plantation and guidelines issued by CPCB for development of green belt shall be followed. The green belt shall enhance environmental quality through mitigation of fugitive emissions, attenuation of noise levels, balancing eco-environment, prevention of soil erosion, and creation of aesthetic environment.

Corporate Environment Responsibility

The ministry of Environment, Forest and Climate Change issued an office memorandum mandating corporate environment responsibility expenditure contingent on the capital cost of the project, in addition to the expenditure on environmental management. The proposed project is a green field project, the management proposed to spent 2.6% of the

capital cost i.e., Rs. 12 lakhs towards corporate environment responsibility. Activities are identified to be implemented by the project proponent in consultation with local public representatives and revenue authorities.

Environment Management Department

The Environment Management Cell of the project is headed by the Pant head. Environment manager will report to plant head. Maintenance engineer, SHW supervisor and Health and safety manager will be guided by environment engineer.