

**SREE RAYALASEEMA HI-STRENGTH
HYPO LIMITED**

**SY. NO. 13/A1, 16, 17, 23, 67, 68, 69, 70/A, A2,
GONDIPARLA VILLAGE, KURNOOL MANDAL AND DISTRICT,
ANDHRA PRADESH**

EXECUTIVE SUMMARY

**SUBMITTED TO
ANDHRA PRADESH POLLUTION CONTROL BOARD,
REGIONAL OFFICE, KURNOOL**

EXECUTIVE SUMMARY

Introduction

M/s. Sree Rayalaseema Hi-Strength Hypo Limited (SRHHL) a group company of TGV group established an industry for manufacturing inorganic and organic chemicals manufacturing at Gondiparla village, Kurnool mandal in Kurnool district, Andhra Pradesh. The unit obtained ISO 9001, ISO 14001 and OSHAS 18001 certifications.

The product profile did not attract prior environmental clearance process before 2006. The unit has a valid Consent to operate vide letter no. KNL-4/APPCB/ZO-KNL/CFO/2015-1049 dated 03.09.2015 valid till 31.03.2020. It is proposed to expand the manufacturing capacity of Mono Chloro Acetic acid production capacity from 16.7 TPD to 83.5 TPD, coal based co-generation power plant from 3 MW to 13 MW, inclusion of Sodium Methoxide plant of capacity 20 TPD in the existing site area of 35.45 ha. The capital cost for expansion is Rs. 150 crores, towards enhancement of production facility, pollution control equipment and additional equipment to enhance the capacity. Prior environmental clearance is mandated by Ministry of Environment and Forests, vide SO 1533, dated September 14, 2006, for synthetic organic chemicals manufacturing activity and power plant. The terms of reference for the environmental impact assessment studies was obtained from MoEF&CC vide letter no. F.No. J-11011/82/2016-IA II (I) dated 21.06.2016 as part of environmental clearance process.

Location of the Project:

The plant site is located at Sy. No.s. 13/A1, 16, 17, 23, 67, 68, 69, 70/A, A2, Gondiparla village, Kurnool mandal and district, Andhra Pradesh. The site is located at the intersection of 15° 50' 57" (N) latitude and 78° 3' 57" (E) longitude. The site elevation above mean sea level (MSL) is 300 m. The plant site surrounded by open lands in north and east directions, Sree Rayalaseema Alkalies and Allied Chemicals Limited (SRAACL) in south direction and road connecting E. Tandrapad – Kaispur Road in west direction. The nearest habitation from the plant is E.Tandrapadu village located at a distance of 0.5 km in northwest direction. The main approach road is NH-7 - Gondiparla village adjacent to the site in south direction. The nearest Town and Railway station is Kurnool at a distance of 3.4 km in southwest direction and nearest airport is Shamshabad located

at a distance of 164 km in northeast direction. Tungabhadra River is flowing from northwest to southeast direction at a distance of 1.8 km in south direction. Interstate boundary between Telangana and Andhra Pradesh is at a distance of 1.2 km in northeast direction. There are two reserve forests in the study area. Gadidamadugu RF at a distance of 6 Km in southeast direction. Pullaiah RF at a distance of 9.5 Km in southwest direction. There are no National Parks, sanctuaries and critically polluted area and interstate boundary within the impact area of 10 km surrounding the site.

Product Profile

The manufacturing capacity of products permitted, proposed and after expansion is presented in following table. The unit is into manufacturing inorganic chemicals like sulphuric acid, chloro sulphuric acid, oleum, bleaching powder, hydrochloric acid, sodium hypochlorite, whitening agent and Calcium Hypochlorite/ Disinfectant / Hypochlorite and Disinfectant put together mainly as a downstream processing industry of the sister concern M/s. Sree Rayalaseema Alkalies and Allied Chemicals Ltd.

Manufacturing Capacity

S. No.	Product Name	Unit	Capacity		
			Consented	Proposed	Total
1	Mono Chloro Acetic Acid	TPD	16.7	66.8	83.5
2	Sodium Methoxide	TPD	--	20	20
3	Co-generation Power Plant (Coal based)	MW	3	10	13
4	Co-generation Power Plant (Bio-Mass)	MW	6	--	6
5	Non EC Products	TPD	747.9	--	747.9
By-Product					
1	Hydrochloric acid (30%)	TPD	19.4	77.4	96.8
2	Decanted Mother liquor*	TPD	4.4	18	22.4
3	Scrubbed Effluent from Caustic Scrubber**	TPD	15.3	60	75.3

* Sold as by-product to downstream users of Sodium Monochloro acetate and Trichloro acetic acid manufactures.

** Sold as by-product to Textile industry for bleaching

Manufacturing Process

Mono Chloro Acetic Acid is manufactured in batch process by using Acetic and gaseous Chlorine as raw materials, acetic anhydride and sulphur as catalyst. Sodium methoxide is prepared by treating methanol with sodium hydroxide. The cogeneration plant of 10 MW capacity shall use steam turbines, using steam generated by using a 50 TPH @ 64 Kg/Cm² (a) pressure boiler using imported coal as fuel.

Utilities

The proposed expansion requires additional steam for both process and effluent treatment system. It is proposed to establish coal fired boiler of capacity of 1 x 50 TPH in addition to existing coal/biomass fired boiler of capacity 1 x 50 TPH and Husk fired boiler of 1 x 3 TPH capacity. The DG sets required for emergency power during load shut down is estimated at 8285 KVA and accordingly 1 x 750 Kva DG set is proposed for expansion in addition to existing 6 x 1010 Kva, 1 x 750 Kva and 1 x 725 Kva DG sets. The list of utilities is presented in following table;

List of Utilities

S.No	Utility	Unit	Permitted	Proposed	After Expansion
1	Coal Fired Boilers	TPH		1 x 50	1 x 50
2	Coal/Biomass Fired Boiler	TPH	1 x 50	--	1 x 50
3	Husk Fired Boiler	TPH	1 x 3	--	1 x 3
4	DG Sets *	Kva	6 x 1010 1 x 750 1 x 725	1 x 750	6 x 1010 2 x 750 1 x 725

*DG sets will be used during load shut down by AP Transco.

Water Requirement

The water required for the plant is mainly for Scrubbers, and washings, cooling tower makeup, process, steam generation and domestic purposes. The total water requirement shall increase from 2579 KLD to 3888.5 KLD out of which 3518.5 KLD fresh water and 370 KLD of recycled water. The required water is drawn from Tungabadra River through infiltration wells. The total fresh water requirement is presented in following tables;

Total Water requirement

S.No	Description	Quantity (KLD)		
		Existing	Proposed	Total after expansion
1	Monochloro acetic acid and Sodium Methoxide plant	86	309.5	395.5
2	Co-generation Power Plant	1274	630	1904
3	Non EC Products	1219	--	1219
	Total	2579	939.5	3518.5

Baseline Environmental Data

The baseline data was collected in the study area during December 2016 – February 2017. 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 expansion. It has also identified the technologies to be adopted for the mitigation and control of the same. The sources of pollution are air emissions from utilities and process; liquid effluents from washings, utilities and domestic usage; solid wastes from process, treatment systems and utilities; and noise pollution from utilities, and process equipment.

Impacts on Air quality: The impacts on air quality shall be due to proposed 50 TPH coal fired boiler and standby DG set of 1 x 750 capacity and the existing emissions from coal fired boilers and standby DG sets. The incremental concentrations are quantified using ISC-AERMOD model based on ISCST3 Algorithm, considering the emissions from the proposed utilities of both Sree Rayalaseema Hi-Strength Hypo Limited (SRHHL) and Sree Rayalaseema Alkalies and Allied Chemicals Limited (SRAACL). The results indicate marginal increase in ambient air quality concentration. The predicted values for SPM, PM₁₀, PM_{2.5}, SO₂ and NO_x are 11.53, 0.61, 0.27, 5.79 and 5.89 µg/m³ respectively and the maximum values are observed at a distance of 1.9 km from the center of plant site in southwest. 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 mitigation and control measures of air pollution shall ensure that the impact on air quality is local – within the site area and its surroundings.

Impacts on Water: Water is essentially used for scrubbers, washings and utilities and domestic purposes. The total fresh water required shall be 3518.5 KLD after expansion which will be drawn from Tungabadra River through infiltration wells in addition to recycled water of 370 KLD. No impact on water quality is expected due to discharge of effluents as treated effluents are reused for cooling tower makeup.

Impacts on Noise quality: The noise levels may increase due to turbine, hi-pressure boiler motors, compressors, air cooled condensers, DG set and other activities. The major source of noise generation is turbine and hi-pressure boiler which emit noise level

ranging from 90 dB (A) to 110 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 55 and 75 dB(A) at distances of 50 to 110 m.

Impacts on Soil: The solid wastes generated from process, utilities and effluent treatment plant may have significant negative impacts if disposed indiscriminately. The hazardous waste is stored in separate storage area and sent to cement plants for co-processing based on caloric value or TSDF, sludge from ETP and inorganic residue is sent to secured land fill located at sister concern unit SRAACL. The operational phase impacts shall be neutral due to effective implementation of mitigative measures in handling, storing and transferring of solid wastes, effluents and chemicals.

Impacts on Ecology: There are no endangered species of flora and fauna in the impact area. The impact on biological environment is neutral with the effect confined mainly to the site area.

Environmental Monitoring

SRHHL is monitoring Ambient Air Quality (AAQ) for PM₁₀, PM_{2.5}, SO₂ and NO_x, work room for Chlorine concentrations, stack emissions for boiler, scrubbers and DG sets, noise levels on quarterly basis. Water and treated wastewater are monitored on daily basis, Soil analysis is done once in a year and the same is practiced after expansion also.

Additional Studies

Risk assessment was conducted and the heat radiation damage distances of pool fire in the tank farm was limited to 12m for a heat radiation of 4 KW/m², and the same was within the plant premises.

Project Benefits

There is a potential for direct/indirect employment of about 100-120 people during construction phase and 75 during operation phase due to the proposed expansion. The project shall have positive impact on socioeconomic environment due to provision of employment both direct and indirect and proposed CSR activities. There will be direct and indirect benefit to government and local body by way of taxes.

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 main sources of effluent generation from the plant are from washings, blow downs from utilities and domestic effluents. Effluents from washings of MCA and SMO plant sent to de-chlorination plant followed by MEE and ATFD. Condensate from MEE and ATFD reused for cooling towers make-up. Utility tower blow downs of MCA and sodium methoxide (SMO) plant sent to the effluent treatment system and treated effluent reused for cooling towers make-up. Utility blow downs of Co-generation power plant reused for ash quenching and greenbelt development after primary treatment. RO rejects from Co-generation power plant reused for preparation of milk lime solution used for manufacturing calcium hypochlorite (Non EC product). Domestic wastewater from MCA, SMO and co-generation power plant sent to septic tank followed by soak pit. Total Effluent generated in the existing plant and for proposed expansion is presented in following table;

Total Effluent Generated and Mode of Treatment

S.No	Description	Quantity (KLD)		Mode of Treatment/Disposal
		Permitted	Proposed	
I	Mono Chloro Acetic Acid and Sodium Methoxide Plant			
1	Washings	5	12	Sent to De-Chlorination plant, air stripping followed by Multiple Effect Evaporator (MEE) and Agitated Thin Film Dryer (ATFD). Condensate from MEE and ATFD reused for cooling towers make-up and salts sent to secured landfill of sister concern unit of SRAACL.
2	Cooling towers blow down	17	71	Sent to primary treatment and treated wastewater reused for green belt development.
3	Domestic	4.5	--	Sent to septic tank followed by soak pit.
4	Non EC Products	253.5	---	
	Total - I	280	83	
II	Co-Generation Power Plant			
1	Boiler blow downs	10	5	Sent to primary treatment and treated wastewater reused for ash quenching and green belt development.
2	Cooling towers blow down	125	60	

4	DM/Softener	50	15	Sent to De-Chlorination plant, air stripping followed by Multiple Effect Evaporator (MEE) and Agitated Thin Film Dryer (ATFD). Condensate from MEE and ATFD reused for cooling towers make-up and salts sent to secured landfill of sister concern unit of SRAACL.
5	RO Plant	70	40	Reused for preparation of milk lime solution used for manufacturing calcium hypochlorite (Non EC product)
6	Domestic	20	15	Sent to septic tank followed by soak pit.
	Total -II	275	135	
Grand Total (I+II)		555	218	

Effluent Treatment System

The high TDS effluent from all the units is taken into main effluent plant collection tank for proper mixing. The over flow from collection pit will be taken into settling tank and allowed to settle the sediments. From the equalization tank the clear effluent will be pumped to Dechlorination plant followed by air stripping, multiple effect evaporator and ATFD. The condensate is reused for cooling tower makeup the salts from ATFD are collected and disposed into SRAACL secured land fill.

Air Pollution

The sources of air pollution are proposed 50 TPH coal fired boiler and existing 50 TPH biomass fired boiler and 3 TPH husk fired boiler Backup DG sets of 1 x 750 KVA is proposed in addition to existing 6 x 1010 KVA, 1 x 750 KVA and 1 x 725 KVA capacity to cater energy requirement during load shut downs. The proposed air pollution control equipment for 50 TPH coal fired boiler is electro static precipitators (ESP). DG sets shall be provided with effective stack height based on the CPCB formula.

The process emissions contain Hydrogen chloride of about 35.25 TPD from Monochloro acetic acid process. Hydrogen chloride emissions are sent to scrubber in series. The scrubber contains 4 units with concentrate HCl, dilute HCl, water followed by caustic lye as scrubbing media. HCl after achieving concentration of 30% of quantity 96.8 TPD is sold as by-product, and scrubbed effluent from caustic scrubber contains mainly salt and sodium hypochlorite sold as by-product.

Solid Waste

Solid wastes are generated from process, solvent distillation, effluent treatment system, DG sets and boilers. 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 TSDF facility. The evaporation salts from ATFD, inorganic residue from process and sludge from ETP are sent to secured landfill located at sister concern unit SRAACL. Waste oil and used batteries from the DG sets are sent to authorized recyclers. Coal ash from boiler is sold to brick manufacturers. 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.

Noise Pollution

Noise is anticipated from turbines and hi-pressure boiler of captive power plants, motors, compressors, air cooled condensers and DG sets. The noise generating equipment is to be covered by special type of walls and other acoustic noise suppression measures under the guidance of equipment manufacturers. DG set shall be provided with acoustic enclosure. Motors and compressors shall be mounted properly to ensure reduction of noise 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. Online chlorine, VOC monitors shall be installed to monitor the ambient air quality and work room air quality, while chlorine sensors are also used for identifying potential hazard areas.

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 18-20 additional truck trip per day to the factory for transporting raw materials and finished 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. The treated waste water is reused for cooling purpose and also as scrubber media. It shall be endeavor of the R&D team to improve yields through constant research and development activities.

Green Belt Development

The management developed green belt in a total area of 12 ha and proposed to increase density to enhance environmental quality through mitigation of fugitive emissions, attenuation of noise levels, balancing eco-environment, prevention of soil erosion, and creation of aesthetic environment.

Post Project Monitoring

Environmental monitoring for water, air, noise and solid waste quality shall be conducted periodically either by proponent or third party. The frequency of monitoring

and the quality parameters shall be as suggested by the Ministry of Environment and Forests and Climate Change, Government of India.

Environment Management Department

Director - Technical, Manager - Environment and Manager - Safety will take the final responsibility for environmental Management and Safety control. The Environmental Manager and staff will supervise the day-to-day activities of the environmental management and control.