

EXECUTIVE SUMMARY
OF
ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR PUBLIC HEARING
OF
NEW PROJECT
PROPOSED BY



M/s. Sri Krishna Pharmaceuticals Ltd.

Plot No. B - 14/1, MIDC - Chincholi,
Taluka-Mohol, District -Solapur, Maharashtra

FOR
Bulk Drugs & Intermediates
(Active Pharmaceutical Ingredients)
Manufacturing Facility

PREPARED BY

GOLDFINCH
One-stop Environmental Solution...

GOLDFINCH ENGINEERING SYSTEMS PVT. LTD.
NABET ACCREDITED EIA CONSULTANT
THANE, MAHARASHTRA

SEPTEMBER 2014

Executive Summary

1.0 Introduction

Since 1975, Sri Krishna Pharmaceuticals Ltd. (SKPL) is active in the business of Pharmaceutical Raw materials (API's), Direct Compression Granules, Drug Delivery Systems, Vitamins, & Nutraceuticals. As a growth policy, SKPL proposes to establish a new unit to manufacture 2250 MT/Month (1250 MT API & Nutraceuticals products and 1000 MT by product acetic acid) of API (Bulk Drug & Intermediates) at Plot B-14/1, measuring 35,155 sq.m of plot area and 7474 sq.m of built up area, in the notified industrial area of MIDC, Chincholi, Taluka Mohol, District Solapur, - 413 255, State – Maharashtra.

SKPL has multi-purpose manufacturing facilities backed up with a modern pilot plant, centralized R & D center and a dedicated scientific team to scale up and commercialize technologies. The group has been recognized as a leader in waste minimization by the Indo – Australian joint venture on waste management and granted an AUS-AID award. SKPL is a largest producer of Paracetamol in India with a capacity of 6000 MT/year and largest producer of Folic Acid in the world with a capacity of 250 MT/year.

To assure better environment, Government of India has made it statutory for the project proponent to take prior Environmental Clearance for all activities covered in schedule as per notification no. S. O. 1533 dated 14th September 2006. This type of industrial activities are covered as category 5 (f) in the Schedule. It is also stated that Synthetic Organic Chemical Industry (Bulk Drugs & Intermediates) located in a notified industrial area/estate comes under category 'B 1'. However, based on the OM dated 16th May 2014 by Director MoEF, Public Hearing is required for the proposals in Industrial Estates / Parks which have not taken Environmental Clearance.

1.1 Purpose of Study

The purpose of this report is to establish the existing (baseline) environmental status of the project area, assess the pollution potential, the possible environmental impacts and recommend the mitigation measures required to minimize the adverse impacts. The proposal by Sri Krishna group falls in category 5 (f) B1 of schedule under EIA notification covering Synthetic Organic Chemicals industry located in notified industrial area.

1.2 Extent of Study and Study Covered

Environmental Impact Assessment report is prepared based on the studies carried out during April, May and June in the year 2012. The Environmental parameters such as ambient air, water, soil, noise, are those which are likely to be affected by the project were selected for study. The study area is defined as an area within 10 kms radius around site. The study area was selected based on the guidelines by MoEF about the criteria of pollutant's potential effects, sensitivity of receptors viz. people within the vicinity area and ecosystems, human settlements, plantations, cultural, aesthetic and recreational features etc.

1.3 Method of Study

Based on the MoEF/SEAC guidelines specifying model ToRs, studies were carried out and the nature of activities involved and their impacts caused on various environmental parameters were identified. These subsequently apply mitigation measures to be executed for safeguarding against any environmental degradation. Finally the exercise suggests methods of implementing the environmental management plan.

2.0 Type of Project

Sri Krishna Pharmaceutical Ltd. (SKPL) proposes a new unit for manufacturing of Bulk Drugs and Intermediates at notified industrial area at Chincholi MIDC at Plot, B-14/1, Taluka-Mohol, District - Solapur-413 255, State - Maharashtra. The total magnitude of operation will be 2250 MT/Month (1250 MT API & Neutraceuticals products & 1000 MT by-product Acetic acid) of API (Bulk Drug & Intermediates) products.

2.1 Need of the Project

Pharmaceuticals are indispensable for curing those who suffer from disease and their availability improves the quality of life. Though many traditional diseases and disorders are controlled or even eradicated, we are finding that due to change in way of life, newer ailments are prevailing. SKPL has developed these products by in-house trials and is desirous to serve the Nation by producing it here, albeit in a small scale.

SKPL already has exposure to such activities both at National and International market and the support needed for controlling human diseases and disorders mentioned. Also, as a part of growth policy and due to continuously changing market scenario, SKPL wish to expand bulk drug and intermediate activity to remain in business and retain the leadership.

2.2 Location of the Project

The proposed project under consideration would be located at,

Plot No: B-14/1, MIDC

Village: Chincholi

Taluka: Mohol

District: Solapur

State: Maharashtra.

Site specific details are as below:

Geographical Location	Latitude 17 ^o 44' 29.96" N and Longitude 75 ^o 48' 40.39" E with an elevation of 1527 ft. above MSL.
Distance from City	5 km from Solapur City.
Nearest Railway Station	15 km from Solapur Railway Station
Nearest Airport	20 km from Solapur Airport
Nearby River	9 km from Sina River

2.3 Size or Magnitude of Operation

SKPL intends to manufacture 2250 MT/Month of API (Bulk Drug & Intermediates) products (1250 MT API & Neutraceuticals products & 1000 MT by-product Acetic acid) in Plot No. B - 14/1. Product wise capacity is given below:

Table 1.1 Details of the Products

Sr. No.	Name of the Product	Proposed production Quantity for Environmental Clearance (MT/Month)	Remark
1	Paracetamol	1000 (200 +800)	200 Tons starting from PNCB - 4 Stages, 800 Tons starting from penultimate stage -2 Stages
2	Ibuprofen	200	
3	Domperidone	10	
4	Docosa Hexaenoic Acid (DHA)	20	
5	Lovastatin	20	
By Product			
1	Acetic Acid	1000	Generates in the process and sold to consumers

2.4 Power Requirement

The total power requirement for this proposed project will be 4000 HP. The required power connection is available from MSEDCL.

- Connected load: 3000 KW
- Max. demand : 1500 KVA
- Transformer capacity: 3000 KVA
- **Total power requirement – 4000 HP**
- **Power Supply:** (From MSEDCL)

In case of emergency backup two nos. of DG sets of capacity 1000 KVA each shall be proposed with acoustic enclosure.

2.5 Fuel /Steam Requirement

19.2 TPH will be the steam requirement for the unit can be met by using one nos. of boiler of capacity of 20 TPH & 1 No. standby boilers with capacity of 10 TPH.

Fuel for Boiler: 2800 MT/ month of coal will be used.

2.6 Water Requirement

The water requirement for process, domestic, gardening, boiler feed & for cooling water make up is about 759 KLD. The source of water is already available from existing water works of MIDC and the same is adequate and satisfactory. A water purification work is already operational with settling, coagulation and disinfection. The source is dependable and reliable. It does not encroach on anybody else's water source.

Table 1.2 Water Balance

Sr. No.	Product	Process Water Consumption (KL/d)	Water loss (-) / Reaction water add (+)(KL /d)	Wastewater(KL/d)
1A	Paracetamol – 4 Stages	41.49	+ 5.45	46.95
1B	Paracetamol – 2 Stages	100.51	- 19.58	80.93
2	Ibuprofen	96.31	- 51.00	45.30
3	Domperidone	33.98	+ 3.07	37.05
4	DHA	12.75	+ 20.40	33.15
5	Lovastatin	27.80	+ 14.90	42.70
6	Scrubber Water	25.00	Nil	25.00
7	Floor Washings	5.00	Nil	5.00
8	Laboratory Washings	1.00	Nil	1.00
	Sub- Total	343.84	-26.751	317.089
9	Domestic	50.00	-10.00	40.00
10	Boiler Feed	100.00(includes 85 condensate recycle)	-85(Condensate recovery back to feed water) -5 splash steam	10.00
11	Cooling water make up	255.00	- 229.00 (evaporation, windage, drift)	26.00
13	Gardening	10.0	-10.00	00.00
	Total	759	-365	393
	Water recycle after effluent treatment	284		
	Net Requirement	475		

3.0 Baseline Environment

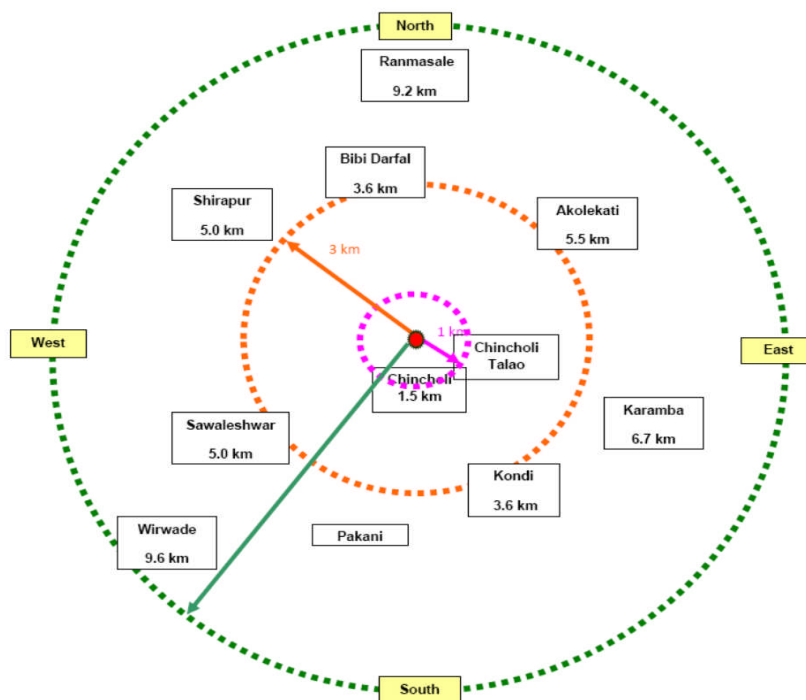
Baseline environment incorporates the description of the various existing environmental settings within the area encompassed by a circle of 10 km radius around the proposed project site. Based on the model Terms of References (ToRs) published by the SEAC for this category and after giving due consideration to various aspects of the project, field studies were conducted and secondary data was collected to establish baseline conditions for the EIA studies.

Table 1.3 and Figure 1.1 below illustrate Air, Water, Soil and Noise monitoring locations and specific parameters of significance. The samples were collected once in a month from various locations around the periphery of the plant. The sampling details have mentioned in the below table.

Table 1.3: Sampling Locations

Sr. No.	Name of Place	Air	Water		Soil	Noise Level Ambient
			Surface	Ground		
1.	Sri Krishna F1 plot				√	
2.	Chincholi Village	√	√		√	√
3.	Bibidarfal Village	√	√		√	√
4.	Kondi Village	√	√		√	√
5.	Shirapur Village	√			√	√
6.	Shirapur borewell		√			
7.	Savleshwar Village	√	√	√	√	√
8.	Akolekati Village	√	√		√	√
9.	Karamba Village	√		√		√
10.	Ranmasle Village	√	√		√	√
11.	Wirwade Village	√				√
12.	Chincholi Talao					
13.	Sri Krishna MIDC water		√			
14.	Pakni village				√	

Figure 1.1: Sampling Locations



3.1 Air Environment

3.1.1 Micro Meteorological Data

From the meteorological data of the study area, the months of April, May and Jun are considered to be dry (summer) season. It is referred that minimum and maximum daily temperatures are 25.1°C and 39.9°C respectively. Predominant wind direction was in the south direction during study period.

3.1.2 Particulate Matter

The average PM₁₀ concentration varied in the range of 25.2 – 42.3 µg/m³. The highest concentration among the locations was observed at Chincholi village and lowest at Sawalesher village among the locations monitored, high concentration may be due to windblown dust, unpaved road etc. The PM₁₀ concentrations for all locations were observed to be below stipulated standards for NAAQS (24 hourly for PM₁₀ = 100 µg/m³).

The average PM_{2.5} concentration ranged between 15.5 – 30.4 µg/m³. The highest concentration among all locations was observed at Bibidarfal village and lowest at Sawalesher village. The PM_{2.5} concentration for all the locations was observed within stipulated standards for NAAQS. (24 hourly for PM_{2.5} = 60 µg/m³)

3.1.3 Gaseous Pollutants

The average concentration of SO₂ ranged between 43.4 – 69.3 µg/m³ and the average concentration of NO_x ranged between 5.8 – 35.8 µg/m³ respectively. Highest concentration among all the locations of SO₂ was found at Sawalesher village and lowest concentration of SO₂ was found at Wirwade village. The levels of the gaseous pollutants were below stipulated National Ambient Air Quality Standards. (24-hourly for SO₂ & NO_x is 80 µg/m³).

The average concentration of Ammonia (NH₃) ranged between 0.05 – 0.42 µg/m³ which may be attributed to emissions from animal waste, and soil and also due to industrial activities. Higher concentration was recorded at Karmada village whereas lower concentration was observed at Wirwade village. However, all these values are well within stipulated National Ambient Air Quality Standards. (24-hourly for NH₃ is 400 µg/m³).

3.2 Noise Environment

Noise, often defined as unwanted sound, interfaces with speech communication, causes annoyance, distracts from work, and disturbs sleep, thus deteriorating quality of human environment. The impact on ambient noise within the study area due to generation of loud noise levels from various sources during operation of the plant was predicted. The major noise sources of the proposed units were used for the simulation. Construction phase impacts due to noise generating equipment and machineries was estimated based on primary data generated at similar project sites. Study shows that noise level in the study area was within stipulated standards prescribed by MPCB for industrial sector.

3.3 Water Environment

The proposed project does not have any potential impact on the surface and ground water quality and quantity in a significant manner in the long term during the operation phase.

All villages in the vicinity are provided with drinking water from wells or Government Water Supply Schemes RWS. Hence, SKPL does not encroach or compete with other users for its supply and is dependent on water line that is dedicated for MIDC. Rainwater harvesting is planned to collect rainwater from the concreted roofs of buildings proposed in the factory. However, this will be a small quantity available only in rainy season as the annual rainfall is low around 545 mm in Mohol Taluka.

Surface and ground water samples analyzed in the study area showed all parameters within the permissible water standards except for hardness in a few bore wells.

3.3.1 Surface Water

During study period the physico-chemical parameters of water samples showed moderate water quality in terms of turbidity: 0.2-0.6 NTU and total suspended solids: 8-18 mg/l. Buffering capacity in terms of alkalinity was found to be in the range of 162-260 mg/l, whereas, pH was in the range of 7.1-7.4. TDS was found in the range of 420-590 mg/l, Total hardness was found in the range of 259 – 302 mg/l, whereas chloride and sulphate were found to be in the range of 78 – 176 mg/l, and 18 – 64 mg/l, respectively. Nutrient load in terms of Nitrates as N was in the range of 0.04-0.11 mg/l, whereas total phosphates were 27-34 mg/l. Level of COD was observed to be in the range of 7.2-9.7 mg/l; Sodium, Calcium, Magnesium and Potassium were in the range of 2 – 94 mg/l, Heavy metals like nickel, cadmium, chromium, copper, lead, iron, manganese, zinc and Mercury were found in the range of ND, ND, ND-0.05, ND-0.08, ND-0.05, ND-0.04, ND-0.11, ND-4.0 and ND mg/l respectively.

3.3.2 Ground Water

In groundwater turbidity was found to be in the range of 0.2-1.0 NTU while corresponding total suspended solids in the range of 4-18 mg/l. TDS was found in the range of 326 – 1650 mg/l. The Alkalinity as CaCO₃ was found to be in the range of 167-1122 mg/l whereas pH was in the range of 7.2-8.2. Chloride and Sulphate were found to be in the range of 52 – 275 mg/l, and 18 – 471 mg/l, respectively. Nutrient load in terms of Nitrates as N was in the range of 0.01-0.18 mg/l, whereas total phosphate was in the range of 20-48 mg/l. Level of COD was found to be in the range of 5-18 mg/l. Sodium, calcium, magnesium and potassium were found in the range of 12 – 480 mg/l, Heavy metals like nickel, cadmium, chromium, copper, lead, iron, manganese, zinc and Mercury were found in the range of ND, ND, ND-0.02, ND-0.08, ND-0.05, ND-1.42, ND-0.16, ND-0.16 and ND mg/l respectively.

3.4 Land Environment

The direct and indirect impacts on surrounding land due to pollution discharge in the form of flue gases, fugitive emission, liquid and solid wastes as well as subsequent urbanization have been considered while studying the base line data of land environment. The likely impacts on land environment depend on several factors like the project location, land use/land covering surrounding area, ecological or otherwise sensitivity of the surrounding regions etc. Accordingly for assessment of impacts, it is pertinent to study the current land use/land cover of identified project site as well as surrounding area.

3.4.1 Land Use Pattern

Main land use in the region is cultivation (78.65%), since the region is well irrigated with many small tanks and

canals. With reference to the satellite image, land under water is 0.27% of the total (this refers to wet water bodies only, since the image is acquired in the month of January, some of the tanks and streams are observed dry). Other natural vegetation covers about 0.54% while scrub covers about 4.02% of total area. Habitation is spread over 1.36% of the total area and open land is about 15.17.

The proposed project is in industrial area, it will not change land use pattern

3.4.2 Geography

Geographically Solapur is located between 17.10 to 18.32 degrees North Latitude and 74.42 to 76.15 degrees East Longitude. The district is situated on the south east fringe of Maharashtra State and lies entirely in the Bhima and Seena basins. Whole of the district is drain either by Bhima river or its tributaries. The district is bounded on the North by Ahmednagar and Osmanabad districts, on the East by Osmanabad and Gulbarga (Karnataka State) district, on the South by Sangli and Bijapur (Karnataka State) and on the West by Satara and Pune districts. There is no important hill system in the district.

3.4.3 Climate

The climate of the district is very good due to high land on the western part and gradual slope towards east and north, and on the western side with moderate summer from April to June and good winter from November to March. The climate during rainy season from the middle of the June to end of September is cool and pleasant followed by a hot spell of October

3.4.4 Rainfall

Agro climatically entire district is comes under rain shadow area. Rainfall is uncertain and scanty. The average rainfall of the district is between 500 mm to 650 mm.

3.4.5 Classification of Soil

The soil of the district can broadly be classified into three groups viz, black or kali, red or Tambat and the gray. Soils of the district are light, medium or heavy according to depth, texture and location. In Solapur district the nodular lime stones or kankars are everywhere and abundant whereas, building stones are mainly found in Chincholi, Darphal, Haglar, Kondi, Lomboti and Savleshvar, 15 km away from the city.

3.4.6 Rivers

The major rivers in the district are Bhīma and Neera, whereas, Mann, Seena, Bhogawati are its tributaries. The Bhima and Sina run South - East. Neera and Mann nearly East. During the summer season all the rivers become dry.

3.4.7 Agriculture / Cultivation

The major crops in the region are Jowar, Barja & Pulses. Cash crops like Sugarcane, Groundnut and Cotton are also grown in Solapur Tehsil. Water from Ujani dam is used for irrigation purpose improving the Agricultural productivity of Solapur District

3.4.8 Baseline Status of Soil

The possible impacts of the project on soil texture has been studied by designing network of baseline(pre-project) status by characterization of soil through field studies. Results are summarized below.

The pH of the soil in the study area is moderately alkaline in the range of 7.2 to 8.9. The soluble salt was determined from soil extract (1:1).The soluble salts were expressed in terms of electrical conductivity (EC). The EC of the soil samples was in the range of 0.04 $\mu\text{s}/\text{cm}$ to 0.1 $\mu\text{s}/\text{cm}$. The phosphate and Sulphate content of soil in the study area varied from 12 gm./Kg to 22 gm./Kg and 0.3 gm./Kg to 17 gm./Kg respectively. Prominent cations in the study area viz. Calcium, Magnesium, Sodium and Potassium were present in the range of 0.5 gm. /Kg to 7.0. gm. /Kg. Study show that land cover in study area is of good quality.

Care has been taken by project proponent that due to operation of the project soil quality of the study area will not get adversely affected.

3.5 Biological Environment

In view of the need for conservation of environmental quality and biodiversity, study of biological environment is one of the most important components for environmental impact assessment.

3.5.1 Flora & Fauna

The project site, falls within the Chincholi MIDC area, is open land having monsoon specific vegetation, the site was devoid of trees, few shrubs, herbs and grasses were observed at the site. *Calatropis procera* (Rui), *Lantana camara* (Ghaneri), *Argemone mexicana* (poppy), *Cynadon dactilon* (Durva), *Dendrocalamus strictus*, *Chloris barbata*, *Andropogon triticeous* were common at the core site.

Faunal ecological and biodiversity status of the site shows characteristic of industrial habitat. Ecological richness and value of the actual project site location was found very low. Ecologically rich areas are 9-10 km away from the project site.

3.5.2 Avian Diversity

In the surrounding areas within 10 km range of the site in total 81 species of birds were encountered. In areas falling within 1 km range of the project 21 species of birds were observed during the study. The observations were made based on direct sightings and bird calls. In the observed list of birds none of the species are classified as endangered or rare.

The project seems to raise no impact on biological environment, as the project falls in the MIDC area, the project is expected to be designed as per MIDC guidelines and infrastructure to reduce any impact that may be expected from water effluent discharge or air emissions.

3.6 Socio-Economic Effect

Environment is a whole complex of physical, social, economic, cultural and aesthetic dimensions which affects individual, communities and ultimately determines their forms, characters, relationships and survivals.

3.6.1 Demographic Structure

In 2011, Solapur had population of 4,315,527 of which male and female were 2,233,778 and 2,081,749

respectively. In 2001 census, Solapur had a population of 3,849,543 of which males were 1,989,623 and remaining 1,859,920 were females. The Taluka is situated in remote, drought, and some part hilly area and has 51363 households of Maratha, Muslim, Buddhist, and also includes SC, ST, OBC and open categories community.

3.6.2 Occupational Structure

Solapur is the home of Handloom and Power loom weaving industry which provides employment to a large number of workers.

The spatial analysis of levels of Socio-economic development shows that low level of socio-economic development found in Madha, Karmala, Mangalvedha, Sangole, Mohol, Akkalkot and South Solapur Tahsil. It covers nearly 65 % of the total geographical area of district. The agricultural activities of these areas are mainly dependent on monsoon, due to scanty and nonuniform rainfall scarcity conditions prevail in the district indicating a very less possibility of agricultural irrigation. It indicates urgent need of industrialization which ultimately helps to provide substantial support for direct employment generation as well as indirect benefit for livelihood support activities.

Total 300 no of man power will be required for technical and administrative work of the proposed project activity, which will be hired from nearby locality.

3.6.3 Infrastructure Resource Base

The infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation and communication facility and power supply etc.

I. The industrial area had modern infrastructure

About 524 Nos of street lights are provided along the main roads as well as the internal roads. 70 W & 150 W HPSV (High-Pressure Sodium Vapour lamps) are used mounted on 9 m high steel tubular poles. A total of 210 lamps of 70 W and 314 lamps of 150 W are provided in the whole area.

ii. Common Facility Center

MIDC has constructed a common facility center building in the area. This building accommodates a post office, the telephone exchange, a bank and the association's office.

iii. Banks

There are full-fledged branches of most of the nationalized as well as co-operative banks in Solapur City.

iv. Education Centers

All educational facilities are available in the surrounding area.

v. Fire Station

A fire station is necessary keeping in mind the planned development of the Chincholi MIDC.

vi. Electricity

Maharashtra State Electricity Board has established a 132 KVA substation in the area.

Vii. Water

MIDC has lifted the water from Solapur Municipal Corporation by making the agreement of 10 MLD quantity. The average daily consumption of water in this area is 4 MLD.

viii Sewage System

No residential activity or housing colony is proposed by the project proponent. Domestic wastewater generated will be treated separately in Sewage Treatment plant of capacity 40 CMD. As per the Solapur City Development Plan (CDP) the sewerage sector investments is 273.23 Crores for the year of 2007-2013 and 2036.30 Crores for the year for 2007-2031.

ix Solid Waste Management

No residential activity or housing colony is proposed by the project proponent. The total amount of waste generated in Solapur city is about 300 MT per day. The solid waste is collected from houses and is deposited at a predetermined location from where it is carried to land fill site through trucks. There is door-to-door collection system in Solapur city. Individual household dispose their solid waste in near disposal location/bins in their locality from where it is picked by vehicles.

As per the Solapur City Development Plan (CDP) the Solid Waste management investments is 80.55 Crores for the year of 2007-2013 and 476.50 Crores for the year for 2007-2031.

x. Roads

Main roads have 45 m land width with 2 lanes while the internal roads have a land width of 30 m, 25 m or 20 m with 1 lane. All the approach roads to the plots are asphalted. Tree plantation along the roadside is done. Streetlights are also erected on road side.

xi. Residential Facilities

Available in Solapur city which is away from 5 kms from Chincholi Industrial area.

xii. Telecommunication

All telecommunication facility such as fax, telephone, telegram and internet are available.

3.6.4 Health status

Total 77 Primary Health Centres are available in Solapur District, out of which seven are available in Mohol Taluka where, SKPL proposes to establish their new unit of API Drugs at Chincholi MIDC area. Around the project site PHS are available at Anagar, Ankoli, Begampur, Kamathi, Kurul, Narkhed, Patkul and Shirpur.

3.6.5 Cultural and Aesthetic Attributes

No cultural and Aesthetic important places are observed within the study area, hence likely impact on such important places is ruled out.

4.0 Environmental Impact Mitigation

4.1 Water Pollution

➤ Treatment of Industrial Wastewater

The freshwater requirement is about 759 CMD for process, domestic, greenery, boiler feed & for cooling water make up. The source of water is already available from existing water works of MIDC.

The quantity of process effluent from the proposed activity will be segregated as high TDS and low TDS streams and treated differently in the ETP consisting of Multi Effect Evaporator (MEE), Agitated Thin Film Dryer (ATFD), where, considerable amount of steam will be required to remove the fairly dry solids in the ATFD as hazardous waste for disposal and considerable clean condensate for recycle. The MEE condensate which may be slightly contaminated will be treated along the low TDS effluent in an ETP consisting of primary,

secondary and tertiary treatment systems to get treated effluent with some small amount of solids. These will be fed to a RO system to get major recyclable permeate and a small reject will be again fed to MEE resulting into zero discharge.

Due to the proposed project, the wastewater quantity emanating from the process facilities will be **353 KL/Day**. The wastewater which is generated due to manufacturing process will be treated in the effluent treatment plant having capacity of **400 m³/day**. Water recycled after effluent treatment will be **283 KL/Day**. The treated water will be reused for washing & flushing. No untreated or partially treated water or by passed effluent will be let directly on to the land or to CETP and hence the impact on the ground water due to the proposed project will not be impinging the water environment.

➤ **Treatment of Domestic Wastewater**

Domestic wastewater generated will be treated separately in Sewage Treatment plant of capacity 40 CMD. Treated wastewater will be reused for gardening.

4.2 Air Pollution

4.2.1 Particulate Matter

Dust will lead to an increase in the background Suspended Particulate Matter (SPM) concentration of the area, if proper control measures are not adopted. However, this will be temporary and reversible in nature and restricted to small area and for short duration. Proper upkeep and maintenance of vehicles, sprinkling of water on roads and construction site, providing sufficient vegetation etc. are some of the measures that would greatly reduce the impacts during the construction phase. Therefore, considering all sources of air pollution, it is expected that air emissions due to construction will not exceed air quality standards (NAAQS). Moreover major portion of plot will be used for green belt development to minimise such effects.

4.2.2 Gaseous Emission

The impacts on air environment due to emission of gaseous from stacks depend on the type of fuel used and may extend to far distances depending on meteorological conditions. The fugitive emissions are generally less in quantity and they are released relatively closer to ground level which cause impact to very limited distances (about 1-3 Km). Amongst the continuous point source emissions, SO₂ will be of prime concern as it is emitted depending on the type of fuel used and followed by emission of Oxides of Nitrogen (NO_x), which also depends on type of fuel (solid/liquid/gas) and the rate of fuel combustion. Emissions from the proposed unit along with anticipated amount of discharge are shown in **Table 1.4**

Table 1.4 Details of Air Pollutants

Sr. No.	Pollutant	Source of Emission	Proposed Limit	MPCB limit
1.	SPM	Process /Boiler/ D.G. Set	<150 mg/nm ³	<150 mg/nm ³
2.	SO ₂	Boiler/ D.G. Set	<35 kg/ hr	<834.5 kg/day
3.	NO ₂	Boiler/ D.G. Set	<50 ppm	<50 ppm
4.	Ammonia	Process	<50 ppm	<35 mg/nm ³
5.	HCl	Scrubber	<35 mg/nm ³	<35 mg/nm ³

Amount of Coal require for one 20 TPH steam boiler will be 1920 MT/month and for one 10 TPH stand by boiler will be 880 MT/month. Generation of 10 % of Ash and 0.5 % of Sulphur is anticipated from the burning of the coal. As a pollution control measure common Chimney with height of 50 meters will be attached to the boilers so that the gas would be discharged at a proper height to disperse the gaseous pollutants. The arrangement of ports in the chimney and facilities such as ladder, platform etc. is proposed considering the post air monitoring operations. Two Polypropylene scrubbers are proposed as a Best Available Control Technology (BACT) to remove Ammonia and HCl gases from industrial exhaust steames each with a stack height of 21.5 m (i.e., above the roof of the building).

Arrangment of two D.G sets will made by proponent and will be used only in case of emergency and in case of power failure. Emission of less than 1.0 % of Ash and upto 0.05 % of sulphur is anticipated from operation of DG sets. Stack will be provided to both DG sets each with height of 3.5 meters above the enclouser.

Sri Krishna Pharmaceuticals will install a comprehensive control system consisiting of control equipments as is warranted with reference to generation of emission and operate and maintain the same continuously so as to achive the level of pollutants to the prescribed standards.

4.3 Noise Pollution

The noise levels will be below MPCB prescribed limits. All operating personnel are well acquainted with their respective operations and personnel protection equipment's will be provided to the operators in utility area.

- In house monitoring will be done regularly inside and outside the factory. The noise levels will always be within Maharashtra Pollution Control Board limits for industrial activity and SKPL will ensure 100% compliance record.
- Proper noise barriers, acoustic enclosures will be provided on noise generating equipment's like DG sets and cooling towers to minimize noise.

4.4 Land Pollution

The project proponents will take all the precautions to make its solid waste areas impervious to water and leach-ate migration. This will avoid soil contamination. It follows that soil quality will not be adversely impacted by proposed production activity. The unit set up is in industrial area hence no change in land use.

Hazardous wastes such as process/ distillation residues, waste solvents, iron sludge, spent carbon, ETP sludge, MEE/ATFD salts, waste oil, E-waste and used lead-acid batteries will be generated from the proposed activity. As per the HW rule (M&H and Trans boundary movement) 2008, all the hazardous waste are being sent to CHWTSDF at MEPL Ranjangaon established with support of MIDC & MPCB. The hazardous waste container will be labeled and record book will maintain as a safety measure and to control any leakage to soil and water. The impact on soil quality will be NIL due to disposal of hazardous waste, as they are not dumped straight into the land.

4.5 Socio-Economic Effects

Sri Krishna Pharmaceuticals will be actively involve in improving the socio economic conditions of the area and will also actively participate in implementing government schemes for welfare of the society of the area.

The overall impact of the proposed project will be positive and beneficial as the company is committed to continue its efforts for improving the socio economic conditions of the area. Negative impact on socio-economic component within the impact zone would be insignificant as the proposed project would be established in Chincholi MIDC area. Due care has to be taken from the planning stage of proposed unit for mitigation of occupational health along with necessary social welfare activities in the surrounding villages. However, the local inhabitants are not against the projects, provided their demands for Infrastructural improvement and job opportunities are met by the management. The project will provide employment opportunities to local population.

5.0 Environmental Monitoring Program (EMP)

EMP is planned such that the mitigation measures should be put in place to reduce the adverse impacts likely to result from the implementation of the project. Apart from the regular monitoring, Post – Project Monitoring Plan (PPMP) is proposed to monitor the ambient environmental quality after the commissioning of the project. The frequency of monitoring of various parameters will be increased as per the requirement after the project goes on schedule.

Table 1.5 Environmental Monitoring Program

Sr. No.	Type	Locations	Parameters	Period and Frequency
1	Ambient air Quality	Project site 2 locations	Criteria Pollutants: SO ₂ , NO _x , RSPM, NH ₃	24-hr average samples every quarter during operation
2	Stack emission Monitoring	Stack of Boilers and DG sets 4 nos	•SO ₂ , NO _x , RSPM, NH ₃ and hydrocarbons	24 hr average every quarter.
3	Workplace Monitoring	Proposed Plant	•RSPM, Acetone, Toluene, HCl, NH ₃	For TLV, Once in two months
4	Ambient noise	Project site 2 locations	•dB(A) levels	Hourly Day and Night time Leq levels every quarter during Operation phase.
5	Treated effluent quality	Influent, bioreactor, final treated water before disposal.	•General parameters like pH, COD, TSS, BOD, MLSS, MLVSS	Once every day. Twice a week.
6	Surface water quality	3 stations around project Site	•Physical and Chemical Parameters.	Once a month.
			•Bacteriological parameters.	Once in 3 months
			•Heavy metals and toxic constituents.	Once in 3 months
7	Ground water quality and depth of water table	3 piezometer stations around the factory site for ground water monitoring to ensure no contamination	•Physical and chemical parameters: Total Organic matter Concentration	Once a month.
			•Bacteriological Parameters.	Once in 3 months
			•Heavy metals and toxic Constituents.	Once in 3 months

8	Terrestrial ecology	Flora and fauna in and around the site	•The health and the density of the vegetation, forest cover	Once a year
9	Aquatic ecology	Aquatic organisms in the nearby water body	•Ensure no fish kill in the nearby water body.	Once a year
10	Waste characterization	Storage area	Physical and chemical composition	Annual by CHWTSDF

6.0 Risk Assessment and Disaster Management Plan

Rapid development has posed wide-ranging hazards threatening safety and health of people. Accidents may adversely affect the environment and the people living in the vicinity. These accidents can be minimized to a great extent by proper procedures, handling and training. The proposed project of SKPL is also complying statutory requirements under section 7A & B and chapter IV A of Factories Act, 1987 and manufacture, storage and import of Hazardous Chemicals Rules Under Environment (Protection) Act, 1986. Hence, the present EIA report also covered following studies. EIA report also concluded following studies.

Hazard Identification

Risk Assessment

Risk Analysis & Emergency Plan

Risk Management & Insurance Planning

Disaster Management Plan

Onsite Emergency Plan

An emergency occurring in the proposed plant is one that may affect several sections within it and/ or may cause serious injuries, loss of lives, extensive damage to environment or property or serious disruption outside the plant. It will require the best use of internal resources and the use of outside resources to handle it effectively. It is imperative to conduct risk analysis for all the projects where hazardous materials, fuels are handled.

Statistics and in-house risk database, the frequencies of occurrence for the different accident scenarios were determined. The frequencies derived from the historical database have been checked with the possible hazard scenario identified during hazard identification.

➤ Disaster Management Plan

- Storage in tightly closed containers in a cool, well-ventilated area away from WATER, HEAT, COMBUSTIBLES (such as WOOD, PAPER and OIL) and LIGHT.
- Storage away from incompatible materials such as flammable materials, oxidizing materials, reducing materials, strong bases.
- Use of corrosion-resistant structural materials and lighting and ventilation systems in the storage area.

- Wood and other organic/combustible materials will not be used on floors, structural materials and ventilation systems in the storage area.
- Use of airtight containers, kept well sealed, securely labeled and protected from damage
- Use of suitable, approved storage cabinets, tanks, rooms and buildings. Suitable storage will include glass bottles and containers.
- Storage tanks will be above ground and surrounded with dikes capable of holding entire contents.
- Limit quantity of material in storage. Restrict access to storage area.
- Post warning signs when appropriate. Keep storage area separate from populated work areas. Inspect periodically for deficiencies such as damage or leaks.
- Have appropriate fire extinguishers available in and near the storage area

➤ **Work Environment**

Under the Factories Act Section 59 (6), regular workplace monitoring is required in any factory in which toxic chemicals are used or given of. Work place monitoring of the proposed plant will be done regularly once in two months and proper care will be taken that concentration will not exceed the prescribed limits. Parameters to be monitored are given below:

Table 1.6 Work Environment Monitoring

Parameter	Short Term Exposure Limit (15 min) Conc. ppm
Acetone	1000
Ammonia	35
Hydrochloric Acid	--
Toluene	150

7.0 Project Benefits

This project development will give rise to social and economic development measures in the study area.

7.1 Improvement in Physical Infrastructure

- Road Transport facilities
- Educational facilities
- Water supply and sanitation

7.2 Improvement in Social Infrastructure

- Education facilities

- Banking facilities
- Post offices and Communication facilities
- Medical facilities
- Recreation facilities
- Business establishments
- Community facilities

8.0 Environmental Management Plan (EMP)

Environmental Management Plan (EMP) includes the protection, mitigation and environmental enhancement, measures to be implemented to nullify the adverse impact on the environment. EMP is a document designed to ensure that the commitments in the EIA and subsequent condition of any approval or license are carefully implemented.

Table 1.7 Environmental Management Plan

Sr. No.	Particulars	Proposed Equipment , Method
1.	Air Pollution Control	<ul style="list-style-type: none"> •The emissions from Process & fuel stacks - Stack with Adequate height.
2.	Water Pollution Control	<ul style="list-style-type: none"> •The wastewater will be treated in Effluent Treatment Plant. •The source of water supply is MIDC.
3.	Noise Pollution Control	<ul style="list-style-type: none"> • No Demolition involved. Construction for short duration and Fabrication part is more. • Acoustic enclosures to D G set as per manufacturers design.
4.	Environment Monitoring and Management	<p>For the effective implementation of the EMP, an Environmental Management System (EMS) will be established at the proposed project. The EMS will include-</p> <ul style="list-style-type: none"> • An Environmental Management cell • Environmental Monitoring Program • Personnel Training • Regular Environmental Audits and Corrective Action • Documentation – Standard operating procedures • Environmental Management Plans and other records
5.	Occupational Health	<ul style="list-style-type: none"> • Cleanliness of all workplaces will be emphasized upon. Sufficient and suitable lighting arrangements will be provided in all working areas. • Effective provisions of drinking water at convenient places will be made for the work force. • Apart from the above provisions, the health of all personnel will be consistently monitored for occupational diseases through medical checkups at regular intervals carried out by a registered medical practitioner. • Regular Work Place monitoring will done to take care of work environment in turn safety of persons working in it.
6	Green Belt	Green belt area : 13168 sq.m which is 52.45 % of total available open area

7	Hazardous Waste Management	<ul style="list-style-type: none"> •Segregation category wise and disposed to CHWTSDF. •Disposal of Haz. Waste: Shall be send to CHWTSDF, •Disposal of non-biodegradable Solid Waste: shall be sale to Authorized Party. •Disposal of biodegradable Waste: Shall be used as manure for gardening.
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8.1 Project Cost and Expenditure for Environmental Activities

Estimated proposed project cost including land building, Plant machinery will be approximately 95 Crores. Proposed project EMP capital cost and recurring cost will be 692 lacs and 283 lacs respectively. Environmental Cost benefit Analysis produces more efficient decision by increasing monetary values of the life, health and natural resources. In order to assess the pros and cons of any particular regulatory standard for proposed activity, cost- benefit analysis seeks to translate all relevant considerations into monetary terms.

8.2 CSR Activities

As a part of CSR activity, SKPL proposes to launch several projects / schemes.

- Free education and books & notes for the students of deprived sections.
- Support scholarship scheme, tuitions, etc. and other facilities.
- Promoting Sports & Cultural activities
- Arranging Health camps in surrounding areas

SKPL will invest Rs. 10 lacs as funds towards CSR activity.

9.0 Conclusion

The industry will manufacture Bulk Drug & Intermediate which is in good demand for growing Medical facilities in India. Project activity will not disturb the environmental setting because SKPL have proposed all preventive and mitigation measures required for pollution prevention.Land selected is in notified Industrial estate. Trees will be planted and not cut down. No Rehabilitation issue is involved. There will not be problematic waste materials as all will be utilized/safely disposed.

It can be concluded that proposed project activity of Sri Krishna Pharmaceutical Ltd.is in the interest of common man, the society, the state and as the country as a whole.

- The proposed project would provide a quality drugs product at lower cost to the users.
- There would be considerable saving in energy resources on account of transportation.
- Socio-economic benefits due to creation of direct/indirect employment. Moreover due to project other direct and indirect business will be benefited.
- Country will save valuable foreign exchange as import of these drugs will reduce by corresponding amount.
- These drugs also have export potential. Hence possibility of earning foreign exchange.
- No air pollution, the Flue gas emission from boiler will be left out through stack. The stack with adequate height as per CPCB norms will be provided.

- Industrial wastewater will be treated by ETP within the premises. The treated wastewater will reuse for floor washing, cooling tower and gardening.
- The domestic wastewater generated will be treated separately in STP and treated water will be used for gardening.
- The risk associated is identified by conducting risk assessment, HAZOP and recommendations of the same will be implemented. Moreover on site emergency plan will be prepared to tackle the emergency when it arises.

Sri Krishna group believes in "**Sustainable Development**" and take care that no pharmaceuticals should release in the environment from manufacturing process. SKPL has a unique effluent treatment plant which results in zero discharge. Thus, it can be concluded on a positive note that after the implementation of the Mitigation Measures and Environmental Management Plan, the normal operation of Sri Krishna Pharmaceutical Ltd. unit will have negligible impact on environment and will benefit the Country as a whole.