

# FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT



2 X 45 KLPD GRAIN BASED DISTILLERY UNIT  
2 X 3.0 MW COGENERATION POWER PLANT  
2 X 7700 CASES/DAY OF IMFL/IMIL BOTTLING UNIT

## Starlight Energy Ltd.

Village Goud Sargiguda, Taluka Junagarh,  
Dist Kalahandi. (Odisha)

### Environment Consultant



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## **EXECUTIVE SUMMARY**

### **1.0 INTRODUCTION**

India, the fourth largest economy in the world, has been maintaining a GDP growth 10% rate of more than 7 % for more than a decade. Analysts have projected that India has the potential to almost double her present rate of growth with labour and capital productivity improvements. Industrial development plays an essential supportive role in improving labour and capital productivity. Investment in industrial sector is also an indicator of economic growth in all market economies.

Ethanol is the basic raw material for the utilisation in the chemical industry, for potable purposes and is now being used for mixing in the petrol as fuel. Keeping in view of the future requirements of ethanol, M/s Starlight Energy Ltd. are planning to set up a 2 x 45 KLPD capacity grain based distillery unit having 2 x 3.0 MW cogeneration power plant along with 2 x 8000 cases/day of IMFL/IMIL bottling unit at Village Goud Sargiguda, Taluka Junagarh, Dist Kalahandi, Odisha. The project is planned to be established in two phases. In phase 1, the company would install a 45 KLPD grain based distillery unit having 3.0 MW cogeneration power plant along and 8000 cases/day of IMFL/IMIL bottling unit. After the commissioning of the phase 1, the promoters of the project would implement the phase 2 having replica project of 45 KLPD grain based distillery unit with 3.0 MW cogeneration power plant and additional 8000 cases/day of IMFL/IMIL bottling unit.

As per the notification of Ministry of Environment and Forests (MoEF), Government of India notification dated 14<sup>th</sup> September, 2006, the project is covered under Category 5 (g). The industry had applied to the EAC of MoEF for the approval of *Terms of Reference* for the Environmental Impact Assessment study and approved TOR was received from them.

### **1.1 Methodology**

The methodology adopted for carrying out the EIA study is based on the guidelines and TOR issued by the EAC. The EIA report is based on data collected from primary and secondary sources that included;

- Collection of information on existing baseline conditions.

- Ambient air, water and soil quality and noise level monitoring
- Identification of environmentally sensitive locations (if any) in the impacted area
- Assess the adverse impacts on the environment and to avoid the impacts, suggest cost effective mitigation and management measures to mitigate the negative impacts
- Preparation of Environmental Management Plan, which will include associated costs for execution of mitigation and enhancement, works; development of an environmental monitoring program
- Addressing the derived issues involving occupational health and safety, and emergency/disaster management to limit/contain the adverse effects.

## 2.0 THE PROJECT

M/s Starlight Energy Pvt. Ltd. are planning to set up a 2 x 45 KLPD capacity grain based distillery unit having 2 x 3.0 MW cogeneration power plant along with 2 x 8000 cases/day of IMFL/IMIL bottling unit at Village Goud Sargiguda, Taluka Junagarh, Dist. Kalahandi, Odisha. The company would be installing the project in two phases. The implementation of the project shall be as below:

Phase	Project Description	Installed Capacity	Expected COD
I	Integrated Distillery Unit with IMFL/IMIL Plant, Biomass Power Plant- Phase I	45 KLPD with 8000 cases/day of IMFL/IMIL Bottling Plant and 3.0 MW Captive Power Plant	Dec 2019
II	Integrated Distillery Unit – Phase II	45 KLPD with 8000 cases/day of IMFL/IMIL Bottling Plant and 3.0 MW Captive Power Plant	Dec 2020

The promoters of the project are already having more than 90 acres of land at village Village - Goud-Sargiguda, Taluka Junagarh, Dist. Kalahandi. Out of this, the promoters of the project would year mark 40 acres of land for the proposed 2 x 45 KLPD grain based distillery project. The estimated cost of project for the Phase 1

would be around Rs. 50.00 Crores. The cost does not include the land cost. The estimated cost of project for the Phase 2 for would be 25 % more as the phase 2 commissioning would take at least 2 years from the date of commissioning of the phase 1.

The distillery will use grains such as broken rice, maize, bajra, jowar and other starch containing grains etc. as basic raw material. Besides this, processing chemicals would be used for the production of ENA/RS/ethyl alcohol. Phase wise raw materials for the distillery plant is given below;

S. No.	Item	Unit	Phase 1	Phase 2	Total
1.	Broken rice, maize, bajra, jowar and other starch containing grains etc.	MT	115	115	230
2.	Enzymes	Kgs.	100	100	200
3.	Sodium Hydroxide	Kgs.	50	50	100
4.	Urea	Kgs.	225	225	450
5.	Anti-foam agent	Kgs.	25	25	50
6.	Yeast	Kgs.	100	100	200

Starlight Energy Pvt. Ltd. would be installing 2 x 3.0 MW cogeneration power plant along with the distillery unit. The cogeneration power plant would be installed in two phases. After the commissioning of the first phase, the company would start the installation of the similar second unit in phase 2.

The daily fuel (biomass) requirements for the 30 TPH boiler furnace of the cogeneration power plant would be around 5.5 MT/hour or 160 MT/day. Phase wise daily consumption of biomass for the cogeneration power plant is given below;

S. No.	Item	Unit	Phase 1	Phase 2	Total
1.	Biomass consisting of rice husk, cotton stalk, mustard stalk etc.	MT	160	160	320

## 2.1 Plant process and equipment

The manufacturing process involves different process steps in distillation process. The process will have following steps/operations;

- a) Grains receiving and storage

- b) Grains handling and milling
- c) Slurry preparation/liquefaction
- d) Saccharification and instantaneous fermentation
- e) HIFERM Fermentation
- f) Multi-pressure distillation
- g) Decantation
- h) Multi-effect evaporation
- i) Spirit storage

## **2.2 CO-GENERATION POWER PLANT**

Starlight Energy Pvt. Ltd. are planning to set up 2 x 3.0 MW biomass based cogeneration power plant (3.0 MW each in phase 1 and phase 2, totaling 6 MW after the commissioning of both the phases) for the production of power and extraction of steam for distillery process use. The industry would install 3.0 MW extraction cum condensing turbine for the cogeneration power plant. Once the industry commissions the phase 1 for whole of the project, the promoters of the project would install another 3.0 MW cogeneration power plant of similar configuration.

The cogeneration power plant is divided in three parts, namely;

Boiler & Auxiliaries

Turbine & Auxiliaries

Generator & Auxiliaries

## **2.3 Sundry Utilities (Each Phase)**

**Condensate system:** To maximize energy conservation, water utilization and plant efficiency, condensate would be recovered throughout the plant and returned for boiler feed make up. Allowance has been made for the necessary condensate receivers, pipes work, valves and traps sets, etc. About 80% of the steam supply to process is recoverable as condensate for re-feeding it into the boiler.

**Water treatment plant – 300 m<sup>3</sup>/day :** It is proposed that the water to be used will be received from the river water. Ground water would be used only in case river water is not available. The water quality will require pre-treatment to satisfy the

quality required for boiler feed water, process requirement, and blending during bottling. Treatment will involve sedimentation, sand filtration, activated carbon filtration, softening and ion exchange treatment (as required for different process requirements), suitable for quality of water required.

**Cooling water – 1200 m<sup>3</sup>/hour:** The maximum process and power plant cooling water requirement will be 1200 m<sup>3</sup>/hour for each phase. The cooling tower will be counter/cross flow induced draft divided into 3 cells. The cooling tower shall be designed for a cooling range of 8°C, and an approach of 5°C while operating under the atmospheric wet bulb temperature of about 27°C. The cooling tower shall be carefully sited such that there is no re-entertainment of the vapors into the cooling tower. Evaporation and drift loss will depend on season and an average figure will be about 1.60 %. The cooling tower blow-downs will be approximately 0.1%. Whole of the quantity lost will be made-up by adding fresh water/treated condensate from the process.

**Water Requirements :** Total average fresh water consumption from the project can be summarized as under;

S. No.	Purpose	Phase 1	Phase 2	Total
	<b>Grain based distillery operations</b>			
1.	Process & dilution water	215 m <sup>3</sup> /day	215 m <sup>3</sup> /day	430 m <sup>3</sup> /day
2.	Cooling water	250 m <sup>3</sup> /day	250 m <sup>3</sup> /day	500 m <sup>3</sup> /day
3.	Washing Requirements	20 m <sup>3</sup> /day	20 m <sup>3</sup> /day	40 m <sup>3</sup> /day
4.	Water treatment plant	15 m <sup>3</sup> /day	15 m <sup>3</sup> /day	30 m <sup>3</sup> /day
5.	Domestic requirement	10 m <sup>3</sup> /day	10 m <sup>3</sup> /day	20 m <sup>3</sup> /day
	<b>Bottling process</b>			
1.	Water requirements for blending	25 m <sup>3</sup> /day	25 m <sup>3</sup> /day	50 m <sup>3</sup> /day
2.	Washing requirements	10 m <sup>3</sup> /day	10 m <sup>3</sup> /day	20 m <sup>3</sup> /day
	<b>Boiler requirements</b>			
	Boiler water requirements	90 m <sup>3</sup> /day	90 m <sup>3</sup> /day	180 m <sup>3</sup> /day
	<b>Total</b>	635 m <sup>3</sup> /day	635 m <sup>3</sup> /day	1270 m <sup>3</sup> /day

### 3.0 BASELINE ENVIRONMENTAL SETTING

This section describes existing environmental status in an area encompassed within 10 km radius around site of the proposed plant.

The environmental monitoring for the EIA study was conducted for the winter season.

Initially, a reconnaissance survey of the study area was carried out and then field monitoring for measuring meteorological parameters, ambient air quality, water quality, soil quality and noise levels was carried out from 1<sup>st</sup> January, 2015 to 31<sup>st</sup> March 2015. In addition, certain aspects like land area, socio-economic status, past meteorological conditions, etc., have been analysed based on secondary information available from sources like district census reports, district gazetteers, Indian meteorological department, etc.

### **3.1 Meteorology**

The project zone lies in the sub tropical region with four distinct seasons – Winter (December to February), Summer (March to May), Monsoon (June to September), Post Monsoon (October to November).

In the study area, annual minimum and maximum temperature range (of extreme variation) is 8 – 45°C. during the study period, the daily range of temperature variation was 31.9 - 9.9°C.

The average annual rainfall in the study region is about 1273.9 mm.

On annual basis, it can be noted that high humidity occurs in the month of December, July, August and September and low humidity occurs in the month of April, May and June.

Annual trend indicates mean wind speeds to be highest in the months of March, April, May, June and July (7.8-9.5 km/hour) and lowest in the month of October, November and December (1.5-3.5 km/hour). The wind rose diagram indicates that the most predominant wind direction is *North-West* during the study period.

### **3.2 Air environment**

To establish the existing baseline status of ambient air quality, 6 AAQM stations were selected. Various pollutants monitored were respirable suspended particulate matter (PM<sub>10 and 2.5</sub>), sulphur dioxide (SO<sub>2</sub>) and oxides of nitrogen (NO<sub>x</sub>). The ambient air quality monitoring was carried out twice a week for the winter season.

During the study period, PM<sub>10</sub> concentrations have ranged from 52.3 to 75.6 µg/m<sup>3</sup>. The maximum value of PM<sub>10</sub> has been observed at village Junagrh and minimum value of PM<sub>10</sub> has been observed at village Machiala .

PM<sub>2.5</sub> concentrations have ranged from 25.3 to 44.6 µg/m<sup>3</sup>. The maximum value of PM<sub>2.5</sub> has been observed at village Junagarh and minimum value of PM<sub>2.5</sub> has been observed at village Machiala.

SO<sub>2</sub> concentrations at various ambient air quality monitoring stations have ranged from 7.5 to 16.3 µg/m<sup>3</sup>. The maximum value of SO<sub>2</sub> has been observed at village Junagarh and minimum value of SO<sub>2</sub> has been observed at village Machiala.

NO<sub>x</sub> concentrations at various ambient air quality monitoring stations have ranged from 17.5 to 28.6 µg/m<sup>3</sup>. The maximum value of NO<sub>x</sub> has been observed at village Junagarh and minimum value of NO<sub>x</sub> has been observed at project site and village Machiala

### **3.3 Noise**

The study area of 10 km radius, with reference to the site, has been covered for noise environment. The three zones, viz., residential, highways and silent zones have been considered for noise monitoring. Proximity to NH 201 has also been considered during the monitoring. Noise monitoring has been undertaken for 24 hours at each location. The noise survey involved the determination of noise levels at 6 locations. Noise level was recorded at every hour for 10 minutes continuously for 24 hours at 'A' response. The maximum day and night time values recorded were 53.20 dB(A) and 44.30 dB(A).

### **3.4 Water quality**

River Hati flows at a distance of 3.5 Kms from the site. Surface water sample of river Hati was collected from upstream at Village Goud Sargiguda. The downstream surface water sample was collected at Village Junagarh.

The utilizable ground water resources in the district for irrigation are computed to be 49520 HAM and net annual ground water draft is 4431 HAM, leaving a balance of 45089 HAM for further ground water development which can support an irrigation potential of 131082 hectares.

There is enough scope to harness ground water resources in over 75 percent of the areas in the district with the additional ground water structures; viz. dug wells (22132). Dug-cum-bore well (4268) and borewells (533) for irrigation purpose,

considering 70 percent of balance ground water resource at it's first stage of exploitation.

To assess the ground water quality of the study area, six no. of ground water samples were collected. The physical, chemical and biological characteristics of the ground water samples were found within the limits as specified in IS-10500:1991.

### **3.5 Land environment**

#### **3.5.1 Land use pattern**

Kalahandi is situated between 19° 8' N to 20° 25' N latitude and 82° 32' east and 83° 47' east longitude. It is located in the south-western part of Orissa.

There are 36 villages within the 10 km radius study area. 32% of the total district area which turns out to be around 2500 Sq. Km. is under forest area. Land under non-agricultural include all lands occupied by buildings, roads and railways or under water. e.g. rivers and canal. Around 41372 Ha of land comes under this category in the district. 56961 Ha of district area covers all barren and uncultivable lands, including mountains, deserts etc. which cannot be brought under cultivation except at a high cost. 350160 Ha of the total district area comes under the net area sown under crops and orchards, counting areas sown more than once in the same year only once.

#### **3.5.2 Soil characteristics**

The soil of Kalahandi district is an admixture of Red, Black and Sandy loan. The district has five different types of soil broadly classified as

- a) Red Laterite
- b) Black clay
- c) Sandy Loan
- d) Clay
- e) Red Sandy loan.

To assess the baseline status of the soil quality in the study area, six soil samples were collected from different locations. Bulk density of soil samples varies between 1.29 to 1.46 gm/cm<sup>3</sup>. The soils of all the sites are moderately porous (porosities ranging

between 47.9 to 58.4%). pH of soil samples ranged between 7.35 to 7.80. Total available nitrogen available for different soil sample ranged between 228 to 280 kg/hect. The available nitrogen value is highest for village Machiala and lowest for village Junagarh. The highest value of nitrogen may be due to favourable conditions which affect the release of nitrogen from the soil ecosystem. The available phosphorus concentration in the study area has varied from 38 to 44 Kg/hect. Available potassium concentration ranged between 218 to 264 mg/100gm.

### **3.6 Biological environment**

The soil of the area in general is fertile which adds to the floristic wealth of the area. Agriculture is dominant in the available area. The main crops grown in the area are wheat, paddy, maize, vegetables etc. Variety of trees are available in the study area. Grazing lands are also found. There is no natural sanctuary in the neighbourhood of study area. The animals and birds found in the area are – Sambhar, Nilgai, Wild boar, dogs, goats, cows, buffalos, horses, donkeys and cats etc.

### **3.7 Socio-economic environment**

The socio-economic profile of the study area is given below;

- **Settlement pattern:** The study area is covered under Taluka Junagarh and District Kalahandi. Altogether, there are approximately 36 villages in the study area.
- **Medical and public health:** The district is gaining a notable improvement in the medical and public health facilities during the last two decades. The district has 1 Allopathic hospital, 43 Primary health centers and 3 sub- centres. There is a lack of medical facilities overall in the state. But still the district is fighting odds to reconcile its stature.
- **Education:** Average literacy rate of Kalahandi in 2011 was 59.22% compared to 45.94% of 2001. If things are looked out at gender wise, male and female literacy rate were 71.90 and 46.68 % respectively. Total literate in Kalahandi District were 802,036 of which male and female were 484,177 and 317,859 respectively as per 2011 census. According to MSME report there are around 2234 primary schools, 771 medium schools, 305 senior secondary schools and around 62 colleges in the district.

- **Demography:** According to 2011 census, Kalahandi has a population of 15,76,869. The male to female ratio of the population in the study area district is 1000:1003. The study area had a population density of 169 persons per sq. km. in 2001 which has raised to 199 persons per sq. km as per 2011 census.
- **Economic profile:** This section deals with the economic aspects of the study area which includes occupational structure of the inhabitants. In the study area the population has been divided into three segments viz. main workers, marginal workers and non workers. Out of the total population, around 620,000 are the total workers in the district in which around 381,000 are male workers and 239,000 are female. Out of the total workers the main workers total up to 382,050.

#### 4.0 ENVIRONMENTAL IMPACT IDENTIFICATION AND ASSESSMENT

In the present study, the most probable impacts on various components of the surrounding environment due to the proposed development have been predicted.

##### 4.1 Impact identification

###### 4.1.1 Land alteration/regime modification

• Atmosphere	No significant impact on atmosphere due to the project.
• Water resources	Limiting uncontrolled surface run-off and storm water management will have positive contribution to water scenario.

###### 4.1.2 Resource extraction and consumption/renewal

• Atmosphere	No significant impact on atmosphere due to the project.
• Water resources	The industry would use river water to cater the needs of the industry, hence no stress laid on ground water resources.
◉ <i>Economic conditions</i>	The activity will generate extra job and business opportunities.

###### 4.1.3 Processing/industrial activity

• Atmosphere	Gaseous emissions will have little local effect.
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◉ <i>Economic conditions</i>	The activity will generate extra employment and business opportunities.
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## 4.2 Quantification of significant impacts

Flue gas emissions would be the only significant object that could have adverse impact on the environment. SPM and SO<sub>2</sub> are the main constituents of flue gas emissions that need to be modeled and quantified. Computer modeling has been carried out using **Gaussian Plume Dispersion Model (PTMTP)** to verify the impact of flue gas emissions into the atmosphere and their effect on ground level.

Accordingly to the modeling, increase in SPM and SO<sub>2</sub> level due to the project would be less than 8 µg/m<sup>3</sup> for SPM and less than 3.5 µg/m<sup>3</sup> for SO<sub>2</sub>. The overall SPM and SO<sub>2</sub> concentration in the atmosphere would be within the permissible limits.

## 5.0 ENVIRONMENTAL MANAGEMENT PLAN

### 5.1 Mitigation Measures

#### 5.1.1 Wastewater generation and treatment

Spent Wash from Distillation Process : The project would result in generation of spent wash from the distillation process. Spent wash @ 270 m<sup>3</sup>/day would be generated during the production of alcohol @ 45 KL/day. After decantation, 40 MT/day of wet cake would be generated and net thin slops generation would be 230 MT/day. Out of this, 50 MT/day of thin slops would be reused in the liquefaction and balance 180 MT/day of spent wash would be treated in multi-effect evaporation system. Condensates from Process and MEE : The project would result in generation of process condensates (spent lees) from the distillation process and multiple effect evaporation condensates. Spent lees @ 60 m<sup>3</sup>/day would be generated and MEE condensate @ 150 m<sup>3</sup>/day would be generated. Whole of the condensates after treatment would be used for makeup water of cooling towers. Besides the above mentioned streams, effluent would be generated from misc. other streams such as – washing effluent @ 10 m<sup>3</sup>/day, cooling towers blow down @ 35 m<sup>3</sup>/day, domestic effluent @ 09 m<sup>3</sup>/day, D.M. plant reject @ 15 m<sup>3</sup>/day, Bottlewash/spillages @ 22 m<sup>3</sup>/day and boiler blowdown @ 15 m<sup>3</sup>/day. This effluent would be moderately polluted and after treatment would be used on land for irrigation purposes.

The details of the effluent generation from each unit is given below:

S. No.	Purpose	Phase 1	Phase 2	Total
<b>1.</b>	<b>Grain based distillery process</b>			
	Spent Wash	270 m <sup>3</sup> /day	270 m <sup>3</sup> /day	540 m <sup>3</sup> /day
	Spent Lees	60 m <sup>3</sup> /day	60 m <sup>3</sup> /day	120 m <sup>3</sup> /day
	MEE Condensate	150 m <sup>3</sup> /day	150 m <sup>3</sup> /day	300 m <sup>3</sup> /day
	Fermentor/floor washing	20 m <sup>3</sup> /day	20 m <sup>3</sup> /day	40 m <sup>3</sup> /day
	Cooling tower blow down	35 m <sup>3</sup> /day	35 m <sup>3</sup> /day	70 m <sup>3</sup> /day
	Domestic Effluent	9 m <sup>3</sup> /day	9 m <sup>3</sup> /day	18 m <sup>3</sup> /day
	D M plant reject	15 m <sup>3</sup> /day	15 m <sup>3</sup> /day	30 m <sup>3</sup> /day
<b>2.</b>	<b>Bottling Section</b>			
	Bottle washing and spillages	12 m <sup>3</sup> /day	12 m <sup>3</sup> /day	24 m <sup>3</sup> /day
<b>3.</b>	<b>Boiler Section</b>			
	Boiler Blowdown	15 m <sup>3</sup> /day	15 m <sup>3</sup> /day	30 m <sup>3</sup> /day

### 5.1.2 Air pollution

The industry plans to install a 30 TPH capacity fluidized bed boiler (FBC) for steam and 3.0 MW of cogeneration of power for the proposed phase I of the distillery unit. Identically similar unit would be installed in phase II, after the commissioning of the phase I. FBC boiler furnace is the most suitable technology for the burning of biomass and coal as fuel.

The air pollution control system, for the combustion emissions from the boiler furnace, will comprise of;

- a) ducting arrangement to transport emissions to the APCD,
- b) an APCD – electro-static precipitator
- c) an ID fan, and
- d) a stack to discharge the cleaned flue gas at adequate height.

### **5.1.3 Solid waste**

The plant facility will generate a maximum of 15 MT/day of ash. The ash handling will be totally in an enclosed system. The ash handling system shall be designed to take care of 100% fuel burning. Ash collected from the bottom of furnace (bottom ash) and the ash collected in the air heater hoppers and ESP (air pollution control system) hoppers will be taken to an ash silo through a pneumatic conveying system. Ash silo will have the capacity of storage for 1 day of ash. The ash from the silo will be unloaded through the ash conditioner and stored on land. This ash will be final disposed for the preparation of fly ash bricks. The industrial unit will commit about 5000 m<sup>2</sup>, exclusively to be developed for ash handling.

### **5.1.4 Green Belt Development**

Taking the above-mentioned criteria into consideration, the green belt covers around 33% of the total project area within the distillery project site. The green belt is consisting of shrubs, trees, avenue trees, revenue trees, crops and potted plants. All the species suggested are pollution tolerant, besides having an aesthetic appeal. The vegetation of varied types has the potentiality to respond to the hazards of pollution. Trees also act as wind breakers and stop the particulate matter from crossing over. The plants species would be planted in such as way that they are able to control the effects of pollutants.

### **5.2 Environmental monitoring**

The industry would have either their own environmental monitoring laboratory or it would get the various parameters of environment monitored from external laboratories as per the requirements of PPCB/CPCB.

### **5.3 Rain Water Harvesting**

The industry would install rain water harvesting wells to control storm water during the rainy season. The complex will be provided with 20 recharge systems interconnected with each-other through storm drains. The average rainfall in the area is about 1330 mm/year. Assuming 70% of the total actual rainfall as efficiency of the recharge system, more than 65000 m<sup>3</sup> of water will be recharged in an year into the ground water.

## **5.4 Occupational Health and Safety**

Production of Ethanol involves storage handling and use of several chemicals. Some of these chemicals are toxic and hazardous in nature. Information about these chemicals is therefore important for the safety of the employees and the plant. Besides, the health status of the employees is also important which may be affected due to exposure to these chemicals. The exposures may be sudden and accidental or for a long period. In both of the cases there will be different health effects. Therefore safety measures dealing with these chemicals are of vital importance and will be followed judiciously.

In order to ensure good health of workers, regular health check-up of the plant workers would be carried out.

Occupational health surveillance programme would be taken as a regular exercise for all the employees and their records maintained.

## **5.5 Management, staffing and capacity development**

The industry shall have an environmental, health and safety committee (from amongst the regular staff of the industry), headed by a co-ordinator, who will be adequately trained.

Suitable training programs will be arranged for the manpower, which are directly responsible for the pollution control systems and emergency response planning, in their respective field/area of responsibility.

An estimated 10% of the project cost has been earmarked for implementation of environmental management plan.