

One step ahead - Environmental Management System (ISO-14001) in J K Paper Mills, Rayagada, Orissa,

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ABSTRACT

"A recurring challenge for pollution prevention (2p) practitioners within organisations is to effectively communicate to their top management how a specific 2p project can directly contribute to the bottom line by making money or reducing operating costs, in addition to potentially reducing regulatory non-compliance. The Environmental Management System is that part of the overall management system that, includes organisational structure, planning, activities, responsibilities and authorities, compliance of legal and other requirements, practices, procedures, process and resources for developing, implementing, achieving, the achievement of continual improvement, the rate or extent of which will be determined by the Organisation in the light of economic and other circumstances."

INTRODUCTION:

J K CORP LTD. (Formerly Straw Products Limited) the flagship company of J K organisation was established in 1938. J K Paper mills, (A Division of J K Corp Ltd) an integrated pulp and paper mill, was set up in the year 1962 at Jaykaypur in the district of Koraput (presently Rayagada District) Orissa with an installed capacity of 18.000 TPA. The mill has expanded in phases and at present has 5 Paper Machines with 90,000 TPA installed capacity. It is proposed to further expand the installed capacity to 1.6 lakh TPA through modernisation using cleaner technology. J.K. Paper Mills manufacture machine finished, machine glazed and surfaces sized quality writing and printing papers and paperboards.

J K Paper Mills is the first among the paper industries in India to be awarded with ISO- 9001 certification by M/S DET NORSKE VERITAS QA

LTD., under accreditation from National Accreditation of Certification bodies, London in the year 1995 for conforming to ISO-9001 1994 Quality Systems for design, development and manufacturing of paper, board and related products.

With technological advancements moving at a rapid pace, organization the world over are concerned about the impact of their business on the environment and are keen to become Eco friendly. However, facing the challenges/ competition to keep up with

**J K Paper Mills,
A Division of J K Corp Limited,
Jaykaypur-765 017,
Dist. : Rayagada, (Orissa)**

contemporaries and at the same time ensuring a matching performance on environment protection is not a very simple task.

Also, J K Paper Mills is the first among the paper industries in India to be awarded with ISO-9001 certification by M/S DET NORSKE VERITAS QA LTD., under accreditation from RvA, Netherland in the year 1998 for conforming to ISO -14001 (1996)

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Environmental Management System (EMS) rightly called "Green and Clean Pulp and Paper Technology", the pulp and paper mill has been nurturing technology amidst the greens right from its inception in the early sixties. Even before its commissioning, the mill management was conscious of its commitment to preserve the ecology in line with its corporate mission of preserving the ecological balance.

There are many reasons why organization might choose to implement ISO-14001. The reasons are as follows:

1. Facilitate continual improvement in environmental performance of the mill.
2. Improved working conditions/atmosphere.
3. Help in resources (Raw materials, Chemicals, stores, utilities etc.) conservation and thereby reducing load on environment and increasing profitability.
4. Help in establishing company's image as environmentally responsible company.
5. Better confidence from regulatory agencies.
6. Increased confidence from regulatory agencies.
7. Increased access to global market.

APPROACH FOR IMPLEMENTATION OF ISO-14001:

All the departments have identified normal, direct, indirect, abnormal and emergencies environmental aspects in their respective areas and its impacts, from chipper house to dispatch including utilities, and services departments For example Bamboo and hardwood dust, fibre loss, chemical loss,

alkali loss, white liquor & green liquor loss, fugitive and H₂S emission, suspended particulate matters, SO_x, CO, CO₂ emission from boilers, water, steam and power usage, office wastes, oil spills/ leakages etc. solid waste like lime sludge, fly ash, ETP sludge, land contamination due to lime sludge disposal etc. Identification will consider direct, indirect aspects under normal, abnormal and emergencies situations. The environmental policy, objectives and targets of J K Paper Mills are set basing upon the significant aspects & impacts.

ENVIRONMENTAL POLICY

We at J K Paper Mills, Jaykaypur, Rayagada, Orissa (India) are committed to:

- Comply with applicable environmental legislation's.
- Prevention of pollution.
- Continual improvement in environmental performance.

We shall improve our environmental performance by:

- Afforestation Through Social and Farm Forestry supported by clonal technology.
- Clearner Technologies and Processes.
- Reducing Pollutants in Discharged Water.
- Reducing Particulate Emissions.
- Solid Waste Management.
- Conservation of Resources.

ENVIRONMENTAL OBJECTIVES AND TARGETS

In order to substantiate the environmental policy the following objectives and targets have been arrived at by the environmental management team.

A. LEAKAGE

To stop the leakages such as leakage of water/ chlorine/chlorine dioxide/sulfur dioxide/hydrochloric acid/ oils and lubricants/ black liquor/ white liquor/ green liquor/ fibres/ fillers/dyes/ steam/ condensate water/ fly ash, various departments have made their yearly environmental index performance, which is a

step towards prevention of pollution.

B. REDUCING PARTICULATE EMISSION

In order to reduce the particulate emission, following steps have been taken and are being monitored on regular basis:

REDUCTION EMISSION AT SOURCE

Low efficiency coal fired boilers have been converted into high efficiency fluidized bed coal combustion, which reduces the emissions. Further, the new stacks are provided with increased height and increased exit gas velocity to allow better atmospheric dispersion. All the C F boilers, the chemicals recovery boilers are provided with efficient electrostatic precipitator for particulate emission control. The emissions of NOx and CO are proposed to be reduced through better design of burners and combustion conditions. Further to reduce the particulate matter, power and recovery departments have their environmental index performance to control equipment and maintenance.

STACK MONITORING

The emissions from all the stacks are being monitored regularly. The exit gases temperature, velocity and of pollutant concentration is being measured.

WORK SPACE MONITORING

The concentration of air borne pollutants in the work space environment is monitored at least once in a month if necessary suppression is done through water sprinkling.

AMBIENT AIR MONITORING

The ground level concentrations of suspended particulate in the ambient air outside the boundaries and in the adjoining villages is monitored at least twice in a week.

METEOROLOGICAL OBSERVATIONS

Meteorological station has been installed for monitoring the meteorological parameters like dry bulb temperature, wet bulb temperature, wind speed, wind direction, cloud cover and solar insolation in the vicinity. The information is being used in air

pollution modeling and also for on-site and offsite emergency management.

GREEN BELT DEVELOPMENT

The purpose of developing a green belt around the mills site is to capture the fugitive emission, if any, from the mills, and to attenuate the noise generated from the mills & machinery, and to improve the aesthetic look of the mill site. The green belt is a set of rows of trees planted in such a way that they form an effective barrier between the mills and surroundings.

With a view to combat the effect of pollution and to protect the environment against the pollution, development of green belts in and around the mill has been a continuous activity at J K paper mills.

C. REDUCING POLLUTION LOAD ON WATER DISCHARGE

J K paper mills have an efficient effluent treatment plant for treatment of waste generated in the mills including a sophisticated environmental laboratory for monitoring water and waste water parameters. In order to reduce the load further on E T plant, J K Paper Mills, have introduced a state of the art technology in their pulping and bleaching process.

SALIENT FEATURES ARE AS UNDER

Switch over to state-of-the art rapid displacement heating (RDH) pulping technology and oxygen reinforced delignification, which significantly reduces AOX, BOD, and COD loads in the effluent, as well as the fugitive emissions.

Increase of 2 to 3% fibre yield is a step towards resource conservation.

Highest recovery of alkali in India through a modern soda recovery plant, is a step towards cleaner technology

D. LAND IRRIGATION WITH THE TREATED EFFLUENT

J K Paper Mills have carried out experimental plantations of paddy and sugarcane under the direct supervision of agriculture/rural development, department of the government of Orissa and the results revealed that crop grown with effluent

irrigation gives about 50% more yield when compared to plane water irrigation. There has been a constant demand from the local agriculturists for diversion of this effluent to irrigation fields.

E. MONITORING OF RECEIVING BODY OF TREATED WASTE WATER

The treated wastewater is proposed to be used for land irrigation, for sugarcane and paddy cultivation, through a lift irrigation scheme. a part of it will be used for the green belt developed in and around the mills.

F. MONITORING OF GROUND WATER

In order to detect any contamination of the ground water from the mill effluents, ground water samples are being taken from representative locations, on site as well as off-site.

G. SOLID WASTE MANAGEMENT

The solid wastes generated in the mill are fly ash and bottom ashes from the steam boilers, lime sludge from the recausticising plant, bamboo and hard wood dust from chippers and primary and secondary sludges from the effluent treatment plant.

H. CONSERVATION OF RESOURCES

The main resources are being used in the paper mills are bamboo, hard wood, water, steam and power. The raw material for the mill, bamboo and hardwood are forest-based materials. In order to conserve the raw material, J K Paper Mills initiated plantation program in the year 1990 with the objectives of creating raw material resources by generating plantation awareness among the farmers for utilizing dry lands thereby enhancing socio-economic condition of the people through rural employment and buy back arrangements. The plantation program has been taken up extensively under three schemes, namely, **SOCIAL FORESTRY, FARM FORESTRY and CULTIVATION -CUM-SHARE CROPPING**, Water, steam, power resources are being conserved through

AT A GLANCE - SOLID WASTE MANAGEMENT

Sl.no	Name of the solid waste	Properties	Utilization Planning
1.	Fly ash	Mineral admixture inert material, good pozzolanic properties.	<ul style="list-style-type: none"> - Filling of low laying area - Brick manufacturing - Cement manufacturing - Road sub-base making
2.	Lime sludge	Calcium carbonate with silica content	<ul style="list-style-type: none"> - Filling of low laying area - Re-use in the process lime kiln - Land filling
3.	ETP-primary sludge	Fine pulp fibre	<ul style="list-style-type: none"> - Manufacturing of low grade paper products
4.	ETP-bio sludge	Fibrous organic mass rich in NPK	<ul style="list-style-type: none"> - Used as manure by local farmers
5.	Bamboo & hard wood dust	Fine with inorganic	<ul style="list-style-type: none"> - Used as a fuel for coal fired boilers.

reduction of water consumption through optimal design and operation of the pulp mill and paper machines.

Improve energy efficiency through overhauling and modernization of steam and power generation.

Departmental environmental index performance.

of ISO-14001 standards, the pollution prevention effort can be effectively implemented. Using regulatory requirements as a benchmark and describing environmental index performance in business technology, the environmental issues and prevention approaches can successfully be incorporated into overall business strategies and operations."

CONCLUSIONS

"By adopting TQEM approach and with the help