CHAPTER 3
HEALTH AND SAFETY MANAGEMENT IN INDIAN OIL CORPORATION

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3.1 Indian Oil Corporation

Indian Oil began operations in 1959 as Indian Oil Company Ltd. The Indian Oil Corporation was formed in 1964, with the merger of Indian Refineries Ltd.

Recently Indian Oil Corp (IOC) has raised $500 million by selling 10-year dollar-denominated bonds, its fourth such issue overseas in the last three and a half years.

Indian Oil Corporation Ltd. is India's largest company by sales with a turnover of Rs.457553 crore a jump of 10.3 per cent over the previous year, and net profit surged to 7,019 crore, a leap of 40.2 per cent compared to 2012-13.

It is the highest ranked Indian company in the latest Fortune ‘Global 500’ listings, ranked at the 125th position. Indian Oil’s vision is driven by a group of dynamic leaders who have made it a name to reckon with.

The main products of Indian Oil are petrol, diesel, LPG, auto LPG, aviation turbine fuel, lubricants and petrochemicals: naphtha, bitumen, kerosene etc.

Indian Oil operates the largest and the widest network of fuel stations in the country, numbering about 20,575 (16,350 regular ROs & 4,225 Kisan Seva Kendra). It has also started Auto LPG Dispensing Stations (ALDS). It supplies indane cooking gas to over 66.8 million households through a network of 5,934 indane distributors.
3.2 Vision of Indian Oil Corporation Limited
3.3 Refineries of IOCL

IOCL has various refineries across India. These are:

➔ In Assam

- **Digboi Refinery** is India's oldest refinery and was commissioned in 1901. Originally a part of Assam Oil Company, the Indian Oil Corporation Ltd took over it on 14 October 1981 and established as a separate division. This division has both refinery and marketing operations. In 1999, a new delayed coking unit of 170000 TPA was commissioned. In 2003, a new solvent De-vaxing unit for maximizing production was installed and commissioned and in the same year company installed hydrotreater and hydrogen to improve the quality of diesel. In December, 2010 naptha hydrotreater and isomerization units were commissioned under the motor spirit quality upgradation.

- **Guwahati Refinery**, the first public sector refinery of the country, was built with Romanian collaboration with 0.75MMTPA and was inaugurated on 1 January 1962. In 2002, hydrotreater unit along with hydrogen generation unit has been installed for improving the quality of diesel. Its present capacity is 1 MMTPA. The refinery has also installed Indmax unit, a novel technology developed by IOCL research and development centre for upgrading the heavy ends to LPG, motor spirit and diesel oil.

- **Bongaigaon Refinery** became the eighth refinery of Indian Oil after merger of Bongaigaon Refinery & Petrochemicals Limited
w.e.f. 25 March 2009. It is located at Dhaligaon in Chirang district of Assam, 200 km west of Guwahati.

➤ **In Bihar**

- **Barauni Refinery**, in Bihar, was built in collaboration with Russia and Romania. It was commissioned in 1964 with a capacity of 1 MMTPA. It was built with an initial cost of Rs.49.40 crore. Its current capacity is 6 MMTPA. It was initially designed to process low sulphur crude oil (sweet crude) of Assam. The refinery receives crude oil by pipeline from Paradip on the east coast via Haldia.

➤ **In Gujarat**

- **Gujarat Refinery**, at Koyali (near Vadodara) in Gujarat, is Indian Oil’s second largest refinery. The refinery was commissioned in 1965. It also houses the first hydro cracking unit of the country. Its present capacity is 13.70 MMTPA.

➤ **In West Bengal**

- **Haldia Refinery** is the only coastal refinery of the Corporation, situated 136 km downstream of Kolkata in the Purba Medinipur (East Midnapore) district. It was commissioned in 1975 with a capacity of 2.5 MMTPA, which has since been increased to 7.5 MMTPA.

➤ **In Uttar Pradesh**

- **Mathura Refinery** was commissioned in 1982 as the sixth refinery in the fold of Indian Oil and with an original capacity of 6.0 MMTPA. Located strategically between Delhi and Agra, the capacity of Mathura refinery has been increased to 8.8 MMTPA.
In Haryana

- Panipat Refinery is the seventh and largest refinery of Indian Oil. The original refinery with 6 MMTPA capacities was built and commissioned in 1998. Panipat Refinery has since expanded its refining capacity to 12 MMTPA. There are plans to further expand the capacity to 21 MMTPA.

In Odisha (Orissa)

- Paradip Refinery. The commissioning of 15 million tonnes per annum refinery in November 2012 has been delayed.

3.4 IOCL Group Companies

- Indian Oil (Mauritius) Ltd.
- Lanka IOC PLC – Group company for retail and storage operations in Sri Lanka. It is listed in the Colombo Stock Exchange. It was locked into a bitter subsidy payment dispute with Sri Lanka's Government which has since been resolved.
- IOC Middle East FZE
- Chennai Petroleum Corporation Limited
- Green Gas Ltd. – a joint venture with Gas Authority of India Ltd. for city-wide gas distribution networks.
- Indo Cat Pvt. Ltd., with Intercat, USA, for manufacturing 15,000 tonnes per annum of FCC (fluidised catalytic cracking) catalysts & additives in India.
- Indian Oil – CREDA Biofuels Ltd., a joint venture with Chhattisgarh government for production and marketing of Bio-fuels.
• Numerous exploration and production ventures with Oil India Ltd., Oil and Natural Gas Corporation
• India Synthetic Rubber Ltd - A joint venture between IOCL, Taiwan Synthetic Rubber Corporation (Taiwan) and Marubeni (Japan)
• Petronas (Malaysia) Ltd

3.5 Brands

• Indane Gas - Domestic and Industrial Gas
• AutoGas - Automotive Natural Gas
• Xtra Premium - Automotive Premium Petrol
• Xtra Mile - Automotive Premium Diesel
• Servo - Lubricants and Greases
• Propel - Petrochemicals
• Indian Oil Aviation - Aviation fuel
• LNG at Doorstep - LNG by cryogenic transportation

3.6 Services of IOCL

The main services offered by IndianOil are Refining, Marketing, Pipelines, R&D and Training. Indian Oil’s Research and Development Center (R&D) at Faridabad supports, develops and provides the necessary technology solutions to the operating divisions of the corporation and its customers within the country and abroad.

It has figured among the best employers in the Indian workplace as per the tenth annual edition of the ‘Best Companies to Work’ for survey unveiled by the Business Today magazine in its latest edition. Indian Oil
controls 10 of India's 20 refineries. The group refining capacity is 65.7 million metric tons per annum (MMTPA, i.e. 1.30 million barrels per day approx.) the largest share among refining companies in India. It accounts for 34.8% share of national refining capacity.

It operates a network of 10,899 km long crude oil, petroleum product and gas pipelines with a capacity of 75.26 million metric tons per annum of oil and 10 million metric standard cubic meters per day of gas. Cross-country pipelines are globally recognized as the safest, cost-effective, energy-efficient and environment-friendly mode for transportation of crude oil and petroleum products.

Indian Oil, along with its subsidiary Indian Oil Technologies Ltd., has been engaged in successful marketing of in-house developed technologies, technical services and training not only in India but abroad.

Indian Oil Corporation Limited, or Indian Oil, is an Indian state-owned oil and gas corporation with its headquarters in New Delhi, India. It is the world's 83rd largest corporation, according to the Fortune Global 500 list, and the largest public corporation in India when ranked by revenue.

Indian Oil and its subsidiaries account for a 49% share in the petroleum products market, 31% share in refining capacity and 67% downstream sector pipelines capacity in India. The Indian Oil Group of companies owns and operates 10 of India's 20 refineries with a combined refining capacity of 65.7 million metric tonnes per year.

The company is mainly controlled by Government of India which owns approx. 79% shares in the company. It is one of the seven Maharatna status companies of India, apart from Coal India Limited, NTPC Limited,
Oil and Natural Gas Corporation, Steel Authority of India Limited, Bharat Heavy Electricals Limited and Gas Authority of India Limited.

As on 31st March 2014, over 6,000 retail outlets were fully automated and it is targeted to achieve 100 per cent automation by the year 2021-22.

A unique drive ‘Networking of Highway ROs; covering over six hundred retail outlets have been initiated for the benefit of HSD consumers from the commercial transport segment. It is also strengthening its presence in rural areas and semi-urban growth centers through the Kisan Seva Kendra (KSK) retail outlets, which have emerged as a clear proof of our Corporation’s commitment to inclusive and sustainable growth.

In LPG Marketing, it not only increased market share in 2013-14 but also launched several customer-friendly initiatives, such as portability of LPG connection within and across companies, sale of 5-kg free-trade LPG cylinders through select retail outlets and kirana stores. Indian Oil’s leading SERVO brand lubricants continued to dominate the business segment during 2013-14 despite adverse market dynamics.

Indian Oil Corporation controls 10 of India’s 20 refineries. It has more than 100 years of accumulated experience in all areas of petroleum refining by taking into its fold. The group refining capacity is 65.7 million metric tons per annum or 1.30 million barrels per day- the largest share among refining companies in India. IOC has 31% share of national refining capacity. IOC is adapting to a variety of refining processes like atmospheric/ vacuum, distillation, distillate FCC/ resid FCC, hydro cracking, catalytic reforming, hydrogen generation, delayed coking, lube processing units, visbreaking, merore treatment, hydro-desulphurisation of kerosene and gas oil streams, sulphur recovery, rewaxing, hydro finishing, coke calcining etc. Indian Oil refineries have an outlay of about RS. 55000 crores for capacity augmentation, debottlenecking, bottle up
gradation and quality up gradation. Major projects under implementation include 15MMTPA grassroots refineries at Paradip, Orrissa, naphtha cracker and polymer complex at Panipat refinery initiated expansion from 12 MMTPA to 15 MMTPA, among others. IOC has also several clean development projects also. It has its refineries in Digboi, Guhawati, Barauni, Gujarat, Haldia, Matura and Panipat. All IndianOil refineries are certified under Occupational Health & Safety Management System (OHSMS)/OHSAS-18001) by M/s. DNV, The Netherlands. Safety systems are audited under International Safety Rating System (ISRS). All Indian Oil refineries have environmental management systems certified to ISO-14001. Re-use of treated effluent is extensively practiced at all refineries. Indian Oil is the only petroleum company in India with ISO accreditation for over 60 of its units, which include refineries, pipelines, aviation fuel stations, quality control laboratories, LPG bottling plants and tap-off terminals.

With its vast experience in successfully implementing SH&E policy and practices at various units, Indian Oil offers its services in ensuring that the work environment is safe, healthy and clean.
### 3.7 Joint ventures of IOCL

<table>
<thead>
<tr>
<th>Name of Company</th>
<th>Business</th>
<th>Partners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avi-Oil India Pvt. Ltd.</td>
<td>Speciality lubricants</td>
<td>NYCO SA, France &amp; Balmer Lawrie &amp; Co. Ltd.</td>
</tr>
<tr>
<td>Delhi Aviation Fuel Facility Private Limited</td>
<td>Setting up and operation of Aviation Fuel Facility at Delhi Airport</td>
<td>DIAL &amp; BPCL</td>
</tr>
<tr>
<td>Green Gas Ltd.</td>
<td>City gas distribution</td>
<td>GAIL (India) Ltd.</td>
</tr>
<tr>
<td>GSPL India Transco Ltd.</td>
<td>Setting up of Natural Gas Pipelines</td>
<td>GSPL, HPCL, BPCL</td>
</tr>
<tr>
<td>GSPL India Gasnet Ltd.</td>
<td>Setting up of Natural Gas Pipelines</td>
<td>GSPL, HPCL, BPCL</td>
</tr>
<tr>
<td>IOT Infrastructure &amp; Energy Services Ltd.</td>
<td>Terminalling services</td>
<td>Oiltanking GmbH, Germany.</td>
</tr>
<tr>
<td>Indian Oil Adani Gas Pvt. Ltd.</td>
<td>City gas distribution</td>
<td>Adani Gas Ltd.</td>
</tr>
<tr>
<td>Indian Oil Petronas Pvt. Ltd.</td>
<td>Terminalling services and parallel marketing of LPG</td>
<td>Petronas, Malaysia.</td>
</tr>
<tr>
<td>Indian Oil Ruchi Bio Fuels LLP</td>
<td>Bio Fuel related activities</td>
<td>Ruchi Soya</td>
</tr>
<tr>
<td>Indian Oil Skytanking Pvt. Ltd.</td>
<td>Aviation fuel facility projects</td>
<td>IOT Infrastructure &amp; Energy Services Ltd., Skytanking GmbH, Germany.</td>
</tr>
<tr>
<td>Indian Oil Skytanking Pvt. Ltd.</td>
<td>Manufacturing of Styrene Butadiene Rubber at Panipat</td>
<td>TSRC Taiwan &amp; Marubeni Japan</td>
</tr>
<tr>
<td>Kochi Salem Pipelines Private Limited</td>
<td>Laying pipeline for transport of LPG from Kochi to Salem</td>
<td>BPCL</td>
</tr>
</tbody>
</table>
### 3.8 Subsidiaries of IOCL

#### Indian Subsidiaries

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chennai Petroleum Corporation Limited</td>
<td>Refining of petroleum products</td>
</tr>
<tr>
<td>Indian Oil - CREDA Biofuels Limited</td>
<td>Plantation of Jatropha and extraction of oil for Bio-diesels</td>
</tr>
<tr>
<td>Indian Catalyst Private Limited</td>
<td>Manufacturing of FCC catalyst / additive</td>
</tr>
</tbody>
</table>

#### Foreign Subsidiaries

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Oil (Mauritius) Ltd. Mauritius</td>
<td>Terminalling, Retailing &amp; Aviation refueling</td>
</tr>
<tr>
<td>Lanka IOC PLC, Sri Lanka</td>
<td>Retailing, Terminalling &amp; Bunkering</td>
</tr>
<tr>
<td>IOC Middle East FZE, UAE</td>
<td>Lube blending &amp; marketing of lubricants</td>
</tr>
<tr>
<td>IOC Sweden AB, Sweden</td>
<td>Investment company for E&amp;P Project in Venezuela</td>
</tr>
<tr>
<td>IOCL (USA) Inc., USA</td>
<td>Participation in Shale Gas Asset Project</td>
</tr>
<tr>
<td>IndOil Global B.V. Netherlands</td>
<td>Exploration &amp; Production</td>
</tr>
</tbody>
</table>
3.9 Important Projects of IOCL

Indian Oil Corporation is focusing on infrastructure development. A large number of schemes have been initiated with increasing emphasis on project execution in compressed schedules as per world benchmarking standards. Important projects of IOCL are:

1. PARADIP-RAIPUR-RANCHI PIPELINE

The purpose of this pipeline to ensure evacuation of Paradip Refinery products and uninterrupted supply to major parts of Orissa, Chhattisgarh and Jharkhand. Total cost of this refinery is Rs. 1793.00 crore.

Project consists of laying of 1108 km long product pipeline with intermediate pumping stations at Jatni and New Sambalpur and delivery stations at Jatni, Jharsuguda, Ranchi, Raipur and Korba.

2. PARADIP REFINERY PROJECT

The purpose of this project is meeting the deficit in distillates viz. LPG, Naphtha, MS, Jet/Kero, Diesel and other products, in the eastern part of the country. The cost of the project is Rs. 34,555 crore. This refinery is constructed at paradip in Orissa. This is the most modern refinery in India with a nil-residue production. 3344 acres of land for the project and necessary infrastructure development has purchased.

3. POLYPROPYLENE PLANT, PARADIP

The cost of project is Rs. 3150 crore. It is expected to start in September 2017.

The Polypropylene Plant will aid Odisha Govt. in further establishing the Petroleum, Chemicals & Petrochemical Investment Region (PCPIR) at Paradip.
The Project aims to set up a 680 KTA Polypropylene unit at Paradip which will be integrated with ongoing Paradip Refinery. Spheripol Technology from Basell, Italy will be used in the project. The unit will be capable of producing different grades of Polypropylene but will commence with production of only homo grade initially. The major facilities envisaged under the project are Coker LPG Treater unit, Ware House for Polypropylene storage and other associated facilities like Flare, Cooling Tower etc.

4. DISTILLATE YIELD IMPROVEMENT PROJECT (COKER), HALDIA

The cost of this project is Rs. 3076 crore. This is expected to commission on December 2017. The purpose of this project is mitigate the problem of shrinkage in demand of High Sulphur Fuel Oil by upgrading Black Oil to higher value products like diesel and LPG which in turn will improve distillates yield of the refinery by about 4-5% wt. It will upgrade Black oil, mainly high sulphur fuel oil to higher value products like diesel and LPG which will lead to subsequent improvement in gross refinery margins.

5. DE-BOTTLENECKING OF SALAYA-MATHURA CRUDE PIPELINE

The proposal is for enhancing the capacity of Salaya-Viramgam section from 21 MMTPA to 25.0 MMTPA, [Viramgam-Koyali section from 8.5 MMTPA to 9.0 MMTPA, Viramgam-Chaksu section from 13.5 MMTPA to 16.5 MMTPA, Chaksu-Mathura section from 7.5 MMTPA to 9.2 MMTPA and Chaksu-Panipat section from 6 MMTPA to 7.3 MMTPA]. The cost of this project is Rs. 1584 crore.
3.10 Health management system in IOC

Management of the Indian Oil Corporation is conscious about the health and safety of their employees. Health and safety management is their work-culture. To provide safety and security to their people they have adopted best-in-class technologies and stringent SOPs (Standard operating procedures) at all locations. Unit specific training on safety health and environment issues is necessary for all the stakeholders working of at operating locations. Rigorous monitoring systems are also in place to ensure safety in day-to-day operations.

Following table shows the training facility of Indian Oil Corporation:

<table>
<thead>
<tr>
<th>Category of Employees</th>
<th>% Age of employees given safety and skill up-gradation training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent male employees</td>
<td>69.46%</td>
</tr>
<tr>
<td>Permanent women employees</td>
<td>67.22%</td>
</tr>
<tr>
<td>Permanent employee with disability</td>
<td>39.35%</td>
</tr>
<tr>
<td>Casual/ Temporary / Contractual employee/ Contract labour</td>
<td>84.18%</td>
</tr>
</tbody>
</table>

To coordinate the health, safety and environment activities of all the divisions there is an executive director who directly report to chairman about such issues. The refineries, pipelines, marketing divisions and R&D centre have independent HSE departments. A designated safety officer is placed at all the marketing and pipelines installations.

Indian oil has two tiers safety committee: Management committee and shop floor safety committee. Management committee is headed by unit
head consisting of other members up to the HOD levels and workmen representatives. Shop floor committees are formed at various sections in the refinery with intensive participation from the workmen side. 100% of employees of IOC are represented by the safety committee.

There is proper arrangement of security of employees also. It is through deployment of Central Industrial Security Force (CIFS) in refinery units, research and development centre and some of the pipelines installation whereas other installations are manned by Directorate General Resettlement (DGR) sponsored private security agencies/ State security boards home guards. Refresher courses are conducted at regular basis for weapon handling, riot control, VIP security etc.

Annual safety and technical audits are conducted by multi-disciplinary teams, safety index surveys and safety awareness surveys are all carried out at all pipelines locations.

In the year, 2013 a safety culture improvement project SEED(Safety in each and every deed was launched in Gujarat refinery in association with the M/S. Dupont, the global leader in employee safety. Dupont sustainable solutions and other team members shared the road map for implementation of the project with the delegates which included representatives of all Indian oil refineries as well as senior officials of Gujarat refinery. Under this project, in addition to strict compliance of the existing safety system and procedure, improvement in safety culture and personal safety behavior is required to be addressed effectively for substance of safe working environment. Under the project, the whole Gujarat refinery is divided in 12 zones and the leading safety efforts (LSE) training have been imparted to about 69 officers. The basic purpose of the company is to make each person as THE SAFETY
PERSON. Company aims to develop zero-tolerance safety culture. Such type of safety culture not only helps in saving valuable lives but also helps in saving the crucial infrastructure which maintains steady flow of oil and gas to keep the wheels of prosperity moving.

Another important project of IOC concerned with safety of employees is Sampada Samriddhi Project. This is also called maintenance transformation programme, a training centre which has been started at Panipat refinery and petrochemicals complex. This is the joint initiative of Indian oil and M/s AT Kearney to achieve Maintenance excellence at all Indian oil refineries. Presently AVU-1 and RFCCU of Panipat refinery has been selected as the pilot location for this project. This project specializes in plant reliability and health and safety is given utmost importance. In the first session around 40 executives from mechanical, electrical, instrumentation and civil maintenance has participated.

Besides this, scientifically designed green belts have been developed at Indian Oil’s Gujarat and Panipat refineries to serve as pollution sinks and to enhance the aesthetic look of the refinery area. Extensive tree plantation has been undertaken by Guwahati, Digboi, Mathura, Haldia and Barauni refineries and townships to develop green cover.

Projected global oil consumption is expected to register a substantial growth over the present levels. Recently published energy reports project incremental demand of about 38 million barrels per day (mbpd) in 2030 over 80 mbpd level in 2003. Most of this incremental demand will emanate from developing countries including China and India where oil consumption is expected to grow at the rate of 3.8 and 2.4 percent respectively as against the world average of 1.4 percent.
The oil and gas industry is potentially more hazardous than any other industries as it has many diverse activities, including processes, operations and materials this can pose risks to health, safety and the environment. As the result of these, workers are exposed to large number of hazards such as Physical, Chemical, Biological and Psychological hazards that can pose a potential risk to health and wellbeing.
References:

1. www.iocl.com


5. http://www.goodreturns.in/company/indian-oil-corporation/history.html