

# Safety Issues

Safety is an important aspect in the functioning of any industry. It is important not only for its employees and workers but also for the environment and the nation. Steel Industry poses one of the most difficult challenges in the area of safety, health and environment when compared to many other industries due to complex nature of its operations and maintenance activities and wide range of hazards associated with them. Despite tremendous technological progress, the safety culture and safety at work still are serious issues. Therefore, maintaining of high standards of health, safety and environment in Steel Industry is of paramount importance.

## 5.1 Safety Policy

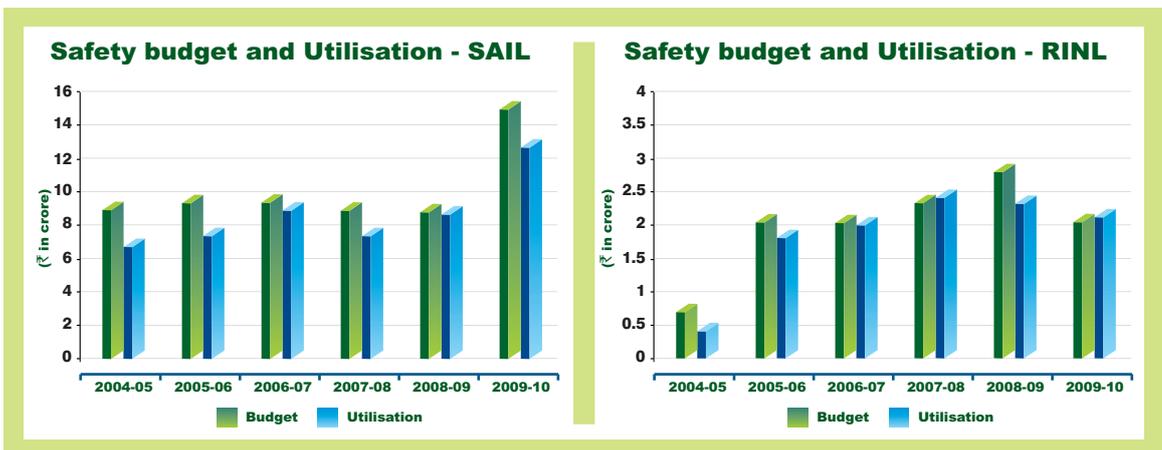
SAIL has a safety policy which states that the company is committed to safety of its employees and the people associated with it including those living in the neighborhood of its plants, mines and units. All the plants are having their own Occupation Health and Safety Policy.

RINL is having combined policy on Quality, Environment, Health and Safety.

SAIL Safety Organization (SSO) was created in 1988 as a corporate body with headquarter at Ranchi, for giving overall direction to the efforts in the area of Safety & Occupational health aspects of the company. The goal & target of SSO, as the primary facilitating agency, is to make all efforts to continuously improve the Safety environment of the company and to bring fatal accident rate to zero. In addition, each plant of SAIL has a full-fledged Safety Engineering Department (SED) to look after safety management of the respective plant. Safety at the shop floor is closely taken care of by departmental safety officers.

RINL is having Safety Engineering Department which was started in 1987 with the objective to assist and advise the departments in fulfilling all the statutory requirements of safety and establishing safety systems, procedures and achieving zero accident rate.

In SAIL and RINL the utilization of safety budget during the period 2004-05 to 2009-10 was as depicted below:



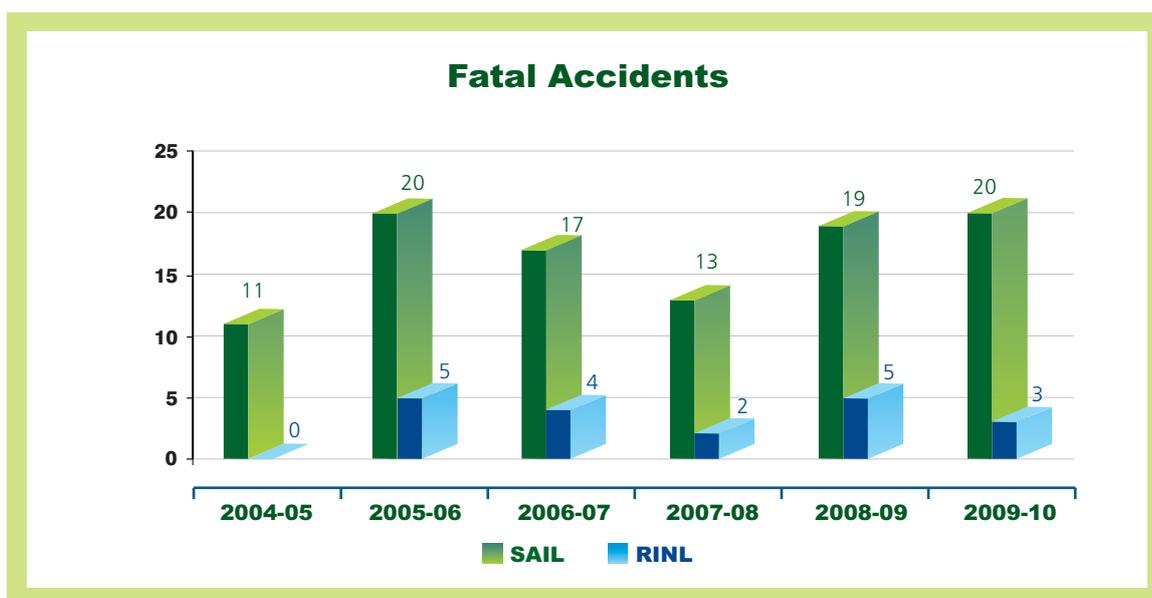
- The safety budget provided by the companies was in addition to the budget provided for CSR activities.
- In the five integrated plants of SAIL the expenditure incurred towards safety during the period 2004-05 to 2009-10 was ₹ 51.38 crore against the budgeted expenditure of ₹ 59.66 crore .
- In RINL, the expenditure incurred on safety was ₹ 10.82 crore against the budget of ₹ 11.71 crore.
- SAIL & RINL utilized the budget substantially but not fully. Utilisation of budget in ISP was very poor and was ranging between 31 per cent (2005-06) and 51 per cent (2004-05).

The Ministry while accepting the audit observation stated (December 2010) that SAIL plants have initiated suitable action to ensure effective utilization of allotted safety budget

## 5.2 Accident reporting

The different types of accidental hazards are Fire, Explosion, Fall from height, Slip and Fall, Struck by object, Caught between Objects, Contact with Hot Metal/ Hot Slag/ Hot substances etc.

The details of the fatal accidents during 2004-05 to 2009-10 are shown in the chart below:



- There were 100 fatal accidents in last six years in SAIL and 19 in RINL during the years from 2004-05 to 2009-10.
- SAIL and RINL did not achieve the zero accident rate. In SAIL and RINL, there was decreasing trend in number of fatal accidents between 2005-06 and 2007-08 which changed in 2008-09 and 2009-10. The decreasing trend was noticed in Reportable and Non –Reportable cases (Annexure IV).
- Analysis of reasons for fatal accidents revealed that majority of the fatal accidents were due to heat/caught/press between stationary/moving objects; road and rail accidents, fall from height; burns, suffocation/buried under, electrocution, lack of communication, deployment of unskilled labour, lack of SOP etc. This indicates that the fatal accidents could have been avoided to a great extent, had proper and adequate steps been taken by the management.

The Ministry stated (December 2010) that the issue of recent spurt in fatal accidents has been viewed seriously by the top management and necessary guidelines were being issued as & when required for ensuring compliance to safety norms by all concerned. Concerted efforts were being made with proper thrust on improving housekeeping standards and ensuring availability of proper safety equipments, PPEs, different process related safety gadgets, warning devices etc., to control the incidence of fatal accidents and gradually bring them to 'Zero level'.

The fact remains that the Companies have not been able to achieve the 'Zero Accident'.

### 5.3 Safety Audit

#### Safety Audit in SAIL

Safety Audit is conducted by SSO officials associating members from sister plants. For this purpose, Annual Performance Plan is prepared in consultation with plants. After each audit, a Safety Audit Report is submitted to the concerned departments indicating deficiencies on various issues such as availability of SOPs, compliance to statutory requirement, housekeeping and first aid & emergency facilities.

However, we observed that SAIL has not adhered to safety audit plan as would be evident from the fact that SSO conducted audit of 9 units against 24 units planned during 2008-09 and 21 units against 18 units planned during 2009-10. The recommendations made in the audit reports were not implemented by the concerned plants fully.

The Ministry while confirming the audit observation stated (December 2010) that SSO and plant's safety departments makes every effort to ensure that shops and departments are adequately covered in terms of their audit requirements through audits done internally (by plants), by SSO and through external agencies.

#### Safety Audit in RINL

Apart from internal safety audit that is being done by SED in Occupational Health and Safety Management System, continuous audit on all the safety aspects including implementation of joint investigation report, recommendations and compliance of the same is being ensured.

The Ministry stated (December 2010) that the safety audit is conducted by external safety auditors (approved by the Factories dept) every year and recommendations are implemented with time frame. Compliance report on the same is submitted to the Factories department.

The companies should conduct safety audit regularly and the recommendations contained in safety audit reports should be complied with to ensure the safety of the employees.

### 5.4 Occupational Health & Safety Assessment Series

Occupational Health & Safety Assessment Series (OHSAS) standard specifies requirement for an Occupational health and safety management system to enable an organization to control its occupational health and safety risks and improve its Occupational Health and Safety (OHS) performance. The requirements include establishment of OHS policy, hazard identification, implementation and operation, checking, management review etc. OHSAS is not mandatory. However, as to improve the safety measures, image of the company and to improve its employees' performance, the companies obtain OHSAS certificate.

- SAIL in four plants (BSP, RSP, BSL and DSP) and RINL have obtained OHSAS – 18001 certification after fulfilling the requirements of OHSAS.
- In respect of ISP of SAIL, implementation of OHSAS was in progress.

## 5.5 Occupational health service

The whole process of production of iron and steel right from the raw material to the finished products is ridden with many inherent hazards and risks. Hazards are also associated with the very nature of the shape and size of operation, reactors and machines. There are physical hazards (noise, vibration, heat and coal stress, radiation), chemical hazards (inhalable gases/ vapour/dust/fumes, asbestos, insulation wools etc.), safety hazards (limited space, electrical/ mechanical/ hydraulic/pneumatic sources of energy, machineries prone to accident including cranes and hoist, falling weights and dangerous objects, slips, trips and falls) etc.

We observed that:

- The list of occupational diseases and the profession/occupation responsible for them has not been displayed in BSP and ISP in works area to make the people aware of hazardous effect of their working. The other plants of SAIL (BSL, DSP and RSP) and RINL are displaying the list of occupational diseases.

The Ministry stated (December 2010) that the list of occupational diseases has been prepared and displayed in BSP and in ISP the same was being displayed.

- SAIL and RINL were having occupational health centre (OHC) at their plants. These OHCs were meeting the occupational health related requirements of the employees except the following:

- i. In SAIL the percentage of employees who attended health check up against the strength varied from 24 to 35 at BSL, 4 to 29 at ISP, 19 to 48 at DSP, 6 to 43 at BSP and 24 to 78 at RSP during 2004-05 to 2009-10. In RINL, the percentage of employees who attended health checkup was ranging from 33 to 45 during 2004-05 to 2009-10.

Due to low show up of employees for medical check-up, it is difficult to establish any trend about disease because of occupational hazards. Further, in absence of regular medical examination of all the employees, companies are unable to know about the fitness of the employees.

The Ministry stated (December 2010) that various actions have been taken by SAIL and RINL to improve employee's turn up for health check up.

- ii. As per section 41-C (C) of the Factories Act 1948, workers employed in the hazardous factory are to be medically examined once in every 12 months. However, in ISP, RSP & BSP, medical examination of workers in hazardous factories was not done once in every 12 months. In DSP & BSL, medical examination of workers in hazardous factories was done once in every 12 months.

In RINL, in eight out of ten hazardous departments, the interval in conducting medical examination was between 13 and 25 months during the year 2008-09 and between 13 and 29 months during the year 2009-10.

The Ministry stated (December 2010) that persons deployed in hazardous areas at DSP and BSL were medically examined once in a year and in RSP all employees were medically examined throughout the year in rotation. Actions were under progress and proposals have been moved for posting of required medical officers & other manpower in OHC at BSP & ISP respectively. This would in turn, facilitate them in fulfilling this statutory obligation. In RINL the interval in conducting medical examination is less than 4 months.

In case of RINL the Ministry reply is not tenable as interval in conducting the medical examination less than four months is based on time gap between the date of completion 9<sup>th</sup> round and date of commencement of 10<sup>th</sup> round. The period of interval has to be calculated at time gap between commencements of two rounds.

The SAIL and RINL should take early action for medical examination of workers at least once in 12 months to ensure the safety of the workers.

- iii. In BSP only 3 medical officers were posted against requirement of 9 medical officers for occupational health centre. At DSP and BSL also there were shortages of two and one medical officers respectively. In ISP and RSP of SAIL and in RINL, the sufficient numbers of medical officers were posted.

The Ministry stated (December 2010) that in BSP and BSL proposal for appointment of more medical officers is under consideration of the management and at DSP there is no shortage of medical officer at present.

The contention of the Ministry is not acceptable as at DSP against the requirement of seven doctors there were six doctors.

- Mock drill is an emergency exercise which is not real but appearing or pretending to be exactly like something real. Mock drill is conducted to ensure whether the organization is prepared to deal with any emergency situation. As per the provisions prescribed under "The manufacture, storage and import of hazardous chemical Rules, 1989" mock drill of the on-site emergency plan should be conducted every six months. In SAIL and RINL mock drills were conducted as per norms.
- The management is not implementing rotation of jobs, i.e., from hot zone to cold zone for ensuring good health of the employees at ISP, DSP, BSL and RSP. However at BSP 30 employees have been redeployed on the above aspect during 2004-05 to 2009-10. In RINL, there was no policy for transferring employees from hot to cold zone.

The Ministry while agreeing with audit observation stated (December 2010) that job rotation is one of the most recommended administrative control measures in the workplace hazard control would be of immense help in reducing the daily overexposure of an individual to hazards beyond the permissible limits. Further, the SAIL plants have the policy of job rotation based on various factors. However, feasibility would be explored regarding possibility & extent of job rotation based on medical grounds in plants as per the recommendations of the audit. In RINL rotation of employees from Hot Zone to cold zone is being done within the department as per consultation with unions and personnel department. These modalities of rotation are different from department to department.

Though in RINL there was rotation of employees from hot to cold zone but the Company has not framed any policy for transferring the employees from hot to cold zone.

## 5.6 House keeping

### (i) Fire Incidence

Section 38 of The Factories Act 1948 provides that in every factory, all practicable measures shall be taken to prevent outbreak of fire and its spread, both internally and externally, and to provide & maintain the necessary equipment and facilities for extinguishing fire. Though, SAIL & RINL follow the norms of Standing Fire Advisory Committee, Oil Industries Safety Directorate, National Building Code, Factories Act 1948 and Bureau of Indian Standard, we observed that:

- There were nine major fire accidents during the years 2004-05 to 2009-10 in SAIL. In RINL there was no major fire accident.
- The minor fire accident occurrence decreased from 574 (2004-05) to 250 (2009-10) in SAIL and from 182 (2004-05) to 63 (2009-10) in RINL.
- Majority of the accidents were due to electric faults and other reasons were hot metal/slag/scale/liquid steel spark/hot coke metal spark, open flame, welding, over heat friction/gas cutting, etc., which shows that there was inadequate maintenance of electrical appliances and upkeep of plant & machineries.

The Ministry stated (December 2010) that in industries, particularly Iron & Steel Industry, Operational fire involves a considerable risk in terms of financial losses and loss of life of employees. This is due to the fact that innumerable number of combustible substances are stored, handled or used in the associated processes of making steel. **As such, chances of minor and major fires always exist in plants in case of slightest deviation from the prescribed safety norms.** SAIL recognizes this well and undertakes a number of fire prevention, protection and control measures at its plants.

The contention of Ministry is not acceptable as majority of the accidents were due to inadequate maintenance of electrical appliances and upkeep of plant & machineries.

## (ii) Fire Fighting Equipments

SAIL and RINL were having adequate fire fighting equipments except the cases noticed below:

- In BSL, two fire incidents occurred (September 2007) in Tandem Mill I of Cold Rolling Mill causing damage (₹ 6.08 crore) to the assets of the company. There were no fire alarm or smoke sensor devices inside the Tandem Mill. Electrical apparatus such as cables, motors etc. were loosely connected with unsafe conditions, such as no flame proof cover at connectors were provided, sludge was not cleaned. Fire detection and Alarm System was either defective or not working. Out of 465 nos. of hydrants installed, 29 were not in working condition. Similarly, out of 1541 internal hydrants installed in 46 places, 56 were not in working condition. Some of the extinguishers were found not kept at their place of installation, many of them were found removed from brackets.

The Ministry stated (December 2010) that all loose connections in electrical apparatus inside the Tandem Mill have been rectified and installation of Fire Detection and Alarm (FDA) system and fire retardant paints for cables for total plant including Tandem Mill was in progress.

- In BSP there was no fire detection and alarm system installed at Continuous Casting Shop of SMS-II. A major fire accident was occurred (February 2010) in power and blowing station due to short-circuit causing stoppages of major production activities for a week which resulted in loss of production of 1.59 lakh tonne of saleable steel leading to loss of revenue of ₹ 513.97 crore. This indicates that there was lacunae in the fire prevention system as one of the reasons of the accident was limited accessibility for fire fighting equipments and poor house keeping in nearby areas.

The Ministry stated (December 2010) that wireless fire detector system at SMS-2 Converter was expected shortly for installation as order has been placed on the supplier.

- In ISP fire alarm systems were not installed at all fire prone areas to ensure safety of employees and property. 31 fire hydrants were damaged or out of order. It was further observed that available pressure at the outlet of hydrant varied from 2.5 to 4.5 kg/ cm<sup>2</sup> against the required pressure of 4 to 6 kg/ cm<sup>2</sup>.

The Ministry stated (December 2010) that in ISP feasibility of installation of fire alarm system in the open areas like Gas Holder, Benzol Plant & Power House is being studied. Fire hydrants are checked regularly and repairing of defective fire hydrants are being done as per requirement. Water leakage in the supply pipe line of hydrants has been stopped.

- In DSP the fire alarm systems were installed at production units during 1991 to 1994 but the same were defunct since 2004. Records revealed that three fire tenders were suffering from problems viz. low compression of engine, non functioning of priming unit and were not roadworthy.

The Ministry stated (December 2010) that proposal for revival/ replacement of old / defunct fire alarm systems has been obtained from reputed parties after site survey and the same is under consideration and procurement of new fire tenders is in progress.

Fire detection and alarm system should be provided in all the fire prone and sensitive places, shops etc., and fire hydrant & fire tenders should always be kept in working condition.

### (iii) Communication system

A proper public address system to ensure safety against fire and other threats is essentially to be established in the plant. Non-installation of communication/public addressing system in fire prone areas indicates deficiency in the system to ensure safety of employees and plant.

- At ISP, Public Address system existed only at Rolling Mills area without UPS facility; and other important fire/gas/fume prone areas had no proper communication system.
- In RSP, public address system were available at main gate, CCD control and fire service control room in addition to gas cleaning plant of blast furnace.
- In DSP public Address system was installed at Gate No. 1 & 2 and on mobile fire tender.
- In BSP, Public address system was installed at entrance gates and in all the conference halls spread throughout the plant
- In BSL, a portable public address system was available with fire service department.
- RINL had provided Fire Alarm and Public Address Systems at 11 identified fire prone departments.

The Ministry stated (December 2010) that action has been initiated to install public address system in other important fire prone areas in ISP.

Public address system should be provided at important installations and fire prone areas to facilitate proper communication.

## 5.7 Conclusion

Although the companies were having safety policy and were providing sufficient fund for safety of its employees, but they were not able to control the fatal accidents even if there was decreasing trend in total number of accidents. The fatal accidents decreased from 20 (2005-06) to 13 (2007-08) in SAIL and 5 (2005-06) to 2 (2007-08) in RINL and subsequently these increased to 20 and 3 in SAIL and RINL during 2009-10. The companies did not achieve the target of 'zero accidents' fixed by them due to inadequate house-keeping and safety equipments.



### Recommendations

- vi. The companies should conduct safety audit regularly and the recommendations contained in safety audit reports should be complied with to ensure the safety of the employees.
- vii. Proper maintenance of entire gas network system should be ensured so that leakage of harmful gases can be avoided.
- viii. Standard operating Procedure (SOP) should be adhered.
- ix. Awareness should be created among employees about safety and medical examination through trainings, hoardings and showing films etc.