

Preface

This Report of the Comptroller and Auditor General of India contains the results of the performance audit of the Activities of Corporate Social Responsibility undertaken by Steel Authority of India Limited (SAIL) and Rashtriya Ispat Nigam Limited (RINL) during the period from April 2004 to March 2010.



Executive Summary

Iron and Steel industry is the most polluting and resource intensive industry. As it consumes huge amount of natural resources like coal, iron ore, etc., as raw material, it has to be responsible towards environment protection and peripheral development. SAIL and RINL being profit making companies have adequate resources to discharge these responsibilities.

Performance audit of these companies was conducted with a view to assess whether they were discharging their corporate social responsibility (CSR) in an effective and efficient manner towards environmental protection, safety of its employees and social development.

CSR Policy Framework

SAIL has a CSR policy, however it was not comprehensive as it did not cover objectives, scope, strategy and areas of focus of CSR activities like that of RINL. While the companies were providing two per cent of their distributable profit for CSR activities but the same was not transferred to a 'separate fund' due to which the unspent funds lapsed at the end of the year. In fact RINL was able to utilise only 45 percent of the budget provided by it during 2006-07 to 2009-10, while SAIL, by and large, utilized the budget.

Environmental Responsibilities

SAIL and RINL were implementing Environment Management Systems (EMS) to evaluate and continually improve their environmental performance at their different plants and units for environmental protection. EMS certification, i.e., ISO 14001 has been accredited to RINL and only to one¹ plant of SAIL, out of total five² plants.

According to the International Energy Agency (IEA), the iron and steel industry accounts for approximately 4-5 per cent of total world carbon dioxide (CO₂) emissions. On an average, 1.9 tonnes of CO₂ is emitted for every tonne of steel produced globally. The average CO₂ emitted by SAIL and RINL during 2008-09 was 2.99 t/tcs³ and 3.18 t/tcs respectively as against the average of 2.09 t/tcs of CO₂ emitted by Tata Steel. SAIL and RINL have not fixed any target for reduction of CO₂ whereas Tata Steel set a target of reduction in CO₂ emission to less than 1.7 t/tcs by 2012. SAIL and RINL were found not to have even analysed the reasons for their higher CO₂ emission.

¹ Bhilai Steel Plant

² Bokaro Steel Plant (BSL) in Jharkhand, Bhilai Steel Plant (BSP) in Chattisgarh, Rourkela Steel Plant (RSP) in Orissa, Durgapur Steel Plant (DSP) and IISCO Steel Plant (ISP) in West Bengal.

³ tonne per tonne of crude steel

As against the world average of energy consumption of 4.5 to 5.5 giga calories per tonne of crude steel (G.cal/tcs), the consumption was 6.72 G.cal/tcs in SAIL, 6.84 G.cal/tcs in RINL and 6.17 G.cal/tcs in Tata Steel during 2009-10.

The world average for raw material used to produce one tonne of crude steel is 2.6 tonne. The consumption of raw materials in SAIL ranged between 3.26 t/tcs and 3.38 t/tcs and in RINL it ranged between 3.04 t/tcs and 3.10 t/tcs.

Water consumption in SAIL (except ISP) & RINL was within the prescribed norms. The RSPM⁴ level which may pose higher risk for respiratory diseases was higher than the norm in three plants of SAIL and RINL whereas SPM⁵ level was within the prescribed norm.

Utilisation of solid waste {Blast Furnace (BF) & Steel Melting Shop (SMS) slag} in SAIL during the year 2009-10 was 82.02 per cent and 75.25 per cent respectively. In RINL, utilisation of SMS slag during the year 2009-10 was 54 per cent. Two⁶ plants of SAIL did not have proper facility for disposal of hazardous waste though other plants of SAIL and RINL have proper facilities for disposal of the same.

Trees are a natural sink for CO₂ gas. On an average, a tree can absorb CO₂ at the rate of 6 kg/year and SAIL and RINL emit 40 million tonne and 10 million tonne of CO₂ per year respectively. Therefore, on an average 6700 million trees are required for absorbing CO₂ generated by SAIL and 1645 million trees are required for RINL against which inventory of trees in SAIL was 14.32 million and 4.59 million in RINL.

Safety

Despite substantial utilisation of the budget for this purpose by both SAIL and RINL, the number of fatal accidents began to rise during 2008-09 and 2009-10.

The companies did not achieve the target of 'zero accidents' fixed by them due to inadequate house-keeping and safety equipment.

Though SAIL and RINL have occupational health centres at their plants, the companies were not complying with the rule of periodic medical examination (once in every 12 months) of employees. Further, the percentage of employees turning up for health check up was very low.

Social Development

Both SAIL and RINL have been contributing to social development through community welfare programmes, medical camps, vocational training, sports facilities, medical facilities, free education in the company's schools to the steel township and neighbourhood children. SAIL adopted 79 villages in eight states for comprehensive development as Model Steel Villages (MSVs). RINL adopted seven villages in its periphery for development as MSVs.

⁴ Respirable Suspended Particulate Matter

⁵ Suspended Particulate Matter

⁶ BSP and RSP

The companies were not doing any need assessment survey in the periphery of their plants to assess their requirements and were not planning for CSR activities in a structured manner to utilise the funds efficiently. Also the companies were not evaluating the impact of the CSR activities on the society.

Recommendations

Significant recommendations to improve the performance of the Companies on CSR front are:

- *The Companies should fix specific targets for reduction of CO₂ emission.*
- *Both companies must put in place a reliable and eco-friendly mechanism for disposal of hazardous wastes.*
- *SAIL should set and implement specific targets for afforestation.*
- *Awareness should be created among employees about safety and medical examination through various measures, e.g., trainings, hoardings, showing films, etc.*
- *The companies should evolve a system of need assessment and impact assessment while undertaking CSR activities in a particular area.*



1.1 Corporate Social Responsibility

Public Sector Enterprises have legal responsibilities to maximize shareholder profits; but a shift in corporate mindset led by social expectations and pressure is causing business leaders to rethink their responsibilities with respect to corporate performance measured in terms of economic impact, social impact and environmental impact – commonly called the **Triple Bottom Line**.

The **Corporate Social Responsibility** (CSR) is seen as a concept in which companies voluntarily integrate social and environmental concerns into their business operations. The idea of being a socially responsible company means doing more than comply with the law by taking concrete measures to address environmental and social concerns. Corporate Social Responsibility (CSR) is a concept whereby organizations serve the interests of society by taking responsibility for the impact of their activities on all stakeholders including environment in all aspects of their operations.

Corporate Social Responsibility is a Company's commitment to operate in an economically, socially and environmentally sustainable manner, while recognizing the interests of its stakeholders. This commitment is beyond statutory requirements. Corporate Social Responsibility is, therefore, closely linked with the practice of Sustainable Development. Corporate Social Responsibility extends beyond philanthropic activities and reaches out to the integration of social and business goals. These activities need to be seen as those which would, in the long term, help secure a sustainable competitive advantage.

Steel manufacturing has a variety of impacts on the environment. The main impacts come from the use of energy and raw materials, which result in the emission of carbon dioxide (CO₂), sulfur-oxides (SO_x), nitrogen oxides (NO_x) and dust to air, as well as water usage and associated emissions. Iron and steel industry contributes 15 per cent of CO₂ emission from industry sector in India. Steel plants generate huge quantity of waste materials including hazardous waste. Steel Industry poses one of the most difficult challenges in the area of safety, health when compared to many other industries due to complex nature of its operations and maintenance activities and wide range of hazards associated with them.

1.2 Steel Authority of India Limited (SAIL) is the leading steel-producing company in India. It has five¹ integrated steel plants with production capacity of 13 Million Metric Tonne (MMT). During the year 2009-10 it recorded gross sales of ₹ 43,935 crore with net profit of ₹ 6,754 crore. The product profile of the company comprises of pig iron, wire rods, rounds, reinforcement bars, angles, channels, beams, coils, pipes, billets, blooms, rails and wheels and axles for Indian Railway. Rashtriya Ispat Nigam Limited (RINL) known as 'Vizag Steel', is one of the major steel producers in India. It has a plant in Vishakhapatnam in Andhra Pradesh with production capacity of 3 MMT and it is the only shore based steel plant in India. The turnover of RINL in 2009-2010 was ₹ 10,635 Crore and net profit was ₹ 797 crore.

The SAIL and RINL being the profit making companies have sufficient resources to discharge these responsibilities.

¹ Bokaro Steel Plant (BSL) in Jharkhand, Bhilai Steel Plant (BSP) in Chattisgarh, Rourkela Steel Plant (RSP) in Orissa, Durgapur Steel Plant (DSP) and IISCO Steel Plant (ISP) in West Bengal.

2.1 Rationale and Scope of Audit

Iron and Steel industry is the most polluting and resource intensive industry. It consumes huge amount of natural resources like coal, iron ore etc. as raw material. Therefore, the companies in iron and steel industry have the responsibility towards environment protection and peripheral development.

The present performance audit covers the CSR activities of these companies for the period from 2004-05 to 2009-10. Implementation of CSR activities were reviewed broadly with reference to resource allocation for CSR activities, environmental care, safety and peripheral development.

2.2 Audit objectives

The Performance Audit on activities of CSR undertaken by SAIL and RINL was taken up with the objective of assessing whether:

- The Companies have formulated CSR policy which adequately addresses CSR concerns and whether adequate resources for CSR have been provided;
- The companies have an appropriate Environmental Management Plan and System to discharge environment related responsibilities such as pollution control, management of waste and compliance with laws;
- The safety practices prevailing in the companies conform to the norms/standards, rules prescribed; and
- The companies have been able to fulfill their social responsibility in an effective and efficient manner towards peripheral development such as medical & health care, education, livelihood generation, infrastructure development and rehabilitation & resettlement.

2.3 Audit criteria

The following audit criteria were used for assessing the performance of the Companies:

- Environment Policies of SAIL & RINL and instructions for fund allocation for CSR
- Action points relating to 'Integrated Iron & Steel Industry' provided in 'Charter on Corporate Responsibility for Environmental Protection' (CREP) issued by the Ministry of Environment and Forest (MOEF) in 2003.
- Global steel industry data published by World Steel Association.
- Hazardous Waste (Management & Handling) Rules, 1989 as amended from time to time.
- Standards for handling of bio-medical waste provided as per EPA notification dated 20/07/1998.

- Ambient air quality standards as per notification of 11/04/1994 issued under section 16(2) of Air (Prevention and Control of Pollution) Act, 1981.
- Norms for noise level prescribed under Noise Pollution (Regulation & Control) Rules, 2000.
- Provisions regarding health of workers and safety measures as stipulated in the Factories Act, 1948.
- Safety policies of the companies and instructions as per Standard Operating Practices.
- CSR Policy and Plan.
- MOU with the administrative Ministry.

2.4 Audit methodology

Audit examined relevant records based on which preliminary observations were issued to the Management of SAIL and RINL and after receipt of response from the Managements exit conferences were held in December 2010. The response of Ministry of Steel was also suitably incorporated while drawing audit conclusions which are discussed in subsequent chapters.

2.5 Audit Findings

Audit findings are discussed in four chapters as detailed below:

- **Chapter 3:** includes issues relating to CSR policy and implementation set up
- **Chapter 4:** highlights concerns regarding air emission, conservation of energy & natural resources and management of waste etc.
- **Chapter 5:** flags the issues of employees safety, fatal accidents and in-adequate house keeping
- **Chapter 6:** discusses the issues of social development like Education, Medical facilities, absence of need assessment/ survey of society for planning CSR activities and impact assessment of CSR activities.

2.6 Acknowledgement

We acknowledge the cooperation and assistance extended by the Managements of the companies at different levels, which facilitated the completion of this performance audit.

Each business entity is expected to formulate a CSR policy to guide its strategic planning and provide a roadmap for its CSR initiatives, which should be an integral part of overall business policy and goals. The CSR initiatives should include identification of projects/activities, setting measurable physical targets with timeframes, organizational mechanism and responsibilities to implement CSR initiatives, budget, and monitoring set-up.

3.1 CSR policy

The Board of Directors of the SAIL approved the Policy on CSR in July 2009. The company through its policy recognizes that its business activities have direct and indirect impact on the society. The company strives to integrate its business values and operations in an ethical and transparent manner to demonstrate its commitment to sustainable development and to meet the interest of its stakeholders.

Audit however noticed that CSR policy of the company is not comprehensive as it does not address the following key issues:

- The areas to be covered under the CSR
- The scope of the CSR activities, e.g., Environment, Safety, Education, Peripheral Development etc.
- Detailed methodology for conducting CSR activities
- The budget/ source of funds for CSR activities
- The implementation and monitoring system for CSR activities

While the CSR policy of RINL is comprehensive and covers objectives, scope, strategy and areas of focus of CSR activities the policy also lays down the budget allocation and implementation machinery for CSR related activities.

The Ministry stated (December 2010) that CSR Policy of SAIL is a document which demonstrates SAIL's commitments to sustainable development and to meet the interest of its stakeholders and covers the Guiding principle of CSR policy. Further, a separate set of document known as "SAIL CSR Guidelines" in line with CSR Guidelines issued by Department of Public Enterprises (DPE) is under process of approval of the competent authority which covers the suggestions made by the Audit.

In short, SAIL should adopt a detailed guidelines/policy covering vital issues relating to scope of CSR activities, methodology for conducting CSR activities, funding arrangements and implementation and monitoring set-up.

3.2 CSR budget and utilization

SAIL and RINL have made commitments through board resolution and CSR policy respectively to the cause of CSR and have earmarked 2 per cent of the distributable surplus from the year 2006-07 for CSR

activities. This amount is utilized for social development and so far as environment and safety issues are concerned, the resources were provided from the overall budget. Details of budget and expenditure incurred for the period 2004-05 to 2009-10 are given below:

(₹ in crore)

Year	SAIL		RINL	
	Budget Provision	Actual Expenditure	Budget Provision	Actual Expenditure
2004-05	Requirement of 2% was effective from 2006-07		RINL started CSR activities from the year 2006-07	
2005-06				
2006-07	26	19.78	6.78	3.47
2007-08	95	119.61	27.27	13.81
2008-09	114	83.03	38.85	12.21
2009-10	80	78.79	12.75	9.37
Total	315	301.21	85.65	38.86

We observed the following:

- SAIL was to provide fund at the rate of 2 per cent of the distributable profit for CSR as per the Board of Directors' decision (March 2006) to which SAIL complied with except during the year 2006-07.
- While RINL provided funds as intended but utilized only about 45 percent of funds, thus, allowing their CSR activities to unfulfilled.

The Ministry stated (December 2010) that in SAIL the expenditure of allocated CSR budget is being monitored by the authorities on regular basis. In RINL to expedite all projects a monitoring mechanism has been put into place where by both progress and expenditure on CSR projects are monitored by committee of Directors headed by CMD every month. Presently, the performance and utilization of CSR funds is in excess or at par with the MOU targets on month to month basis.

3.3 Separate Fund for CSR activities

- SAIL allocates budget of two percent of their distributable surplus for CSR activities. This budget was reallocated to different plants and units of SAIL. But as the SAIL was not transferring this amount to a separate CSR fund, therefore, unspent fund lapsed at the end of each year.
- In RINL also, the company did not create any separate CSR fund. The company made commitments out of the budget provision and the uncommitted/unspent amount lapsed at the end of the year.

The Ministry in its reply (December 2010) remained silent on the issue in case of SAIL while for RINL stated that action has been initiated for creation of a non lapsable CSR pool fund. Further, SAIL Management during exit conference (December 2010) did not agree for creation of CSR fund and stated that in future while preparing the budget, the unspent balance if any, would be carried forwarded and added to the next year budget.

The contention of the Management is not acceptable as DPE in its guidelines (April 2010) also emphasized that CSR Budget should be transferred to a CSR Fund. Therefore, a CSR fund, separate from the mainline budget, may be created by SAIL and RINL so as to avoid lapse of unspent fund and ensure better monitoring.

3.4 CSR Implementation set up

SAIL is having a CSR cell at corporate level headed by General Manager. There are CSR cells at plant level also which are supervised by the Managing Directors of the respective plants. The plans are prepared at plant level and also incorporated in the annual budget.

For implementation of CSR activities, RINL has established a charitable trust named RINL Foundation which is administered by a Committee consisting of CMD, Director (Finance) and Director (Personnel). The Committee is the Apex Policy making Body to lay down guidelines for allocation of budget under various heads of CSR like Peripheral Development, Education, Community Health Care, Sports & Games, Self-Employment Programmes etc. The Apex committee is assisted by Personnel (Welfare & CSR) Department in formulating the guidelines and its implementation.

The Ministry while replying (December 2010) confirmed the facts.

3.5 Conclusion

Though SAIL was providing sufficient funds and was having proper implementation set up, the company was not having detailed CSR policy for execution of CSR activities effectively. While RINL has a detailed CSR policy and also established separate set up for implementation of CSR activities but the company did not utilize full earmarked budget. The companies were not transferring the budget provided for CSR activities to a separate fund due to which the unspent amount was being lapsed.

The impact of these inadequacies has been analysed and discussed in succeeding chapters.

Recommendations

- (i) A dedicated CSR fund, separate from the mainline budget, may be created by SAIL and RINL so as to avoid lapse of fund and ensure full utilisation of dedicated funds.

Environmental Responsibilities

4.1 Environmental Legislative Framework

The Ministry of Environment & Forests (MoEF) is the nodal agency in the administrative structure of the Central Government, for the planning, promotion, co-ordination and overseeing the implementation of environmental and forestry programmes. MoEF is also the Nodal agency in the country for the United Nations Environment Programme (UNEP). The principal activities undertaken by MoEF consist of conservation & survey of flora, fauna, forests and wildlife, prevention & control of pollution, afforestation & regeneration of degraded areas and protection of environment, in the framework of legislations.

Under the provisions of The Water (Prevention & Control of Pollution) Act, 1974, the Central Government constituted the 'Central Board for the Prevention and Control of Water Pollution' in September 1974. The name of the Central Board was changed to Central Pollution Control Board (CPCB) under the Water (Prevention & Control of Pollution) Amendment Act 1988.

The main functions of CPCB, as spelt out in The Water (Prevention and Control of Pollution) Act, 1974, and The Air (Prevention and Control of Pollution) Act, 1981, are:

- (i) To promote cleanliness of streams and wells in different areas of the States through prevention, control and abatement of water pollution; and,
- (ii) To improve the quality of air and to prevent, control or abate air pollution in the country.

State Pollution Control Boards, were constituted under the provisions of the Water (Prevention and Control of Pollution) Act, 1974. This was the first initiative taken by the Government of India for the prevention and control of water pollution with a view to maintain and restore wholesomeness of the water. During the subsequent years, many more federal enactments related to environmental protection came into force, with the State Pollution Control Boards being designated as the implementing authority within the geographical boundary of respective states.

Several regulations have been introduced in the recent past covering Hazardous Wastes, Coke Ovens, Ozone Depleting Substances (ODS) such as Environment Protection Act, 1986 (EPA), Air (Prevention and Control of Pollution) Act, 1981, Hazardous Waste Rules, 1989, Noise Pollution (Regulation & Control) Rules, 2000 etc. These regulations are applicable to steel industries.

4.2 Environmental Management System

Environmental management system (EMS) refers to the management of an organisation's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organisational structure, planning and resources for developing, implementing and maintaining policy for environmental protection. An EMS serves as a tool to improve environmental performance and provides a systematic way of managing an organization's environmental affairs. EMS gives order and consistency for organizations to address environmental concerns through the allocation of resources, assignment of responsibility and ongoing evaluation of practices, procedures and processes.

SAIL and RINL are building environment management systems at its different plants and units for environmental protection, including acquisition of certification under the international standard ISO

14001 to reduce the environmental impact of its activities. The areas covered in ISO 14001 certification include Environmental policy, environmental aspects and related impacts, legal and other requirements, Environmental management programmes, training awareness and competence, environmental management system documentation, monitoring and measurement, environmental management system audit, management review etc.

EMS certification i.e. ISO 14001 has been accredited to the BSP (whole plant), BSL (10 units), DSP (19 units), RSP (8 units) and ISP (1 unit). There is no plan at present in BSL, DSP and RSP for accreditation of ISO 14001 for remaining units. However, ISP has decided to implement Integrated Management System in all the new units including the units that will remain after implementation of the expansion plan.

RINL has got ISO 14001 certification for whole company (including production & production supporting service departments).

The Ministry while accepting (December 2010) the audit observation stated that SAIL is having no plan at present for accreditation of ISO 14001 for remaining units of BSL, DSP and RSP.

SAIL should take early action to get ISO 14001 certification for the remaining units as EMS enables an organisation to evaluate and continually improve its environmental performance and operating efficiency.

4.3 Environmental Management Plan implementation and monitoring set-up

The production of steel causes air, water and noise pollution and generation of solid wastes including hazardous waste. The main units of steel industry causing pollution are coke oven and by-product plant, steel melting shop, sintering plant, blast furnace, refractory material plant and captive thermal power plant. In India most of the causes of higher pollution are attributed to usage of old technologies besides inherent quality raw material constraints. Therefore, it is necessary to have Environmental Management Plan (EMP) in place to address the environmental concern.

Preparation of environmental management plan is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of projects. The EMP helps reaching identified goals in systematic and cost effective manner. The plan should specify key activities, milestones with timeframe, cost and implementation and monitoring setup.

SAIL has Environment Management Division (EMD) at Kolkata for controlling, monitoring and advising plants/units on the environmental issues. The Environment Policy of SAIL emphasizes on "conducting operations in an environmentally responsible manner to comply with applicable legal and other requirements related to its environmental aspects and strive to go beyond".

Audit noticed that it did not have any structured Environment Management Plan or monitoring mechanism. EMD takes up environment issues faced by the plants, on a case to case basis and monitors the environmental issues at plants through monthly/quarterly reports sent by Environmental Control Division of the plants. No regular visit either monthly or quarterly is conducted by technical executives of EMD at different plants to monitor/guide, educate and to identify the action plans for the steel plants.

The Ministry stated (December 2010) that Annual Business Plan (ABP) is made at all the units which also take into account the environmental priorities and the progress of these plans are reviewed at the plant level as also at the corporate level at regular intervals. Further, the Ministry while agreeing stated that

technical executives of EMD make plant visit on need based basis and of late, plant visits are being made regularly by the respective desk officers.

The Company (SAIL) should prepare EMP at the corporate level to mitigate the possible adverse impact of plant operations and for maintaining the existing environmental quality in a structured manner. The EMP should also specify key activities, milestones with timeframe and cost.

RINL established EMD in January 1995 to (i) control air, water and noise pollution (ii) maintain essential dust extraction systems (iii) monitor, control and submit data to pollution control board.

RINL prepares Annual Sustainability Plan as a part of Environmental Management System (EMS). The Management sets the targets for the completion of environmental projects. While setting the targets, Management fixes responsibility to the heads of the respective zones for the implementation of the projects as per the schedule specified in the Sustainability Plan.

4.4 Air Emission Management

The greenhouse gas of most relevance to the world steel industry is carbon dioxide (CO₂). Much of the CO₂ arising from iron production comes directly from the burning of coke or charcoal as fuel and reductant for the blast furnace. Yet more carbon dioxide is produced when limestone is added to the blast furnace to act as a flux. Steel production essentially involves the reduction of the amount of carbon in the iron and this refining process again produces some carbon dioxide. Blast Furnace produces BF gas which contains oxygen, carbon Monoxide, carbon dioxide and nitrogen. They are used as fuel for industrial heating in downstream, upstream processes and in power generation or burnt in air. As of now the BF gas is not being utilized fully as fuel but burnt in air which releases CO₂ gas.

According to the International Energy Agency (IEA), the iron and steel industry accounts for approximately 4-5 per cent of total world CO₂ emissions. On an average (world average), 1.9 tonnes of CO₂ is emitted for every tonne of steel produced. Over 90 per cent of steel industry CO₂ emissions come from iron production in nine countries or regions: Brazil, China, the European Union (EU), India, Japan, Korea, Russia, Ukraine and the US.

Audit analysis revealed that during the years 2004-05 to 2009-10; SAIL and RINL emitted 233.80 million tonne and 59.21 million tonne of CO₂ respectively. The average CO₂ emitted by SAIL and RINL during 2008-09 was 2.99 t/tcs² and 3.18 t/tcs respectively as against the average of 2.09 t/tcs of CO₂ emitted by Tata steel which is another steel major in the private sector. Further, audit noticed that SAIL & RINL have not set any targets for reduction in CO₂ emission while on the other hand, Tata Steel set a target of reduction in CO₂ emission to less than 1.7 tonnes per tonne of crude steel by 2012.

The companies were not making any reason wise analysis as regards higher CO₂ emission. However, the several factors determine the CO₂ emission such as specific energy consumption, coke rate for iron making, quality of raw material (coal and iron) and type of fuel used for generation of power. The quantum of excess CO₂ emitted by SAIL and RINL due to excess consumption of energy and coke has been dealt with in para 3.6.1 and 3.6.2.

The Ministry while agreeing with audit stated (December 2010) that consumption of energy and carbon emissions are interlinked and any effort for the reduction of energy consumption has a significant impact on the reduction of CO₂ emissions. As most of the SAIL steel plants are very old and were set with old energy intensive technologies, the specific energy consumption at SAIL was higher compared to the newly installed other steel plants in India. Further, the Ministry also stated that major technological initiatives are being taken at SAIL plants which would have an impact on the CO₂ emissions reduction.

² tonne per tonne of crude steel

Ministry further added that RINL installed various cleaner technologies which not only reduced energy consumption but also reduced CO₂ emissions. Further, RINL is planning to fix targets for reduction of CO₂ emission commensurate with specific energy consumption as part of sustainability plan 2011-12.

In conclusion, though SAIL and RINL have taken various initiatives for reduction of CO₂ emission but it did not map any specific plan to facilitate further reduction in CO₂ emission.

4.5 Air quality

(i) Respirable Suspended Particulate Matter (RSPM)

RSPM or PM10 is the dust particulates having diameter less than 10 μm (micron) and they are small enough to be inhaled and may enter deep into respiratory tract and pulmonary system of human beings. PM10 is generated in Raw Material Handling Plants, coke oven Batteries, sinter plants, steel melting shops etc. RSPM because of its small size poses health hazard due to easy inhalation and deep penetration in respiratory system during breathing. Mostly diseases of lungs like asthma, bronchitis, allergic disorders etc. are caused by inhalation of respirable dust.

As per the Notification of 1994 issued by the CPCB, norm for industrial RSPM on 24 hourly basis is 150 microgram/ cubic meter ($\mu\text{g}/\text{m}^3$).

We observed that:

- In BSP, as per management plan, the RSPM sample was required to be taken once in week from five specified locations; however, sample for RSPM was not taken as per plan of the management. Out of the total available 164 weeks from January 2007 to March 2010, percentage of sample taken from the three locations was ranging between 73 and 79. Out of the 378 samples taken during this period, in 146 cases RSPM concentration was more than the norms of $150\mu\text{g}/\text{m}^3$.
- In RSP out of six locations, RSPM exceeded the norm of $150\mu\text{g}/\text{m}^3$ in two locations during 2004-05, in four locations during 2005-06 and in two locations during 2008-09.
- RSPM level in ISP (except in 2009-10), BSL & DSP was within the norm during the years 2004-05 to 2009-10.
- At RINL, RSPM recorded at one location only where it exceeded the norm in 100 out of 419 samples taken during June 2007 and March 2010.

The Ministry stated (December 2010) that installation of new air pollution control facilities in shops and augmenting the capacity of the existing ones at integrated steel plants of SAIL have resulted in improving the air quality both inside and outside the plant premises and the RSPM level has been found to be in the range of 20 – 100 $\mu\text{g}/\text{m}^3$ which was within stipulated norm. In case of RINL the Ministry did not give specific reply to the issue of excess level of RSPM over the norms, it only stated that Pollution control equipments are being maintained as per requirement of Quality Management System & Environmental Management System by all the Departments.

The fact remains that RINL could not maintain the RSPM level with in the norm which may pose higher risk for respiratory diseases to the employees and the people living in the vicinity of the plant.

(ii) Suspended Particulate Matter (SPM)

SPM are the particulate having diameter less than 100 μm that tend to remain suspended in the atmosphere for a longer period of time. The atmospheric suspended particulate affect the environment by lowering the visibility, producing hazy condition, participating in secondary reactions in atmosphere and affecting biotic population directly or indirectly.

As per the Notification of 1994 issued by CPCB, norm for industrial SPM on 24 hourly basis is 500 $\mu\text{g}/\text{m}^3$. SPM level in SAIL plants and RINL was within the norm during the years 2004-05 to 2009-10.

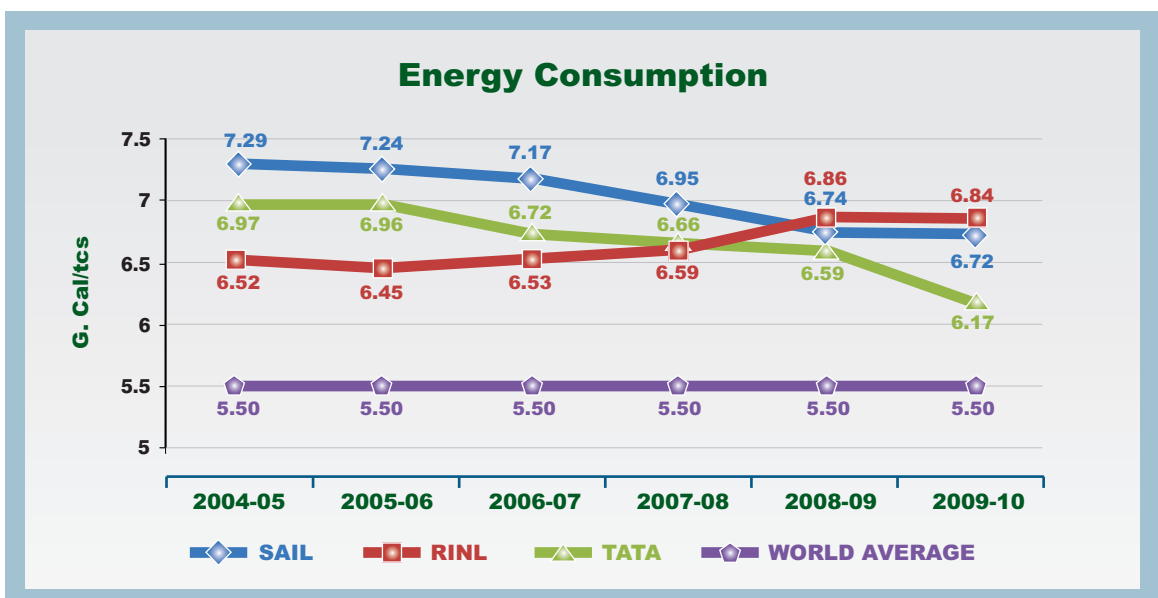
The Ministry stated (December 2010) that SPM content continues to be within norm in all the steel plants.

4.6 Conservation of energy and natural resources

Steel industry is a resource intensive industry. The extraction, transport and production of raw materials for steel making have an impact on the environment. Efficient use of these natural resources is critical to the sustainability of the steel industry. Key raw material inputs needed in steel making include iron ore, coal, limestone and recycled steel. *On an average 2.6 tonne of raw material³ is used to produce a tonne of crude steel. The consumption of raw materials in SAIL ranged between 3.26 t/tcs and 3.38 t/tcs.* Though there has been reduction in consumption of raw materials over the years, SAIL is lagging behind Tata Steel which consumed 3.00 t/tcs in 2008-09. In RINL it ranged between 3.04 t/tcs and 3.10 t/tcs.

(i) Energy Consumption

The energy consumption per tonne of crude steel in SAIL & RINL vis-à-vis Tata Steel and world average during last six years ending 2009-10 is depicted below:



As against the international average of energy consumption of 4.5 to 5.5 G.cal/tcs⁴, the consumption was 6.72 G.cal/tcs in SAIL and 6.84 G.cal/tcs in RINL during 2009-10.

³ 1,725 kg of iron ore, 645 kg of coal, 150 kg of limestone, and 138 kg of recycled steel

⁴ Giga calories per tonne of crude steel

- The SAIL has not fixed any specific targets for reduction in energy consumption. In RINL, against the commitment of reduction of one per cent per year in specific energy consumption, the actual consumption, on the contrary, increased by one to four per cent year after year during the four years 2006–2010.
- While energy consumption was lowest in DSP (6.55 G.cal/tcs), in ISP it was the highest (8.18 G.cal/tcs) during 2009-10. BSL and RSP made improvement by consistently decreasing the energy consumption. The energy consumption per tonne of crude steel vis-à-vis norms in SAIL plants and in RINL during the years 2004-05 to 2009-10 are given in Annexure I.
- SAIL consumed an extra energy of 118.33 million G.cal during 2004-05 to 2009-10 which contributed to increase in CO₂ emission by 62.10 million tonnes during this period.
- In RINL, excess consumption of 23.83 lakh G.cal of energy contributed to increase in CO₂ emission by 12.51 lakh tonnes during the years from 2004-05 to 2009-10.
- Reasons for consumption of energy in excess of the norms included high fuel rate, coke screening losses in blast furnaces, stoppage of LD gas recovery due to rupture of seal of LD gas holder in SMS and non-availability of gas holder for storing Coke oven & BF gas.

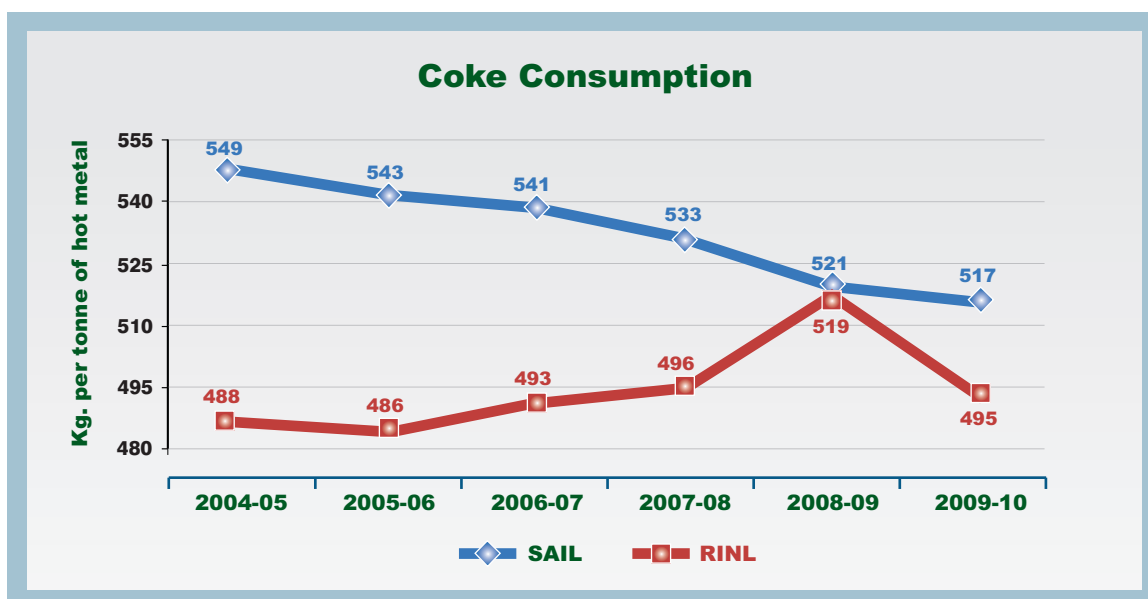
The Ministry stated (December 2010) that energy consumption in ISP has been higher as compared to other integrated steel plants of SAIL due to age and prevalence of obsolete technologies and fixation of target for energy consumption is done by SAIL management keeping in view maximum possible operational improvement and adoption of new technology, if any. RINL is adopting BS EN: 16001 Energy Management System across the steel works which is expected to reduce energy consumption and CO₂ emissions.

We do not agree with the Ministry because SAIL could not achieve the plant wise energy consumption target and RINL could not meet the commitment of reduction of specific energy consumption by one per cent per year which impacted the emission of CO₂.

(ii) Coke consumption

Coke is a very important ingredient (as a fuel) for the functioning of the Blast Furnace to produce hot metal. Coke rate is denoted in terms of consumption of coke in kilogram per tonne of hot metal (kg/thm) produced. A lower coke rate indicates better performance.

The coke consumption per tonne of hot metal in SAIL & RINL during the years 2004-05 to 2009-10 is shown below:



We observed that:

- The Consumption of coke in SAIL was ranging between 549 Kg. and 517 Kg. per thm during the years 2004-05 to 2009-10 and it was on decreasing trend. Whereas in BSP it was varying between 491 to 509 kg/thm. In ISP it was ranging between 778 and 816 kg/thm. Consumption of coke in other plants was also more than actual consumption of BSP.
- In RINL coke consumption was ranging from 486 kg/thm to 519 kg/thm during the years from 2004-05 to 2009-10 and it was on increasing trend. However in the year 2009-10 it was decreased to 494.6 kg/thm.
- In comparison with RINL (486 kg/thm in 2005-06) SAIL consumed excess coke of 40.8 lakh tonne during 2004-05 to 2009-10 (Annexure II).
- On an average the reduction of one kg in coke rate results in reduction of CO₂ emission by 3.4 kg. Thus, due to excess consumption of 4.08 million tonnes of coke by SAIL resulted in excess emission of 13.87 million tonnes of CO₂ in the atmosphere and RINL emitted excess CO₂ of 0.78 million tonnes due to excess consumption of 0.23 million tonnes of coke.
- The excess consumption of coke was due to adverse quality of input materials such as iron ore and coke and low blast temperature.

The Ministry reply (December 2010) did not address the issue of excess consumption of coke. Since excess consumption of coke has an adverse impact on the overall financial viability of the Company as well as on environment, therefore, it should take all necessary steps to reduce the consumption of coke.

(iii) Water Consumption

Considering the importance of water conservation, CREP⁵ provided norm for limiting the water consumption to 5 m³/tcs for long products and 8 m³/tcs for flat products plant.

We observed that water consumption in ISP was more than the norm during 2004-05 (8.59 m³/tcs) 2005-06 (6.96 m³/tcs) and 2008-09 (5.58 m³/tcs). The actual consumption of water in other SAIL plants & RINL during the last six years ending 2009-10 was within the norm.

The Ministry stated (December 2010) that overall specific water consumption at SAIL plants decreased by 30 per cent during last 6 years from 5.64 m³/tcs to 3.96 m³/tcs in 2009-10.

We appreciate the action taken by the management to reduce the water consumption and expect that the same efforts would be continued.

4.7 Solid Waste Management

Wastes are substances or objects, which are intended to be disposed of, or are required to be disposed by the provisions of national laws. Additionally, wastes are such items which people are required to discard, for example, by law because of their hazardous properties.

Municipal waste is generated by households and consists of paper, organic waste, metals etc. The production processes, households and commercial activities generating waste are hazardous waste. Bio-medical waste is waste generated by hospitals and other health providers and consists of discarded drugs, waste sharps, microbiology & biotechnology waste, human anatomical waste, animal waste etc.

Waste represents a threat to the environment and human health if not handled or disposed of properly. **According to United Nations Environment Programme (UNEP), waste management includes both the components of prevention and disposal of waste. Thus, strategies for waste**

⁵ Charter on Corporate Responsibility for Environment Protection

disposal should focus on waste prevention and minimization through the '3 Rs' - Reduce, Reuse and Recycle.

In the process of iron and steel making, huge quantity of BF and SMS slag wastes are generated which are to be re-used or disposed of.

(i) Blast Furnace and Steel Melting Slag

BF slag is granulated and sold to cement plants whereas the unprocessed BF slag and SMS slag are used for refilling of low lying areas. As per CREP, BF and SMS slag were to be utilized to the extent of 70 per cent by 2004, 80 per cent by 2006 and 100 per cent by 2008.

- Though SAIL and RINL have plans to utilize slag which include interface with cement manufacturers, soil conditioners and setting up of cement plants etc., utilization of slag in SAIL & RINL was less than the CREP requirement.
- In SAIL, utilization of BF slag ranged between 54.49 percent and 84.41 per cent during the years 2004-05 to 2009-10 whereas utilization of SMS slag ranged between 56.22 per cent and 75.24 per cent during this period. Similarly in RINL, utilization of BF slag was in the range of 62 per cent and 107 per cent whereas in respect of SMS slag, the utilization ranged between 35 per cent and 82 per cent during 2004-05 to 2009-10.
- In respect of utilization of BF slag, BSL is far behind the CREP commitment. So far as utilization of SMS slag is concerned, none of the plant could meet the target of CREP and at ISP the disposal of SMS slag is nil.
- Concept of 3Rs (Reduce, Reuse and Recycle) emphasizes more on reduction in waste generation. Although there has been reduction in BF slag generation per tonne of crude steel production in DSP and ISP, there has been increase in generation of BF slag from 374 kg/tcs in 2004-05 to 431 kg/tcs in 2009-10 in BSP and from 415 kg/tcs in 2004-05 to 431 kg/tcs in 2009-10 in BSL.
- The reasons for low utilisation of BF slag in BSL was lack of adequate facility (only two out of five BFs have granulation facility) to granulate the BF slag which has huge demand in the market, non existence of cement plant in nearby areas etc. which resulted in no/less off take of BF slag.

The Ministry stated (December 2010) that SAIL plants have effectively adopted waste minimization strategies including conservation at source, recovery and recycling. Further, at ISP, total SMS slag generation is from Twin Hearth Furnace (THF). The physio-chemical characteristics of this slag are such that it finds no use. However, after completion of the on-going modernisation at ISP expected by Dec. 2011, the operating THFs shall be phased out and the total steel making would be from Linze Donawitz (LD) converters. Work order for installation of Cast House Slag Granulation Plant for the other three Blast Furnaces at BSL has already been placed. All these plants are expected to be commissioned by the end of 2012.

Though SAIL and RINL have taken action to utilise the slag but they were still lagging behind the CREP target of utilization of SMS and BF slag.

(ii) Hazardous waste

Steel plant generates hazardous wastes such as tar sludge, used batteries, benzol acid sludge, used oil etc. Disposal of such waste on land affects the soil & water and leads to environmental problems.

As per Hazardous Waste (Management and Handling) Rule 1989, the occupier or operator of a facility (steel plants in this case) shall be responsible for identifying sites for establishing hazardous wastes disposal facility. Considering the seriousness of the environmental pollution being caused by the hazardous waste, the Supreme Court of India issued (October 2003) comprehensive directives on

hazardous waste. As per directives, MoEF also constituted a Supreme Court Monitoring Committee in November 2003 which had set time limit for setting up of common facilities for land filling of hazardous waste latest by June 2006.

In this regard we observed that:

- In BSL secured landfill is in operation and for DSP and ISP agreement has been made with West Bengal Waste Management Limited for disposal of the hazardous waste at a common place.
- BSP is yet to construct secured landfill for storage of hazardous waste despite getting regular show cause notices from Chhattisgarh Environment Conservation Board (CECB). For handling hazardous waste, the plant obtains authorization from CPCB in every three years. As per the terms and conditions of this authorization, BSP has to display on-line data outside the factory gate on quantity and nature of hazardous chemicals being used in the plant, water & air pollution and solid waste generated within the factory premises. However, BSP has not fulfilled this condition so far.
- In RSP clearance has been obtained from State Pollution Control Board for development of new secured land fill facility.
- RINL has not constructed secured landfill as all hazardous waste generated in the company are either recycled or sold to authorized parties as per Andhra Pradesh Pollution Control Board directive.

The Ministry stated (December 2010) that actions have already been initiated for construction of secured landfill at BSP. Display board has been installed at the factory main gate of BSP, where the quantity and nature of hazardous chemicals and other details are being displayed.

The Companies should take early action for proper disposal of hazardous waste as dumping of such waste on land affects the soil & water which could lead to environmental problems.

(iii) Municipal Waste

In 2000, under the powers conferred by the Environment (Protection) Act, 1986, the Municipal Solid Wastes (Management and Handling) Rules were notified which made every municipality, within its territorial jurisdiction, responsible for management and handling of solid waste. Since SAIL and RINL are responsible for maintenance of their townships, they need to make proper arrangements for disposal of municipal waste.

- In SAIL (except DSP where handling and disposal of municipal waste is done by Durgapur Municipal Corporation) the municipal waste is not disposed of properly. There was no waste processing and disposal facility required as per Municipal Solid Wastes (Management and Handling) Rules.
- RINL was having proper facility for collection, transportation and disposal of municipal waste.

The Ministry stated (December 2010) that in SAIL adequate facilities exist at all the steel townships for collection, transportation and disposal of municipal wastes.

The Ministry's contention was not acceptable as municipal waste was not properly disposed at BSL, ISP and RSP, as the required facilities for disposal were not available at these plants.

The Company should make expeditious arrangements for proper disposal of municipal waste to avoid any kind of disease outspread.

(iv) Bio-Medical Waste

To ensure proper management of bio-medical waste, Bio-Medical Waste (Management and Handling) Rules, were notified in 1998 with amendments in 2000 and 2003. Under the rules, the institutions generating bio-medical waste were responsible for management and handling of bio-medical waste.

- In SAIL (BSP, DSP and ISP) and RINL disposal of bio medical waste was assigned to private party authorised by state pollution control boards.
- In RSP disposal of bio medical waste was as per norms whereas the BSL has not complied with the requirement of Jharkhand State Pollution Control Board to install a two stage incinerator of adequate capacity for processing of bio medical waste.

The Ministry stated (December 2010) that action has been initiated for installation of bio-medical incinerator at BSL, which is expected to be completed by June 2011.

4.8 Effluent Discharge

Used water in the steel plant contains harmful contents viz. phenol, cyanide, ammonia, oil & grease etc. These chemical contents have adverse effect on human beings as stated below:

Phenol: Drinking water containing phenol for a long period of time can cause diarrhea, mouth sores, corrosive damage and death. If skin comes into contact with phenol for a long time, people may get liver or kidney damage, dark urine, damage to the red blood cells etc.

Cyanide is acutely toxic to humans and it makes the cells of an organism unable to use oxygen.

Ammonia can affect respiratory system and repeated exposure can cause respiratory tract irritation.

To maintain quality of water for re-use, the prescribed norms as per EPA notification dated 24/10/1989 are given below:

Parameters	Std-Concentration in milligram/liter (mg/ltr) except pH (not to exceed)
pH ⁶	6.0 to 8.5
Suspended solids	100
Phenol	1.0
Cyanide	0.2
BOD	30
COD	250
Ammonical Nitrogen	50
Oil and grease	10

We observed that:

- In BSL, BSP & ISP Effluent discharge level was within the norm.
- In RSP the suspended solid exceeded the norm in 2005-06 although in other years it was within the norm.
- In DSP elements like phenol, ammonia & cyanide at outfall number 5 were much above the prescribed norm despite censure and imposition of penalty by SPCB and CPCB during 2007-08. However, the effluent discharge level in 2009-10 was within the norms.

⁶ measure of the acidity or basicity of a solution

- In RINL the effluents were within the norms during the years 2004-05 to 2009-10 except Ammonical Nitrogen which was ranging between 76.2 to 87.2 mg/ltr as against the statutory norm of 50 mg/ltr. For this the Russian supplier suggested (August 2002) modifications to the effluent treatment plant, which were yet to be done by the company.

The Ministry stated (December 2010) that all the SAIL plants are meticulously maintaining the various Effluent Treatment Plants so that the effluent quality is well within the stipulated norms when let out from the plant boundary to the receiving bodies. In RINL Modifications to the effluent treatment plant as suggested by Russian supplier is at final stages of commissioning and stabilization at the total estimated cost of Rs. 46 crore.

RINL should commission the effluent treatment plant at the earliest and the Companies should make continuous efforts to keep the level of the quality of effluent in the water discharged from the plants within the norm to avoid adverse effect of these chemicals.

4.9 Noise Pollution

Since noise pollution has deleterious effects⁷ on human health and the psychological well being of the people, MoEF issued (February 2000) the 'Noise Pollution (Regulation and Control) Rules 2000' and specified the AAQ standards for noise. As per section 4 of the said rule, the noise levels in any area/zone shall not exceed the specified limits as detailed below:

Category of Area/Zone	Limits in dB(A) Leq ⁸	
	Day Time	Night Time
Industrial area	75	70
Commercial area	65	55
Residential area	55	45
Silence Zone	50	40

We observed that:

- Noise level was more than the prescribed level in residential and silence zone areas in BSP and ISP. In BSL, noise level was more than the norm (75 dB) during the period 2004-05 to 2009-10 in the various shops particularly in blast furnaces, sintering plant, slabbing mill, SMS, hot rolled coil finishing and coke oven & by product plant. In RSP, noise level remained well within the norm except in SMS during 2009-10. DSP started measuring noise level in industrial area only from 2009-10, which was well within the norm. However, noise monitoring in other areas in DSP was not done.
- As against the norm of maximum noise level of 55 dB(A) for residential areas in day time, actual level in RINL during the review period was ranging between 43 dB(A) and 69.3 dB(A). The rules also stipulated that the ambient noise levels in respect of industrial and residential areas are to be measured during night time. The Company, however, started measuring the noise levels in respect of industrial area and residential areas during night time from 2007-08 and 2009-10 respectively and the same were within the norm.

The Ministry stated (December 2010) that SAIL has taken up ambitious expansion/ modernisation projects at all the integrated steel plants under which state-of-the-art technology is being implemented in most of the work zone areas. After completion of these on-going projects, the noise levels are expected to come down below the prescribed noise levels in all the areas.

The Ministry has not indicated any time frame for completion of the projects. There is an urgent need to control the noise level as per MoEF regulations.

⁷ Noise induced hearing loss, increased heart respiration rate, elevated blood pressure, psychological disturbances like sleeplessness, tinnitus, annoyance, poor work performance etc.

⁸ Db(A) Leq denotes the time weighted average of the level of sound in decibels on Scale A which is relatable to human hearing.

4.10 Tree Plantation

Trees are natural sink for CO₂ gas. The green belt developed by afforestation adds to aesthetic environment which also become dust and noise barrier as well as heat absorber. *On an average, a tree can absorb CO₂ at the rate of 6 kg/year and SAIL and RINL emit 40 million tonne and 10 million tonne of CO₂ per year respectively. Therefore, on an average 6700 million trees are required for absorbing CO₂ generated by SAIL and 1645 million trees are required for RINL. As this is not possible, both the companies need to reduce CO₂ emission considerably.*

We observed that:

- Though SAIL in its corporate environment policy has emphasized on increasing greenery in and around plant and afforestation programme on a company wide basis is included in the annual business Plan, **it has not set any target for tree plantation for the year 2004-2009.**
- During the years 2004-05 to 2009-10, SAIL has planted 8.95 lakh trees.
- The total inventory of trees in SAIL plants was 14.32 million trees as on 31 March 2010.
- RINL has planted 8.39 lakh trees during the years 2004-05 to 2009-10 against the target of 30.72 lakhs.
- The total inventory of trees in RINL as on 31 March 2010 was 4.59 million trees.

The Ministry stated (December 2010) that with increased thrust on environment protection, SAIL plant/unit level targets for tree plantation are kept and performance monitored on a regular basis. During the year 2009-10, 2.1 lakh trees were planted against the target of 2.88 lakh and in 2010-11, 1.44 lakh tree were planted (upto September 2010) against the target of 1.95 lakh. RINL is maintaining green belt as per norms of MoEF and has fixed the target of 2.5 lakh trees per year for the years 2010-11 and 2011-12.

The targets for tree plantation set by the Companies were not commensurate with the quantum of CO₂ emitted by them and even SAIL could not met the target set by it for the year 2009-10. Therefore, the Companies should step up the tree plantation and also take effective measures to reduce the CO₂ emission.

4.11 Clean Development Mechanism

To tackle climate change through reduction of GHGs emission, Kyoto Protocol came into force in February 2005, which sets limits to the maximum amount of emission of GHGs by developed countries. To meet the emission reduction target, Kyoto protocol, inter-alia, provided market based mechanism called Clean Development Mechanism (CDM). In CDM, entities in developing countries can set up a GHG reduction project, get it approved by United Nations Framework Convention on Climate Change (UNFCCC) and earn carbon credits, which can be bought by entities of developed countries with emission reduction targets. Implementation of CDM projects not only results in reduction of GHGs but also yields revenue by selling carbon credits.

In this regard we observed that:

- SAIL and RINL have no company level CDM or Carbon policy.
- SAIL identified 71 CDM projects, categorized as Category A (38 nos) and Category-B (33 nos) in its five steel plants. SAIL acted belatedly (May 2007) and took 32 months from February 2005 (Date of Kyoto protocol) in appointment of consultant (November 2007) for category A projects. Consultants for category B projects have not been appointed as yet.

- RINL identified 27 projects as CDM and appointed consultant belatedly in October 2010.
- It was observed that SAIL could complete only six projects (March 2010) and is lagging behind the schedule. Since Kyoto Protocol is going to expire in 2012 and Copenhagen climate change summit has failed to take any decision on extension of Kyoto Protocol agreement beyond 2012, accruing of benefits of carbon credit from these projects was uncertain.

The Ministry stated (December 2010) that in SAIL six projects out of 38 projects of Category A were validated in the year 2009. Out of these, three projects were verified and action has been initiated for monetisation. For other projects (Category B), tenders were floated four times for appointment of CDM consultant. However, no suitable offer was received from these tenders. The tender document has been recently modified for re-tendering. In RINL claiming CDM benefits has been expedited.

Efforts need to be made for early completion of CDM projects so that carbon credit could be earned and sold before expiry of Kyoto protocol in 2012.

4.12 Charter on Corporate Responsibility for Environment Protection

“Charter on Corporate Responsibility for Environment Protection” (CREP) released by the Ministry of Environment and Forest (MoEF) in 2003 for compliance of pollution control norms identified iron and steel sector as one of the 17 major polluting industries. SAIL and RINL have agreed to adopt the guidelines as set in the CREP. The compliance status of the clauses incorporated in the CREP by SAIL and RINL as on 31 March 2010 has been detailed in Annexure – III.

4.13 Conclusion

In essence the energy consumption in SAIL and RINL was more than the world average and Tata Steel. SAIL has not set any target for reduction in energy consumption whereas RINL could not meet the targets set by it for reduction in consumption of energy resultantly the average CO₂ emission in both the Companies was higher as compared to Tata steel (2.09 t/tcs) and world average (1.9 t/tcs). Further, the tree plantation by the Companies was also not commensurate with the amount of CO₂ emitted by these companies. Therefore, the companies have to step up the tree plantation and take the concrete measures for reduction of CO₂ emission.

Recommendation

- ii. The Companies should fix specific targets for reduction of CO₂ emission.
- iii. The possibility of slag transportation to the abandoned mines to fill up the cavities may be examined.
- iv. The effective measures for reduction in generation of slag should be taken.
- v. The SAIL should set specific targets for tree plantation and RINL should take concrete steps to achieve the targeted afforestation.

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

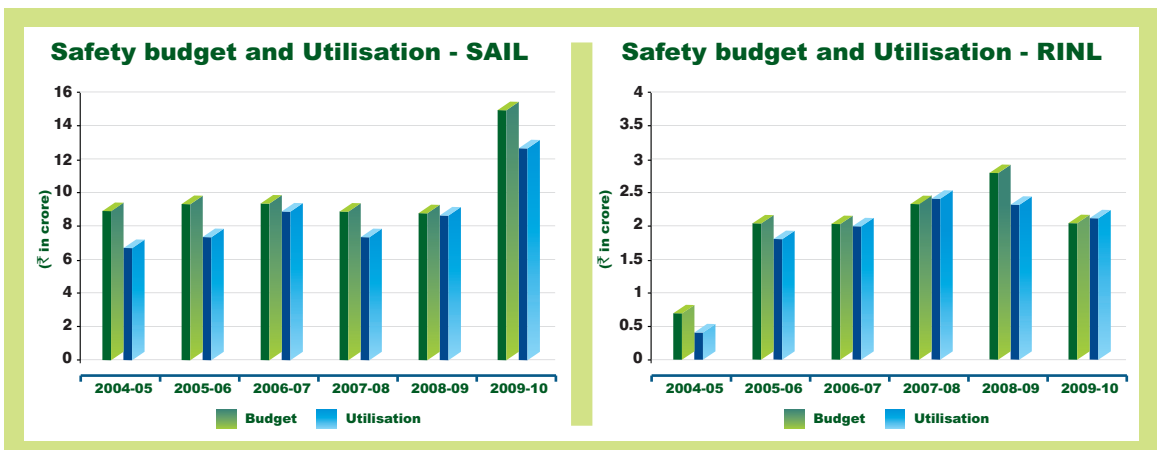
SAIL has a safety policy which states that the company is committed to safety of its employees and the people associated with it including those living in the neighborhood of its plants, mines and units. All the plants are having their own Occupation Health and Safety Policy.

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:



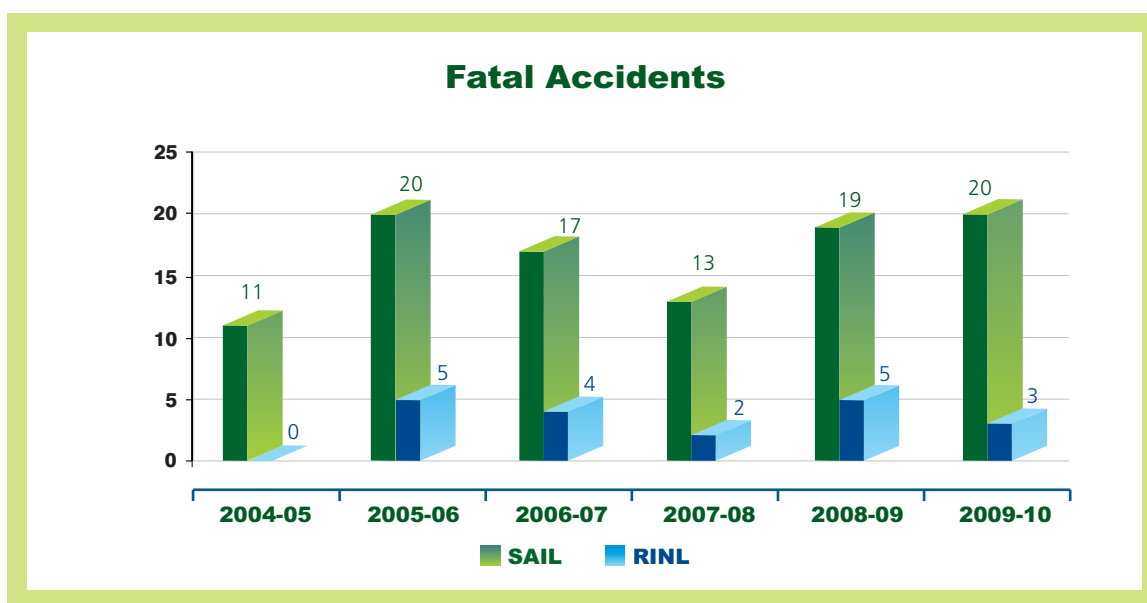
- The safety budget provided by the companies was in addition to the budget provided for CSR activities.
- In the five integrated plants of SAIL the expenditure incurred towards safety during the period 2004-05 to 2009-10 was ₹ 51.38 crore against the budgeted expenditure of ₹ 59.66 crore .
- In RINL, 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 9th round and date of commencement of 10th 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/ cm² against the required pressure of 4 to 6 kg/ cm².

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.

6.1 Activities undertaken by SAIL and RINL

SAIL has been contributing to social development by community welfare programme, medical camps, vocational training, sports facility, medical facilities, free education in the company's schools to the steel township and neighborhood children, provided access to 73.31 lakh people across 435 villages by constructing and repairing roads, installed 5,153 water sources to provide water to 38.64 lakh people, has opened 54 primary health centers, 17 hospitals, 7 super specialty hospitals, 12 Reproduction & Child Health Care (RCH) center to provide health care to 26.7 million people. For CSR activities and efforts, Bhilai Steel Plant has won the prestigious Golden Peacock Award-2008.

RINL has also been contributing to social development by conducting medical camps, vocational training, sports facilities, medical facilities, education etc. During the review period within its periphery the RINL had extended free education to 0.47 lakh students, conducted 27 medical camps duly extending free medical aid to 0.97 lakh patients, identified seven villages as model steel villages for development of schools, hospitals, bus shelters, community halls etc.

The provisioning of CSR budget and utilization of the same by SAIL and RINL has been discussed in chapter 3. Component wise utilization of fund in respect of SAIL plants and RINL during last six years was as under:

(₹ in crore)

S A I L	Plant	Period	Peripheral	Medical	Education	Others*
	BSP	2004-10	25.11	5.35	12.13	5.89
RSP	2004-10	18.39	3.87	5.46	1.43	
DSP	2004-10	3.00	1.95	3.84	12.02	
BSL	2006-10	26.00	13.39	2.46	N.A.	
ISP	2007-10	5.98	0.99	1.92	N.A.	
CMO	2004-10	21.71	2.62	1.11	3.76	
RINL	2006-10	18.72	4.34	6.97	8.83	

* includes vocational training, assistance to handicapped, social upliftment, development of sports etc.

6.2 Planning for CSR activities

A long-term Corporate Social Responsibility Plan needs to be prepared matching with the long term business plan. This may be broken down into short term and medium term plans, specifying activities to be undertaken, budgets allocated, responsibilities and authorities defined, and measurable results expected. The plans should be prepared after conducting need assessment of the targeted community/area.

- In SAIL CSR activities were not planned in advance except those cases which are related to project for model steel villages and which are continuing from previous period.

- NGOs/ Organisations/Trust/ Civil Societies etc. approach the company with a request to provide financial assistance for undertaking different CSR activities. After getting request from different agencies the companies scrutinize and shortlist these requests on their merits and requirement of the community. These shortlisted requests constitute the CSR plan for the year or for a specific period. Further, in case of activities undertaken by plants in their respective peripheral area the requirement of the community is assessed by implementing agency (SAIL/NGO/other organisation) in consultation with local community.
- The SAIL was not doing any need assessment / survey of the society for preparing the CSR plan.
- In RINL the CSR plan was prepared based on the request received from the local people, local bodies, state organizations, people's representatives, NGOs etc. and a road map for allocation of budget was prepared based on the Apex Committee approvals.

The Ministry stated (December 2010) that SAIL was in the process of evolving a system of need assessment/ impact assessment for CSR projects. In RINL earlier need assessment and impact assessment was done by National Institute of Rural Development (NIRD) in 2007 and action initiated to re-assess the need and impact of CSR through Andhra University, Visakhapatnam.

The companies should map their CSR plan after assessing the needs of the society in order to fulfill the essential requirement of the society.

6.3 Model Steel Villages

SAIL adopted 79 villages in eight states⁹ for comprehensive development as Model Steel Villages (MSVs). The development has been planned in phased manner spanning three years. RINL adopted seven villages in its periphery for development as MSVs. The development work undertaken in these villages includes promotion and sustenance of:

- Medical and Health Services
- Education
- Roads and Connectivity
- Sanitation
- Sports facilities and Community Centers
- Livelihood promotion
- Self help groups

Though SAIL and RINL have completed 54 and 1 MSVs respectively up to 31 March 2010 but the companies did not have any policy relating to selection and development MSVs. Such a policy/ guideline would help in targeted development.

The Ministry stated (December 2010) that the decision to undertake the developmental work of 79 villages as Model Steel Villages in SAIL was taken by Secretary, Steel in a meeting held (August 2007) at Ministry of Steel, New Delhi. As per the decision in above meeting, SAIL, has identified 79 villages in the periphery of plants/units across 8 State to be developed as Modal Steel Villages in a phased manner in consultation with local representative of villages, Distt. Administration, etc.

In RINL the villages were identified through an independent survey by an external agency (NIRD) and the Company is now following the CSR Guidelines prescribed (April 2010) by DPE. CSR activities including development of peripheral villages will be taken up as per the new CSR guidelines only.

The Companies should have uniform laid down policy for selection and development of MSVs.

⁹ Bihar, Chattisgarh, Jharkhand, Madhya Pradesh, Orissa, Tamil Nadu, Karnataka and West Bengal.

6.4 Education

SAIL has not framed education policy for providing education to the underprivileged people living in the vicinity of its plants. RINL's policy focuses on promotion of literacy, promotion of girl child education, special attention on education, training & rehabilitation of mentally & physically challenged children/ persons etc. in schools in the surrounding areas.

We observe that:

- SAIL has opened 138 schools up to 2008-09 in the steel townships which increased to 146 in 2009-10 and provide education to 73,925 students in 2008-09 and 69,184 students in 2009-10. The SAIL has provided assistance to 269 schools of villages surrounding its units in 2008-09 which increased to 286 schools in 2009-10 but students were drastically reduced to 13,770 in 2009-10 from 55,839 students in 2008-09.
- RINL provided financial assistance of ₹ 5.06 crore for providing education to 47,718 students during the years 2006-10.

The SAIL should formulate an education policy and ensure that the benefits of financial assistance given to schools flow to maximum number of students.

6.5 Medical and Health Care

(i) Medical Facilities

SAIL has not formulated a detailed policy to provide medical & health care facilities to the underprivileged people of society, however RINL has a detailed policy in this regard.

We observe that:

- SAIL has set up health centres at BSP, DSP, BSL, RSP and ISP to provide medical care to the poor and needy persons, where free treatment is being provided including medicines.
- Ten Mobile medicare units were provided in each of the years 2007-08 and 2008-09 to different organisations.
- RINL has given (2007-08) financial support of 3 crore to Sankhar Foundation, Visakhapatnam for providing free eye treatment to the poor people and ₹ 1.15 crore (2008-09) to Lions Cancer Hospital – 'Sanjeevan Mobile Clinic'.
- RINL was also constructing a blood bank for International Red Cross Society at a cost of ₹ 2.80 crore.

While the medical facilities provided by the SAIL and RINL are appreciable the SAIL should formulate a policy for identification and fulfillment of the medical needs of the under privileged.

(ii) Health Camps

SAIL and RINL organized 5989 medical camps, spent ₹ 17.41 crore and treated 17.45 lakh patients during the four years ending 2009-10 as detailed below:

Plant	No. of camps organised		Amount spent on (₹ in crores)			No. of patients Treated (in lakh)	
	Total	In the vicinity	Medicines	other activities	Total	Total	from the vicinity
BSL	79	8	1.91	8.65	10.56	9.98	0.22
BSP	518	506	0.72	1.30	2.02	1.72	0.46
RSP	4272	4268	0.44	1.17	1.61	2.47	2.19
DSP	670	653	0.49	0.14	0.63	0.55	0.18
CMO	7	-	0.34	1.22	1.56	1.29	0.00
ISP	416	416	0.49	0.34	0.83	0.47	0.47
Total SAIL	5962	5851	4.39	12.82	17.21	16.48	3.52
RINL	27	26	0.15	0.05	0.20	0.97	0.72
Grand Total	5989	5877	4.54	12.87	17.41	17.45	4.24

We observe that:

- SAIL spent more amounts on 'other activities' than medicines. BSL in particular spent excessively high amount (82 per cent) on other activities than the medicines. Out of total expenditure of ₹ 10.56 crore a major portion was incurred on hiring of helicopters for the then Minister of Steel (₹ 1.31 crore), public relation activities (₹ 5.62 crore). Only 18 per cent was spent on medicines which resulted in defeating the basic purpose of organizing medical camps which was to provide medical facilities to the underprivileged people of the society living in the periphery of the plants.
- BSP treated 1.72 lakh patients out of which 1.26 lakh belonged to other states.
- RINL organized 27 medical camps including 26 in the state and treated 0.97 lakh patients at an expenditure of ₹ 0.20 crore, of which ₹ 0.15 crore was on medicine.

The Ministry while replying stated (December 2010) that the SAIL would adhere to the recommendations of audit with regard to organising medical camps i.e. while organizing the medical camps the major of expenditure should be incurred on main activities (medicine, treatment of patients etc.).

6.6 CSR monitoring and impact assessment

- In SAIL the implementation is reviewed / monitored and corrective measures are taken.
- SAIL prepares a report on its CSR activities every year.
- The company was not doing any overall impact assessment of the CSR activities undertaken by it.
- In RINL Personnel (Welfare & CSR) Department is putting up periodical reports on progress of implementation of CSR projects to the Management. Apart from the above, company also sends quarterly progress reports to the Ministry of Steel. RINL does not prepare any separate annual report on CSR related activities.

The Ministry stated (December 2010) that SAIL and RINL were in the process of evolving a system of need assessment/ impact assessment for CSR projects.

The companies should evaluate impact on the society of these CSR activities which would also help the Companies in future planning of CSR initiatives.

6.7 Conclusion

SAIL and RINL were contributing to social development by community welfare programme, medical camps, vocational training, sports facility, medical facilities, free education, providing access to lakhs of people by constructing and repairing roads and adopting villages for development as model steel villages. SAIL while organising health camps spent more amount on 'other activities' than medicines. But the companies were not doing any need assessment survey in the periphery of their plants to assess the requirements of the society and were not planning in structured manner to utilise the funds efficiently. The companies were also not evaluating the impact on the society due their CSR activities.

Recommendations

- x. The companies should evolve a system of need assessment and impact assessment while undertaking CSR activities.
- xi. The companies should disseminate information on CSR policy, activities and progress in a structured manner to all their stakeholders and the public at large through their website, annual reports, and other communication media.



Conclusion and Recommendations

7.1 Conclusion

In discharge of their corporate social responsibilities, SAIL and RINL were contributing to social development by various community welfare programme, medical facilities, free education, adopting villages for development as model steel villages etc. Though SAIL was providing sufficient funds and was having proper implementation set up, the company was not having detailed CSR policy for execution of CSR activities effectively. While RINL had a detailed CSR policy it did not utilize earmarked budget fully. The companies were not transferring the budget provided for CSR activities to a separate fund due to which the unspent amount lapsed. The companies were not doing any need assessment survey in the periphery of their plants to assess the requirements of the society and were also not assessing the impact of their CSR activities on the society.



Steel manufacturing has various impacts on the environment. The main impact comes from the use of energy and raw materials, which result in the emission of carbon dioxide. Energy and raw material consumption in both the Companies was significantly higher than the average global consumption per tonne of crude steel. SAIL has not set any target for reduction in energy consumption whereas the RINL could not meet the targets set by it for reduction in consumption of energy resultantly the average CO₂ emission in both the Companies was also higher as compared to Tata steel and global average CO₂ emission by steel plants. Further, the tree plantation by the Companies was also not commensurate with the amount of CO₂ emitted by these companies which underscores the need to step up the tree plantation and to take the concrete measures for reduction of CO₂ emission.



The companies were having safety policy and were providing sufficient funds for safety of their employees. Though there was decreasing trend in total number of accidents, the companies did not achieve the target of 'zero accidents' fixed by them due to inadequate house-keeping and safety equipments.

Recommendations

Some of the important recommendations are summarized below:

- i. A dedicated CSR fund, separate from the mainline budget, may be created by SAIL and RINL so as to avoid lapse of fund and ensure full utilisation of dedicated funds.
- ii. The Companies should fix specific targets for reduction of CO₂ emission as also for tree plantation.
- iii. The possibility of slag transportation to the abandoned mines to fill up the cavities may be examined.
- iv. Awareness should be created among employees about safety and medical examination through trainings, hoardings and showing films etc.
- v. The companies should evolve a system of need assessment and impact assessment while undertaking CSR activities in a particular area.

New Delhi
Dated :

(SUNIL VERMA)
Deputy Comptroller and Auditor General
and Chairman, Audit Board

Countersigned

New Delhi
Dated :

(VINOD RAI)
Comptroller and Auditor General of India

Energy consumption per tonne of crude steel in SAIL & RINL vis-à-vis norms during the last six years ending 2009-10

(As referred in paragraph 4.6 (i))

Plant	G.cal/tcs	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10
BSP	Normal	6.85	6.84	6.82	6.75	6.45	6.45
	Actual	6.84	6.79	6.82	6.72	6.50	6.56
BSL	Normal	7.30	7.10	7.00	6.88	6.65	6.74
	Actual	7.23	7.08	7.09	6.89	6.83	6.74
DSP	Normal	6.88	6.80	6.86	6.80	6.40	6.45
	Actual	7.29	7.37	7.07	6.85	6.51	6.55
RSP	Normal	8.54	8.59	8.40	7.74	7.10	7.05
	Actual	8.69	8.47	7.98	7.39	7.09	6.97
ISP	Normal	8.66	8.55	8.00	7.99	8.10	8.00
	Actual	8.69	8.46	8.19	8.14	8.18	8.18
RINL	Normal	6.55	6.48	6.37	6.37	6.53	6.79
	Actual	6.52	6.45	6.53	6.59	6.86	6.84

Excess consumption of Coke

(As referred in paragraph 4.6 (ii))

Plant	Year	Norm (Kg/Tonne)	Actual coke rate (kg/tonne)	RINL Actual coke Rate in 2005-06 (kg/tonne)	Hot metal Production (tonne)	Diff in coke rate (kg/tonne)	Excess consumption of coke at Plants in comparison to RINL (tonne)	Total in lakh tonne
(a)	(b)	(c)	(d)	(e)	(f)	(g) = (d-e)	(h)=(f x g)/1000	(i)
ISP	2009-10	770	778	486	502133	292	146623	
	2008-09	760	783	486	597729	297	177526	
	2007-08	725	816	486	639800	330	211134	
	2006-07	745	807	486	775266	321	248860	
	2005-06	760	786	486	779560	300	233868	
	2004-05	780	784	486	683553	298	203699	
Total							1221710	12.22
BSL	2009-10	494	506	486	4065568	20	81311	
	2008-09	496	518	486	4021000	32	128672	
	2007-08	505	512	486	4658000	26	121108	
	2006-07	515	520	486	4588000	34	155992	
	2005-06	520	523	486	4706000	37	174122	
	2004-05	530	531	486	4132000	45	185940	
Total							847145	8.47
RSP	2009-10	540	534	486	2267765	48	108853	
	2008-09	550	548	486	2200015	62	136401	
	2007-08	580	566	486	2229410	80	178353	
	2006-07	585	577	486	2123936	91	193278	
	2005-06	580	607	486	1778063	121	215146	
	2004-05	580	633	486	1690744	147	248539	
Total							1080570	10.80
DSP	2009-10	475	506	486	2173953	20	43479	
	2008-09	490	500	486	2111127	14	29556	
	2007-08	512	522	486	2186507	36	78714	
	2006-07	530	525	486	2063801	39	80488	
	2005-06	520	559	486	1953003	73	142569	
	2004-05	535	544	486	2016920	58	116981	
Total							491788	4.92
BSP	2009-10	487	498	486	5370002	12	64440	
	2008-09	490	491	486	5387180	05	26936	
	2007-08	484	509	486	5267670	23	121156	
	2006-07	485	509	486	4816773	23	110786	
	2005-06	480	497	486	5178269	11	56961	
	2004-05	500	499	486	4511179	13	58645	
Total							438924	4.39
Grand Total							4080137	40.80

Annexure - II

Plant	Year	Norm (Kg/Tonne)	Actual coke rate (kg/tonne)	RINL Actual coke Rate in 2005-06 (kg/tonne)	Hot metal Production (tonne)	Diff in coke rate (kg/tonne)	Excess consumption of coke at Plants in comparison to RINL (tonne)	Total in lakh tonne
(a)	(b)	(c)	(d)	(e)	(f)	(g) = (d-e)	(h)=f x g)/100	(i)
RINL	2004-05		488	486	3920339	2	7840.68	
	2005-06		486	486	4152621	0	0.00	
	2006-07		493.2	486	4045697	7.2	29129.02	
	2007-08		496.4	486	3912750	10.4	40692.60	
	2008-09		519	486	3545501	33	117001.53	
	2009-10		494.6	486	3900060	8.6	33540.52	
Total							228204.35	2.28

S.No.	Parameters	Compliance by SAIL	Compliance by RINL
1.	<p>Coke Oven Plants</p> <p>(i) To meet the parameters PLD⁹, PLL¹¹ and PLO¹² of the notified standards under EPA within three years (by December 2005).</p> <p>(ii) To rebuild at least 40% of the coke oven batteries in next 10 years (by December 2012).</p>	<p>PLL, PLO & PLD were within the norms in BSL, BSP, DSP. PLD and PLO level in RSP was within norm. PLL level in battery No. 2, 3 and 4 was beyond the norm during 2004-05 to 2007-08. Although PLD, PLL in ISP were within the norms during the year 2004-05 to 2009-10 there was an excess emission of PLO during 2004-05, 2005-06 and 2007-08 which ranged between 4.2 per cent and 15.3 per cent against a norm of 4 per cent.</p> <p>Ministry stated (December 2010) that PLL, PLO & PLD were within the norms in all SAIL plants since 2008-09.</p> <p>Out of the 30 batteries SAIL has already rebuilt 3 batteries and 7 batteries are under rebuilding. It has a plan to install a new battery by 2011 in place of 2 batteries.</p> <p>Ministry stated (December 2010) that out of the 25 batteries in operation, 5 batteries have been rebuilt since March 2003 and 4 batteries are under rebuilding which is expected to be completed by Dec. 2012. One battery is under cold repair and SAIL has planned to install a new battery by 2011 in place of 2 old batteries.</p>	<p>PLL, PLO & PLD were within the norms.</p> <p>Out of 3 batteries RINL has a plan to rebuild one battery in 2013 i.e. beyond the CREP schedule.</p> <p>Ministry stated (December 2010) that Batteries are in good health, hence, rebuilding of batteries will be taken up from the year 2014 onwards after commissioning of Battery – 5.</p>
2.	<p>Steel Melting Shop</p> <p>Fugitive emissions - To reduce 30% by March 2004 and 100% by March 2008 (including installation of secondary dedusting facilities).</p>	<p>100 per cent reduction could not be achieved in any of the SAIL plant.</p> <p>Secondary dedusting facilities are yet to be installed at SAIL plants.</p> <p>Ministry stated (December 2010) that effective actions have been taken at the steel plants to install secondary de-dusting facilities so as to minimise fugitive emission.</p>	<p>100 per cent reduction could not be achieved.</p> <p>Secondary de-dusting facilities are yet to be installed.</p> <p>Ministry stated (December 2010) that Secondary dedusting facilities are envisaged in SMS-2 (Expansion) and target date is Dec' 2011. In existing SMS-1 facilities will be taken up during revamping and target date is Dec'2013.</p>
3.	<p>Blast Furnace</p> <p>Direct inject of reducing agents by June 2013.</p>	<p>Out of 24 blast furnaces Coal Dust Injection facility has been installed in six blast furnaces and Coal Tar Injection facilities have been installed in four blast furnaces. But the intended benefits of these facilities were yet to be achieved.</p> <p>Ministry stated (December 2010) that out of 19 operating blast furnaces, Coal Dust Injection facility has been installed in 10 blast furnaces and Coal Tar Injection facilities have been installed in 5 blast furnaces but the reply did not address the issue of not achieving the intended benefits from these facilities.</p>	<p>RINL had proposal to install CDI facility in both the blast furnaces by December 2009 but the same was yet to be completed (November 2010).</p> <p>Ministry stated (December 2010) that provision of CDI facilities are in progress in BF 1 & 2 with target date of March 2011 and the facility is envisaged in BF-3 (Expansion) and target date is last quarter of 2010-11.</p>

⁹ Percent leaking doors

¹⁰ Percent leaking lids

¹¹ Percent leaking off take

Annexure - III

S.No.	Parameters	Compliance by SAIL	Compliance by RINL
4.	<p>Solid Waste /Hazardous Waste Management</p> <p>Utilization of Steel/ Melting shop (SMS)/ Blast Furnace (BF) Slag as per the following schedule:</p> <p>* By 2004 - 70%</p> <p>* By 2006 – 80% and</p> <p>* By 2007 – 100 %.</p> <p>Hazardous Wastes</p> <ul style="list-style-type: none"> - Charge of tar sludge/ ETP sludge to Coke Oven by June 2003. - Inventorization of the Hazardous waste as per Hazardous Waste (M& H), Rules, 1989 as amended in 2000 and implementation of the Rules by Dec. 2003). 	<p>Status has been detailed in para 4.7.1.</p> <p>Being charged in coke oven</p> <p>Status has been detailed in para 4.7.2</p>	<p>Status has been detailed in para 4.7.1</p> <p>Being charged in coke oven.</p> <p>Status has been detailed in para 4.7.2</p>
5.	<p>Water Conservation/ Water Pollution</p> <p>(i) To reduce specific water consumption to 5 m³/t for long products and 8 m³/t for flat products by December 2005.</p> <p>(ii) To operate the Co-BP effluent treatment plant efficiently to achieve the notified effluent discharge standards by June 2003.</p>	<p>Status has been detailed in para 4.6.3</p> <p>Status has been detailed in para 4.8</p>	<p>Status has been detailed in para 4.6.3</p> <p>Status has been detailed in para 4.8</p>
6.	<p>Installation of Continuous stack monitoring system (CSMS) & its calibration in major stacks and setting up of the online ambient air quality (AAQ) monitoring stations by June 2005.</p>	<p>CSMS has been installed in SAIL plants except ISP.</p> <p>AAQ has been installed in RSP, BSP and ISP. In DSP and BSL AAQ is yet to be installed.</p> <p>Ministry stated (December 2010) that the two numbers of CSMS installed recently in ISP were presently under calibration/ stabilization and installation of Continuous AAQ monitoring station at DSP and BSL was in progress.</p>	<p>CSMS and AAQ have been installed in RINL.</p>
7.	<p>To operate the existing pollution control equipment efficiently and to keep proper record of run hours, failure time and efficiency with immediate effect.</p> <p>Compliance report in this regard be submitted to CPCB/SPCB every three months.</p>	<p>Proper records were being maintained and compliance reports were being submitted to the respective SPCB and CPCB.</p> <p>Ministry stated (December 2010) that plants are maintaining records and compliance reports are sent to CPCB/SPCB on regular basis</p>	<p>Proper records are being maintained and compliance reports are being submitted to the respective SPCB and CPCB.</p>

Annexure - III

S.No.	Parameters	Compliance by SAIL	Compliance by RINL
8.	To implement the recommendations of Life Cycle Assessment (LCA) study sponsored by MoEF by December 2003.	<p>Major recommendations have already been implemented. Technically feasible recommendations have been envisaged in Technology Plan for expansion/ modernization of SAIL plants.</p> <p>Ministry stated (December 2010) that recommendations of CREP/ Audit observations have been complied with at BSP, DSP, RSP and BSL. At ISP all the recommendations are being implemented in the on-going modernisation/ expansion project.</p>	Major recommendations have already been implemented.
9.	To implement clean technologies measures to improve the performance of industry towards production, energy, land and environment.	<p>Many of the mentioned clean technologies are already in practice. Others like Rain Water Harvesting, Ozone Depleting Substance replacement, reduction in GHGs were under implementation.</p> <p>Ministry stated (December 2010) that many clean technologies measures have been adopted and some are under implementation</p>	Many of the mentioned clean technologies are already in practice.

SAIL

Year	FATAL						REPORTABLE						NON-REPORTABLE						Total
	BSP	DSP	RSP	BSL	ISP	Total	BSP	DSP	RSP	BSL	ISP	Total	BSP	DSP	RSP	BSL	ISP	Total	
2004 (R+C)	1	3	3	3	1	11	3	13	37	25	2	80	56	27	40	177	0	300	391
2005 (R+C)	3	3	3	9	2	20	2	88	38	18	112	258	51	23	36	115	0	225	503
2006 (R+C)	4	3	3	5	2	17	2	24	33	14	120	193	45	168	38	64	1	316	526
2007 (R+C)	4	0	1	4	4	13	2	9	31	16	17	75	48	33	31	73	0	185	273
2008 (R+C)	6	1	4	4	4	19	2	2	14	21	20	59	44	13	25	19	0	101	179
2009	2	1	4	10	3	20	11	2	16	12	10	51	34	25	18	16	0	93	164

(R = Regular, C=Contractual)

RINL

YEAR	FATAL	REPORTABLE	NON-REPORTABLE	TOTAL
2004-05 (R+C)	NIL	75	15	90
2005-06 (R+C)	5	62	14	81
2006-07 (R+C)	4	60	16	80
2007-08 (R+C)	2	56	02	60
2008-09 (R+C)	5	44	03	52
2009-10 (R+C)	3	42	02	47

(R = Regular, C=Contractual)