

**OCCUPATIONAL HEALTH AND SAFETY
NEEDS ASSESSMENT
IN THE
COAL MINES OF DHANBAD,
JHARKHAND, INDIA**



**THE ASIAN WORKERS OCCUPATIONAL HEALTH, SAFETY
AND ENVIRONMENT INSTITUTE**

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Introduction

An occupational health and safety needs assessment exercise was carried out by Asia Monitor Resource Centre (AMRC), South Asian Research and Development Initiative (SARDI) and the International Confederation of Free Trade Unions (ICFTU) in collaboration with the Indian National Mine Workers Federation (affiliated to the INTUC) on behalf of the Asian Workers Occupational Health, Safety and Environment Institute (OSHEI). The exercise was carried out in the coal mining region of Dhanbad, Jharkhand state (previously part of Bihar) in India. The aims of this exercise were to:

- assess the overall health and safety situation in the coal mines of Dhanbad¹;
- assess the role of government and the employer in providing the safe and healthy environment for the workers and the actual situation at ground level;
- assess the present capacity and infrastructure of the trade unions with respect to occupational health and safety and if there is any need/scope for improvement;
- assess the present Mining Laws and Regulations;
- present a set of recommendations on how trade unions can improve their capacity to work with government and employers to further develop working and living conditions of miners and specific sectors where trade unions may need help and support.

The exercise was carried out from December 26 to 30 in Dhanbad and included following activities:

- review secondary literature regarding mining in India, particularly coal mines;
- review of occupational health, safety and environmental activities in the coal mining sectors of Jharkhand state in India;
- meetings with workers, trade unions, government officials, employers and other relevant organisations to get their view and opinion;
- visiting some mines to obtain first hand information about the health and safety conditions as well as systems in the mines;
- one day consultation with workers, members of the safety committee and workmen's inspectors about the workplace hazards and other problems;
- hazard mapping exercise where workers, divided into four groups, mapped the hazards in both underground and opencast mines.

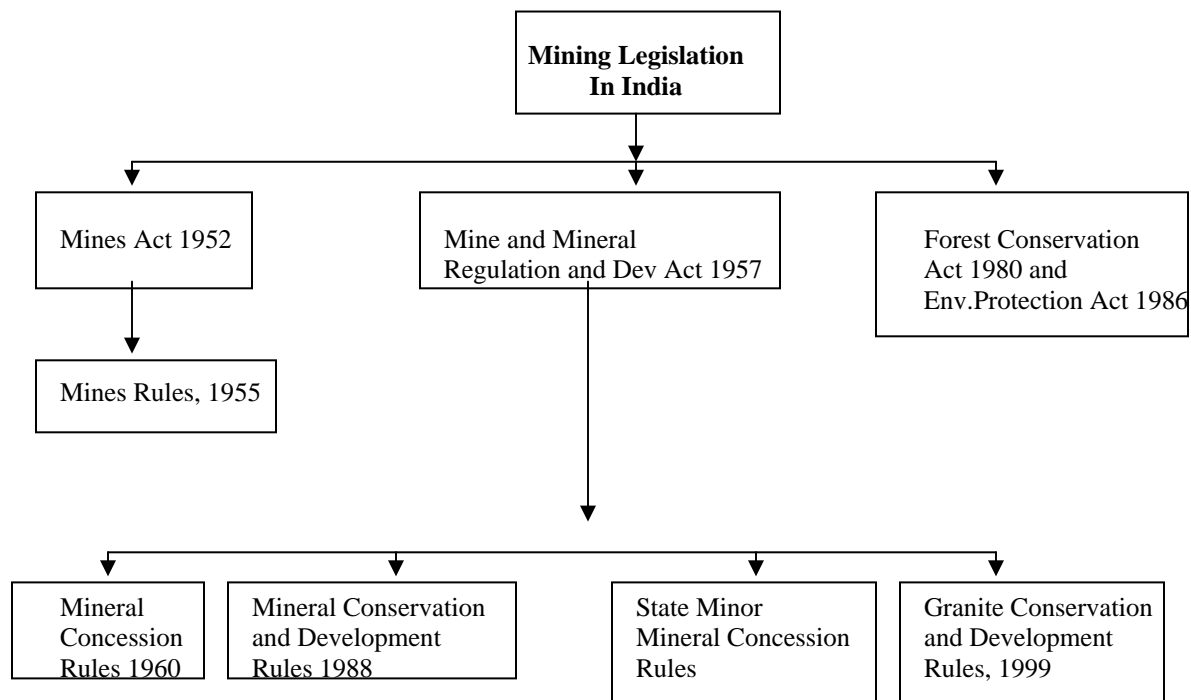
¹ The Coal Mines in Dhanbad region are under Bharat Coking Coal Limited (BCCL) a public company.

Overview of the Mining Sector in India

India is among the top 10 mineral producing nations in the world and the third largest producer of coal and lignite. In Indian mining statistics, minerals are classified into fuel minerals, metallic minerals, non-metallic minerals and minor minerals². It excludes atomic minerals. India produces 89 minerals including four fuels, 52 non-metallic minerals, 11 metallic minerals and 22 minor minerals³. The total value of mineral production, excluding atomic and minor minerals, in the country during February 2002 was Rs 4,499 crore⁴. Coal accounted for 44 per cent of the value estimated at Rs 1,958 crore. The total workforce employed in mining is about 1 million. (Source DGMS)

Mining Legislations and Regulation in India

The management of mineral resources, in India, is the responsibility of the central and the state governments. Broadly the legislative framework governing the mining industry can be represented as follows:



The Mines and Minerals (Regulation and Development) Act, 1957 laid down the legal framework for the regulation of mines and development of minerals (other than petroleum and natural gas).

² Within the fuel minerals are petroleum and natural gas, and coal and lignite. Metallic minerals include such principal minerals like iron ore, chromites, copper, lead and zinc, manganese, gold, bauxite, silver, tin etc. Among the non-metallic minerals are limestone, phosphorite, dolomite, kaolin, barytes, manganese, gypsum, steatite etc.

³ Brick earth, building stone, marble, quartzite and sandstone, ordinary sand, road metal, boulder, murrum, limestone and kankar etc., are among the principal categories of minor minerals.

⁴ 1 Crore = 10 million, 1USD = 49 Rs

Provisions related to Occupational Health and Safety

The safety setup (administrative) for mining is the best of any industry in India. The legislations related to mining are very comprehensive. National tripartite conferences on safety in mines are held, and each mining company is supposed to comply with its recommendations as well as the law. Under the Constitution of India, safety, welfare and health of workers employed in mines are the concern of central Government. The objective is regulated by the Mines Act, 1952 and the rules and regulations framed there. These are administered by the Directorate-General of Mines Safety (DGMS), under the Union Ministry of Labour. The health and safety of the workers is governed by Coal Mines Regulations 1957, Metalliferous Mines Regulation 1961, Maternity Benefits (mines) Rules 1963 and Mines Rules, 1955 created under the jurisdiction of the Mines Act, 1952. Specific provisions have been made to protect workers from occupational health hazards and prevent occurrence of occupational disease. (see appendix)

Salient features of Mines Act:

- minimum age of employment is 18;
- one day of rest per week;
- limited working hours; (48 in a week)
- no underground work for women;
- provision of clean water and medical facilities;
- constitution of tripartite safety committees;
- no unsafe mines;
- right of inspectors to survey safety and health:

Coal Mining

Coal dominates energy production in India contributing about 70% of the total energy production. India has total coal reserves of over 194 billion tonnes and lignite deposit is estimated to be about 2,800 million tonnes. India produces about 320 million tonnes of coal every year. There are about 612 working coal mines, providing direct employment to about 800,000 persons. Coal of practically all ranks occurs in India except peat and anthracite. The share of lignite is however insignificant compared to sub-bituminous and bituminous coal. In India bituminous coal is divided broadly into two categories, coking and non-coking.

Most of the coal is produced by the public sector⁵. Coal India Limited (CIL) with its eight subsidiaries control about 85% of the coal production, with operations spread in eight states with a total manpower of 562,071 in year 2000.⁶

⁵ The coal mines in India were nationalised in early 1970s. It was done in two phases, the first with the coking coal mines in 1971-72 and then with the non-coking coal mines in 1973. The nationalisation of all these mines was complete on 1.5.1973 with the enactment of the Coal Mines (Nationalisation) Act, 1973 which now is the piece of central legislation determining the eligibility of coal mining in India.

⁶ The employment in coal mines is on steady decline and much of it is due to opencast mining which is more mechanized and employs much less manpower.

Production and Employment chart of Coal India Limited

COMPANY	MINES	PRODUCTION(MT) 1999-2000	PROFIT and LOSS(1999- 2000) Rs Crores	MANPOWER 1.4.2000
ECL	122	25.12	- 728.23	133383
BCCL	91	28.01	- 692.32	119978
CCL	68	32.40	- 121.24	80916
NCL	9	38.43	936.87	17242
WCL	86	33.86	405.86	80228
SECL	93	58.75	455.34	93370
MCL	22	43.55	607.65	22859
CMPDIL			0.71	3667
OVERALLCIL	498	260.69	693.87	562071

ECL: Eastern Coalfields Ltd.
 BCCL: Bharat Coking Coal Ltd.
 CCL: Central Coalfields Ltd.
 NCL: Northern Coalfields Ltd.
 WCL: Western Coalfields Ltd.
 SECL: South Eastern Coalfields Ltd.
 MCL: Mahanadi Coalfields Ltd. and
 CMPDIL: Central Mine Planning and Design Institute Ltd.

Trade Unions

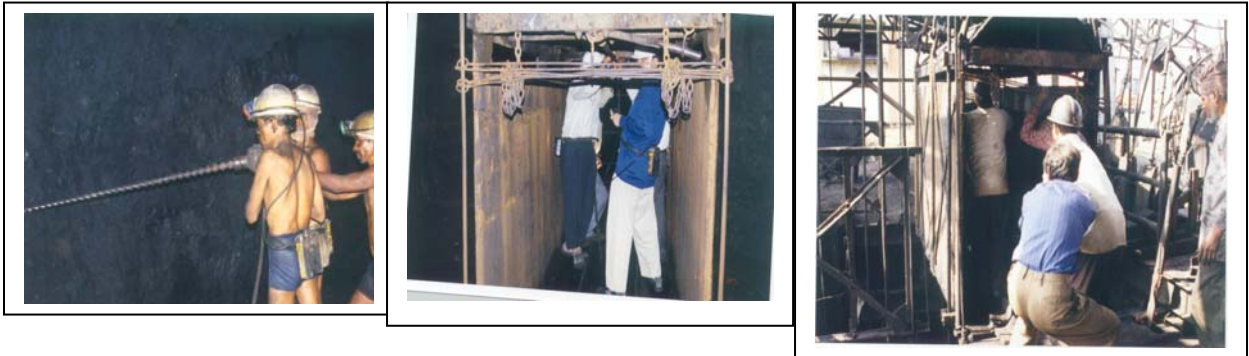
Coal mining is a highly organised sector, considering the fact that total level of labour organisation in the whole of India is not more than 7%. The major trade unions in the coal mines are:

- Indian National Mineworkers' Federation (affiliated to INTUC);
- Indian Mineworkers' Federation (affiliated to AITUC);
- All India Coal Workers' Federation (affiliated to CITU);
- Hind Khadan Mazdoor Federation (affiliated to HMS);
- Akhil Bharatiya Khadan Mazdoor Sangh (affiliated to BMS).

Visit to a Colliery in Katras

On the morning of December 27, the team (AMRC and SARDI) visited an underground coal mine in Katras, about 20 Km from Dhanbad city and under BCCL operation. The team was accompanied by Mr Bhattacharya and Mr Pandey from INTUC. After the initial discussion with the management, who were quite helpful and cordial, the team went inside the mine. Some of the observations in the mine are as follows:

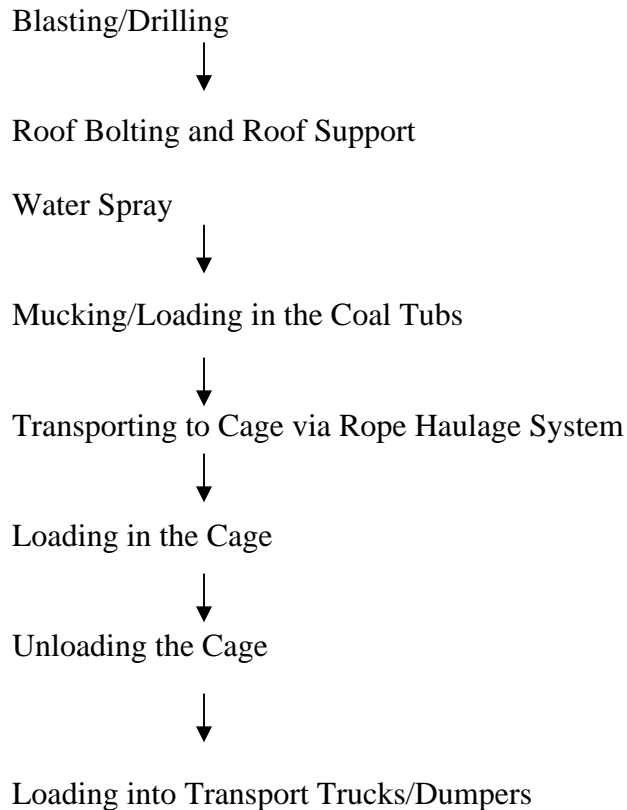
- The mine is about 500 to 600 meters deep and there is only one shaft, in which a cage/lift is operated manually via a crane and pulley. Coal tubs and personnel ascend and descend using the same lift, however, when the lift is carrying coal tubs, no persons are allowed in and vice versa. The cage/lift is operated on the basis of a signal system which is a sort of bell that indicates to the cage operator if the tubs have been loaded and if the cage has touched the ground.
- The coal in this mine is extracted using Bord and Pillar Method⁷. There are about 50 workers in the mine working for an eight hour shift with no breaks.
- The ventilation in the mine seems fairly good and we could feel a rush of fresh air at many places. However at certain places, it is very warm and workers work with minimal clothes.
- Workers cannot go inside the mine without the safety lamp and self rescuers⁸, hard hat and safety shoes. However, the batteries used for safety lamp are the wet batteries (which can be recharged). These batteries are quite heavy and workers have to wear this gear for a period of eight hours with no rest breaks. Sometimes acid also leaks out of the batteries causing skin burns and damage to workers' clothes.



⁷ Bord and Pillar Method is one of the oldest ways of extracting coal. Bord is the pathway from which the coal is extracted and Pillar being the coal in between which has to be left untouched so that it can support the overlying rocks.

⁸ A device which allows miners to breathe in an atmosphere devoid of oxygen, and helps them to escape.

- The work/production process in the mine is explained below:



- A delayed action detonator is used to blast the coal face, which is followed by water spray and exhaust so as to remove/suppress the coal dust. The coal is loaded in the coal tubs mechanically by means of Slide Discharge Loading (SDL)⁹. Once loaded in tubs the coal is transported by an extensive, mechanically driven, rope haulage system¹⁰ to the haulage stop. The tubs are then pushed manually into the cage and pulled above the ground. The loading and unloading of tubs is carried out manually and involves hard labour. Workers work (pull and push) in a very uncomfortable position. Sometimes workers have to drill the coal from the coal face using a long mechanical drill.
- Roof support is an important operation in this mine. Since coal is mined using Bord and Pillar Method, so the coal pillar has to be of appropriate thickness so that it can support the roof. In addition the roof is also supported with the help of additional wooden or steel support frames/structures. Roof bolting has also been introduced and used extensively in this mine for roof support. In this technique a steel bolt is

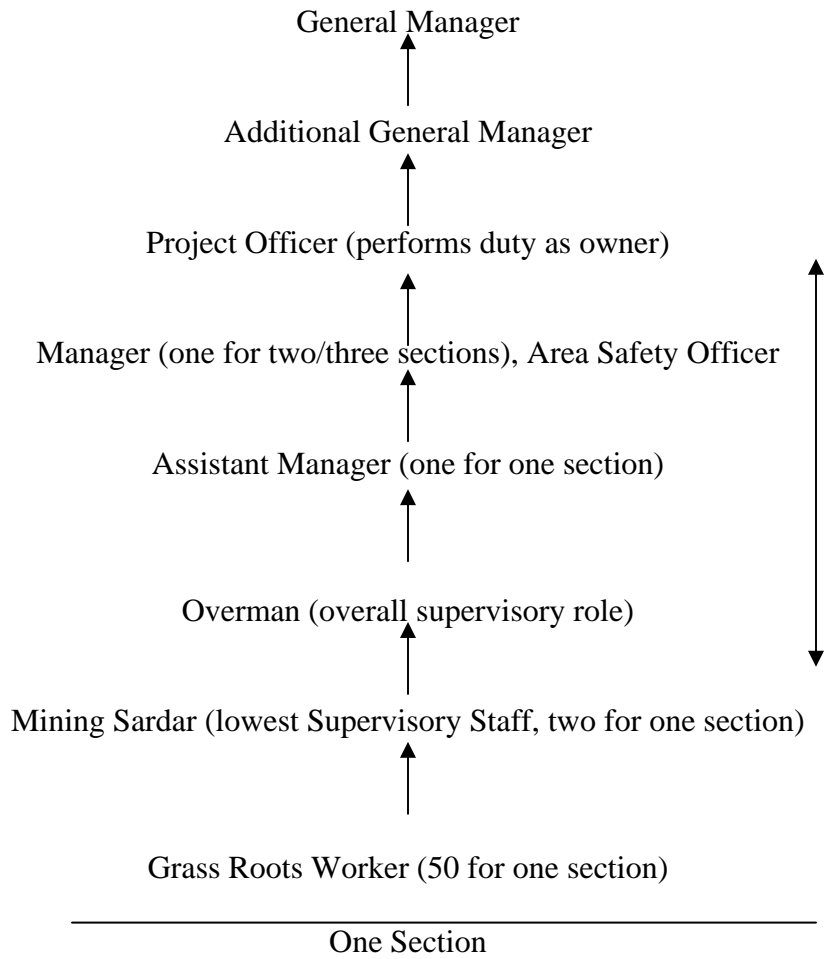
⁹ This is a new technique which has replace previously used ‘basket loading’, where workers load coal manually into the tubs. Basket loading is still being used in many coal mines.

¹⁰ moving of loaded and empty mine cars/tubs by use of wire rope

drilled into the roof top (after blasting) along with some resins and cement. This helps to hold the strata over roof together and gives it more stability.

- Rope haulage is carefully maintained and movement of tubs is strictly regulated. Tubs can cause serious injuries to workers even if they are moving at very low speed so the way has to be clear of workers when tubs are moving. There are 'man holes' at appropriate distances in the haulage way which are whitewashed. A 'man hole' is sort of a safe shelter carved in the wall so that if some worker gets trapped in the haulage way, he can stay in the man hole safely till the coal tubs pass.
- Some workers were not wearing safety shoes. It appeared that there was shortage of safety shoes as BCCL is running under heavy financial losses.
- We tried to ask workers some safety related questions, however, they could not speak openly (due to obvious reasons), in front of the manager. However, in the meeting with the workers at the union office, they detailed the problems in the mines (discussed later).
- The mine has very little lighting and most of it is pitch black, which is very dangerous.
- There are no toilets in the mine and workers use abandoned work area for this purpose which is very unhygienic and has a very offensive smell.
- Some safety committee members and Workmen's Inspectors were carrying out an inspection of the mine.

A typical hierarchal structure in a mine:



Meeting with Dr P K Sishodiya, Deputy Director of Mines Safety, Directorate General of Mines Safety (DGMS)¹¹, Dhanbad.

On December 27, (evening) we also had a meeting with Dr Sishodiya at his office in DGMS. Dr Sishodiya explained the overall role of the DGMS specifically with respect to enforcement of health and safety in the mines.

Current functions of DGMS broadly include

1. Inspection

2. Investigation into:

- (a) accidents;
- (b) dangerous occurrences - emergency response;
- (c) complaints and other matters.

3. (a) Granting:

- (i) statutory permission, exemptions and relaxation;
- (ii) approval of mine safety equipment, material and appliances.
- (b) Interactions for development of safety equipment, material and safe work practices.
- (c) Development of Safety Legislation and Standards.
- (d) Safety Information Dissemination.

4. Safety promotional initiatives including:

- (a) Organisation of -
Conference on Safety in Mines
National Safety Awards
Safety Weeks and Campaigns
- (b) Promoting -
 - safety education and awareness programmes
 - workers' participation in safety management through -
 - o workmen's inspector
 - o safety committee
 - o tripartite reviews

5. Conducting examinations to issue competency certificates.

¹¹ The organisation has its headquarters at Dhanbad (Bihar) and is headed by the Director-General of Mines Safety. At the headquarters, the Director-General is assisted by specialist staff-officers in mining, electrical and mechanical engineering, occupational health, law, survey, statistics, administration and accounts disciplines. The headquarters has also a computer centre, a technical library and SandT laboratories as a back-up support to the organisation.

The field organisation has a two-tier network of field offices. The entire country is divided into six zones, each under the charge of a Deputy Director-General. There are three to four regional offices under each zonal office. Each region is under the charge of a Director of Mines Safety. There are in all 21 such regional offices. Sub-regional offices have been set up in important areas of concentrated mining activities away from Regional office. There are six such sub-regional offices, each under the charge of a Deputy Director. Each Zone, besides having inspecting officers of mining cadre has officers in electrical and mechanical engineering and occupational health disciplines.

Dr Sishodiya discussed the lack of doctors specialising in occupational health and safety. There is no Masters course available in India on this subject. Dr Sishodiya also shared a DGMS conducted survey¹² in mines with an objective to check the status of implementation of various statutory provisions and also to gather information about infrastructural facilities on occupational health and hygiene available in mines. Some of the findings in coal mines are as follows:

- A majority of coal companies are yet to establish comprehensive Occupational Health Services. However, all coal mining companies have Periodic Medical Examination (PME) centres and employ full time medical officers.
- Almost all the companies surveyed had an X-ray facility in their PME centres, however, only 34% of the respondents had facilities for Lung Function Test, 31% a facility for Audiometry and 71% had a facility for the classification of Chest Radiographs.
- Coal mining companies employ 39 Occupational Health Physicians and some physicians are trained in use of ILO classification. However, most PME centres are without an occupational health physician.
- Most coal companies have not completed PMEs of workers as required by the law.
- Environmental monitoring (dust, noise etc.) is not carried out regularly.

Besides, Dr Sishodiya also identified noise at the workplace as a major problem in coal mines which has been grossly neglected. The Mines Act does not set any limit for noise and companies regulate it arbitrarily.

Meeting with Mr P.K Mittal, Chief General Manager (Safety and Rescue), BCCL

A meeting with Mr P K Mittal was held on December 28, in Koyla Bhavan, the headquarters of BCCL. Mr Mittal provided an overview of the mining industry in India and detailed achievements of the coal sector. Mr Mittal emphasised that mining in India is very safe and claimed that not more than 300 people die in all mines in India. According to BCCL, since nationalisation the accident and fatality rate had reduced drastically. Mr Mittal claimed that for the past few years there has been a very low accident rate in BCCL. However, this runs quite contrary to the actual facts. In 2001, 29 miners lost their life (31, unofficial figure) due to flooding of a mine in Bagdigi, under BCCL.

Mr Mittal claimed that a reduction in accidents has been due to shifting production base to opencast, which requires less manpower and is more mechanised. He also said that in underground mines, the biggest killer was the roof and side cave-ins. He also emphasised the new ways being used to strengthen the top, which includes roof bolting. Mr Mittal also spoke at length about the organisational safety set-up which, he said, consists of two parallel systems. An internal ISO system (self regulation) and the external monitoring carried out by DGMS. Mr Mittal also gave details of the safety committees at various levels and various tripartite structures aimed to improve safety at the workplace. He claimed that there is no occupational disease in the coal industry. Mr Mittal also briefed us about the excellent medical infrastructure of BCCL, which has a hospital for each

¹² The information provided in the survey is as on 31 December 1997

mining area. Every mine has an ambulance. BCCL has a central hospital in Dhanbad, which is a well reputed hospital with almost all specialities (even neurosurgery).

Visit to Central Hospital, Dhanbad

We also visited BCCL central hospital in Dhanbad.

The doctor at the Occupational Health Centre, Dr N Sharma, outlined the structure of the medical services for mines under BCCL:

- There are 15 areas of coal mines.
- Each area is managed by Area Medical Officer who looks into preventive and curative aspects.
- Each area has a Occupational Health (OH) centre with a doctor and one full time staff, who conduct Periodical Medical Examination which includes Lung X-rays.
- If the worker is suspected of suffering from pneumoconiosis, the details are sent to the pneumoconiosis board which consists of a Occupational Health Specialist, a Chest Specialist and a Radiologist. Together they confirm the diagnosis and determine the percentage disability to the worker.
- When a worker is declared suffering from pneumoconiosis, the disease is notified and compensation paid according to the Workman's Compensation Act and the worker is also retrained for a safer job.

We asked the doctors there if the workers have access to their PME records, to which they replied that workers tend to mishandle them so it is better to refuse access to them.

Some occupational diseases/injuries common in mine workers according to the doctor are:

- Noise Induced Hearing loss.
- Tremors due to drilling.
- Chest Infection/Bronchitis.
- Occupational Skin Diseases.
- Gas poisoning.
- Multiple injuries, head injuries and spinal injuries due to roof fall (which is the most common case handled in hospital).

Doctors also pointed out that even though the number of occupational accidents is decreasing, the rate of accidents is increasing as employment in mines is also declining (which is very interesting considering all companies are boasting the low accident figure). Doctors also said that more mechanisation has led to more accidents.

Half a day Consultation with workers/Trade Unions

On December 29, half a day consultation was conducted with workers and trade unions. A total of 23¹³ workers from all major trade unions INTUC, HMS, BMS, AITUC and CITU attended the meeting. The meeting involved a presentation from Christine about the ICFTU and the OSHEI, its mission and functions. Some trade union leaders like Mr Pandey (INTUC) also spoke on the occasion.

We had an informal session with workers, who spoke about the problems in mines. The major problems as narrated by workers are as follows:

Periodic Medical Examination and Health Issues

- Many workers complained about the PME. Even though it is a legal requirement and every worker has to undergo PME every five years, some workers working in mines for more than five years had never had one.
- Some workers who underwent PME complained about its inefficiency. For some no diagnostic tests were carried out and even if the tests are done, they cannot see the report.
- One worker termed the whole system 'faulty' as in his case his physical examination was carried out by a gynaecologist.
- If a worker gets sick, the doctor does not even touch the worker. He just prescribes the medicine which may not be available in the dispensary.
- In some cases workers who had an accident were termed fit to work by doctors.
- In a weird case, a worker whose leg was amputated was sent to work as a driver.

Water and Drinking Water at the Workplace

- Drinking water seems to be a major issue in the whole mining area. Almost all the workers complained about the non-availability of potable water. They have to work for hours without any water and this causes serious dehydration. Some of them have to drink dirty or polluted water. Many of them have to buy water to survive.
- After blasting no water is available for spraying, so workers work in a very dusty environment. Even in the opencast mines, workers complained that water is sprayed only on the road but not at the place of work.

Other Safety Issues

- Some workers complained of heat and gas inside the mines due to the poor ventilation system.
- Workers complained about the shortage of safety equipment like safety shoes etc. and they work only in their undergarments.
- Some workers complained that there is only one main fan in their mine and in case of breakdown they have to work without ventilation.

¹³ Please see annexure for details of the participants

Hazard Allowance

- Mr Pandey from INTUC cited an interesting case of safety mismanagement. According to him, the officers of the BCCL receive a dust allowance of 500 rupees per month whereas workers who work in the mines receive nothing¹⁴.

Living Conditions

- Workers are provided residential quarters by BCCL. However, many workers complained that these residential areas are filthy with almost no drinking water. Workers also complained of unhygienic conditions around the residential areas. Mosquitoes are also a menace.

Hazard Mapping

We also carried out a hazard mapping exercise with the workers. The workers were divided into four groups (three underground and one opencast) and were asked to draw in detail all the operations in their mine on a chart and then list all the possible hazards. Each group was finally asked to make a presentation to the larger group:

Presentation of Group 1

Hazards at the Coal Face:

- Noise
- Dust
- Explosive gas
- Heat
- Low oxygen
- Roof Fall
- Side Fall
- Uncomfortable working posture

Haulage Hazards

- Rope breaking
- Run over by coal tubs
- Little or no illumination

¹⁴ It should be noted that the hazard allowance cannot be accepted by workers as it is a trick employed by management to cut on the safety costs and put the lives of workers at risk. However, this point only highlights the notion that managers who live miles away from the coal mines receive dust allowance, which otherwise could have been used in improvement of the safety conditions.

Cage Hazards

- Brake failure
- Operator error.

Presentation of Group 2: (Underground)

Coal Face Hazards

- Dust
- Sound
- Roof fall
- Air pollution
- Slippery mud due to oozing water
- Poor light
- Electrical hazards
- Loading and unloading of tubs
- Gas
- Explosion due to methane

Haulage Hazards

- Over speeding
- Rope breaking

Cage Hazard

- Improper signalling
- Brake failure
- Pushing and pulling of heavy load

Group 3: KCC underground

Major remark on the chart says that workers work without any proper safety provisions only due to fear of suspension etc.

Coal Face Hazards

- Dust because water spray is not available;
- Noise
- Gas and fumes
- Accidents due to unauthorised SDL operations

Haulage Hazards

- Due to non availability of roller pulleys, rope gets damaged and coal tub may tilt posing potent threat.
- Guide pulleys are not also available posing similar threat
- Safety equipment like coupling guards, fencing of drum, pulley, rollers and signalling arrangements are not available.
- Lots of dust produced during transportation of coal.

Group 4: Opencast Mine

The major hazards in opencast mine are:

- Dust due to blasting.
- Haul road hazards which include accidents due to improper gradient, improper lighting, inadequate road signals and improper side drainage during the rainy season.
- Accidents due to dumpers which have a visibility of 10 meters.

Conclusion and Recommendations

Coal mining in India is at a very critical juncture (like many other public sector companies). Workers and their organisations are facing an uphill task of preventing privatisation, saving their jobs and union membership. There has been a steady decline in the employment in the coal sector due to mechanisation and other cost-cutting measures. There is no doubt that safety has taken a back seat and we are faced with a Hobson's choice - "No Jobs versus Hazardous Jobs". The accident figures which appear in government statistics do not reveal the actual situation. The figures say almost nothing about the occupational diseases in the mines as the PMEs are not carried out properly and also due to lack of qualified doctors in this sector.

Trade unions have to play a major role in the improvement of the health and safety conditions in the mines. Fortunately, there is a strong trade union in this sector (unlike many other sectors in India). However, they have to perform a critical balancing act between ensuring better health and safety at workplace that does not threaten their jobs. No doubt it is very difficult as Mining Companies (like BCCL) always quote their losses as a reason for their inability to invest in health and safety and many a times also threaten privatisation or closure if such things are demanded. The need of the hour is to develop a holistic approach towards safety, which should not mean just more personal protective equipment. Trade unions in Jharkhand are already looking into it and the Institute for Miners' and Metalworkers' Education run by trade unions (INTUC) provides comprehensive training on a range of health and safety subjects and this needs to be strengthened further. ICEM can play an important role in further developing the capacities of this international trade union secretariat. Some of the areas of intervention can be:

- Collective bargaining on occupational health and safety, which can include comprehensive training programmes for trade unions detailing steps to bargain with management on occupational health and safety.
- Health and Safety in era of privatisation and trade union responses. This is a very new and unique situation and trade unions need more help in how to deal with this issue. Health and safety has to be considered important under all circumstances.
- Capacity building of the safety committees and workman's inspectors, which can also be done by exchange programmes with the safety committees of ICEM in other countries.
- Resource mapping and sharing, under which trade unions make maximum use of their existing resources as very few resources are available on occupational health and safety.
- Diagnosis of occupational diseases and assessment of disability. This is an important sector of development where trade unions develop understanding on occupational diseases in mining. A simplified manual explaining the subject would be of great help.
- Exchanges of information on mining safety techniques and equipment in different countries. A good example would be information about the type of battery used for miners' lamps. In Jharkand, workers use the wet battery, which is very heavy and they do not know if there is any alternative available in other countries.

Appendix 1

Names of workers in the half day consultation

Name	Colliery
1. R Mistry	A.K.L
2. S Dutta	ROCP/55
3. Kurban Ansari	20/21 pits Murulidih
4. Ashok kr. Maju	Bastacolla Area Kuya Colliery
5. Shankar Singh	Ramkanali Colliery Katrag IV
6. P Yadav	P.B.Project
7. Satrughu P.	G.P.C
8. Madho Mistry	Basta Colla Victory Sec.
9. Nirmal Kanti Roy	Kustore Colliery Area-8
10. Bijay kr Singh	Hariladih Colliery
11. Ramadhin Pandit	Bhalgora (new pit)
12. Ajit Kumar	Junagora O.C.P
13. Japau kr.Ghosh	Kankanee Colliery Area-V
14. S K Rudra	Balihari Colliery, P.B Area
15. R K Dwivedi	Tetnlmari Colliery, Signa Area
16. R G Pathak	Bhowra(South) Colliery, E.J Area
17. Sudhakar Mishra	Amlabad Colliery E.J.Area
18. S P Verma	Moonidih Project
19. R K Singh	Moonidih Project, W.J A

20. U K Roy (Foreman incharge)	Jammunia O.C.P Block II
21. J.PJha (Foreman in charge)	Keshalpur Colliery ,Katrag Area
22. Mahesh Kumar Sinha (Foreman incharge)	Mudidih Colliery Siyira Area V
23. Ashok kr.Sinha (foreman incharge)	Nadh-hurki Opencast Project B-II

Appendix 2

Important Statutory Provisions relating to Occupational Health and Hygiene in the Mines Act 1952.

Section 25 Notice of diseases

Mine management is required to submit notice of occurrence of diseases notified under the following laws:

Section 25 of the Mines Act, 1952

The following diseases have been notified as diseases connected with mining operations for the purpose of sub-section (1) of Section 25 of the Mines Act, 1952:

- Silicosis
- Pneumoconiosis
- Manganese poisoning - nervous type
- Asbestosis
- Cancer of lung, stomach or the pleura and peritoneum (i.e. mesothelioma)

Mines Rules, 1955

Rule 29B Initial and Periodic Examination

The Rule provides for;

- (a) Initial medical examination of every person to be employed in the mine.
- (b) PMA once every five years of persons employed in the mines.

Routine initial and PMA should include:

- General physical examination.
- A full size posterior-anterior chest radiograph.
- Lung Function Tests (Spirometry).

2.3 Coal Mines Regulations, 1957 / Metalliferous Mines Regulations, 1961/ Oil Mines Regulations, 1984

Regulation 123A of the Coal Mines Regulations, 1957 and Regulation 124 of the Metalliferous Mines Regulations, 1961 prescribe the permissible limits for various types of airborne respirable dusts, dust sampling strategies and control measures required to be adopted in mines. The important provisions are;

The eight hours time weighted average permissible limits for airborne respirable dust as

determined by use of approved dust sampling instruments and procedures are as follows-

- 2 fibres per millilitre of air in case of asbestos.
- 5 milligrammes per cubic metre of air in case of manganese ore.
- 3 milligrammes per cubic metre of air; where the working is done wholly in the coal seam or where free respirable silica content in respirable dust is less than 5%.
- In other cases where free respirable silica content in respirable dust is more than 5 percent, the permissible limit shall be calculated by the formula: 15/% of free silica in milligrammes per cubic metre of air

Provisions have also been made for environmental surveillance to be exercised by the mine management in respect of airborne respirable dust viz. location, frequency and manner of sampling.

Regulation 91 of Oil Mines Regulation stipulates that mine management shall take reasonably practicable means to reduce noise level and exposure to workers. No person shall be allowed to enter an area with Sound Level 115 dBA or more without ear protection.

RECOMMENDATIONS OF CONFERENCES ON SAFETY IN MINES

In addition to the statutory provisions on Occupational Health and Hygiene prescribed under the Mines Act, 1952, Mines Rules, 1955, Coal Mines Regulations, 1957, Metalliferous Mines Regulations, 1961 and Oil Mines Regulations, 1984 the issues related to Occupational Health and Hygiene in mines have been discussed in Conferences on Safety in Mines. The VIIth, VIIIth, and IXth Conferences on Safety in Mines have made detailed recommendations on creation of occupational health services, occupational health hazards and occupational health surveillance in the mining industry. Some of the important recommendations of Conferences on Safety in Mines are:

Occupational Health Services

1. There is a need for creation of occupational health services in each mining company working mechanised mines.
2. Occupational Health Services shall have sufficient technical personnel with specialised training and experience in occupational health. The Occupational Health Services shall carry out following functions:
 - I. identification and assessment of the risk from health hazards at the work place;
 - II. surveillance of the factors in working environments and work practices which may affect workers' health;
 - III. surveillance of workers' health relating to work;
 - IV. Advising the management on issues relating to occupational health, industrial hygiene, first-aid and ergonomics.

Medical Surveillance

1. There should be at least one medical officer properly trained in occupational health and in use of the ILO Classification of Radiographs for Pneumoconiosis.
2. Adequate facilities for X-rays and lung function tests should be provided at each medical examination centre.
3. If the profusion of any type of pneumoconiotic opacities in chest radiograph is 1/0 or above according to ILO classification, the case shall be certified and notified as

pneumoconiosis.

4. One medical examination for every person should be arranged within one year of his superannuation.

Dust

Every mining company operating mechanised mines should take early steps to ensure that:

1. adequate arrangements and wherever necessary infrastructure facilities to carry out dust surveys in mines are established.
2. Air-borne dust surveys are conducted and necessary control measures, wherever required are taken;
 - (i) at all mechanised longwall faces, mechanised bord and pillar workings and road header drivages in coal mines;
 - (ii) at all drilling, mechanised loading and crushing operations in non-coal mines;
 - (iii) at all ore/coal handling/benefication plants.

Noise

All mining companies should take steps regarding

- standardisation of the information to be furnished by the manufacturers/suppliers; as well as its assessment procedure;
- development and supply of the proper type of ear protectors including helmet-mounted ear muffs.

Audiometry should be introduced, as a mandatory part of medical examination, for persons seeking employment in mines and for persons engaged in operations/areas where noise levels exceeds 90 dBA.

Occupational Health Surveillance

1. Occupational Health Services in mining companies wherever not yet established shall be established.
2. Each mining company operating mechanised mines shall computerise all records of medical and environmental surveillance.
3. All chest radiographs of Initial and Periodical Medical Examinations shall be classified for detection, diagnosis and documentation of pneumoconiosis in accordance with ILO standards.
4. Classification for Pneumoconiosis.
5. Each mining company operating mechanised mines shall set up an Occupational Diseases Board consisting of one Occupational Health Physician, one Radiologist and one General Physician.