

# Disaster Management, Case of a Coal Mine

**Dr Pramod Pathak, Assistant Professor and S S S Kumar,  
Lecturer in Indian School of Mines, Dhanbad.**

Human failure and poor management practices often define the reasons for a series of fatal mining disasters. Prevention is possible through better management.

**T**he twin mining disasters at Dhanbad Coal Mines of Bharat Coking Coal Limited (BCCL) that took several lives in early February, this year have once again focussed the attention of the nation on poor safety conditions in the Indian Coal Industry.

The first one that took place on the afternoon of 2nd February of 2001 in the Bagdiggi Coal Mine resulted in 29 deaths including that of two officers. A week later, in Chaitudih Coal Mine of the same company another accident resulted in one death with some 100 odd mineworkers escaping miraculously. The interesting coincidence was that both these accidents were due to inundation arising out of similar set of circumstances. What these and many previous accidents indicate is that the managerial attitude has always been a critical element in accident causation. History of coal mine accidents is rather old in Jharia Coalfields, which is largely under the control of BCCL.

## **Formation of BCCL**

Coal mining activities in Jharia Coalfields

started about 150 years ago. This Coalfields is the sole repository of prime coking coal in the country, which is needed for manufacturing of steel in blast furnace. After nationalisation of coking coal mines BCCL was formed on 1st May of 1972. The company did inherit some man made problems owing to the large number of small mines that the private owners operated prior to nationalisation.

BCCL operates the most difficult mines of Coal India Limited. Because of small lease holds mine fares, exhaustion of better quality coal, deep underground mines and due to many water logged abandoned mines, the mining here is dangerous and unsafe. Of the 50 major accidents that have taken place in coal mines in the past 100 years, 20 have been in the mine of Jharia Coalfields. After nationalisation, 11 major coal mine accidents have taken place, out of which eight were in Jharia Coalfields region.

Two conclusions can be drawn from this. One that mining conditions in this region are inherently dangerous and accidents will occur no matter what precautions are taken. The corollary is that why take precautions at all. The second one is that given the greater accident liability the mines operating in this region there is need to be extra cautious. A

closer analysis of accidents and their cause reveals that it is the first conclusion that the mine managers of this region seem to agree with. Safety is treated as an input cost on which can be reduced by all means.

Safety, however, needs to be a major concern for the companies engaged in coal mining. More so, because more than 80 per cent of coal mining is carried out by Public Sector Undertakings, which are supposed to be the model employers. This, however, does not seem to be the case. Rather, safety is treated as an avoidable liability. Not only have there been accidents at a nagging frequency. Most of the time these have been found to occur due to managerial acts of omission and commission. The accident at the Bagdigi Mine of Bharat Coking Coal Limited, Dhanbad, followed by another at Chaitudih Mine are only latest examples.

#### **Mine safety: an overview**

Organised mining coal in India began in early 19th century in the Raniganj Coalfields of Bengal and spread to other parts of the country in the subsequent decades. Accidents have been taking place ever since. Government of India initiated steps to frame legislative measures for safety of mine workers in 1895. In 1899 the first recorded major accident occurred in the Khost Coal Mine (now in Pakistan) killing 47 persons. This hastened the process of formulation of safety laws leading to the enactment of Mines Act in 1901. Legislative measure have continued to be enacted since then. Yet, the death rate in Coal Mine accidents remains high in comparison to other industries. Particularly accidents with high casualty.

In fact, disasters causing 10 or more deaths account 10 per cent of total casualties in coal mine accidents. Coal mine managements may like to state the death rate per 1,000 persons employed has gone down from 0.50 in 1973 (year of nationalisation) to 0.32 at present. But the fact remains that disasters keep on striking the coal mines at regular intervals. Statistically speaking, the rate works out to

be once in every 27 months. While the common refrain for coal mine managements is to dismiss these as acts of god, Courts of enquiry probing the disasters attribute most to human failure. And the argument continues. So, also the disaster.

The point, however, is not what caused the disaster. It is how to check them. Or reduce the impact of disasters. With the demand-supply gap in coal likely to be huge, there will be an urgent need for increasing the production. And with safety. It will not be easy given the managerial attitude of coal mine bosses.

#### **Causes of mine accidents:**

Classical research suggests that faulty attitude prove to be the most important contributory factor in accidents. Post facto analyses often confirm this. More so, in the case of coal mine accidents. It proved so in the case of Chasnala accident, the biggest so far in the history of coal mines. Three hundred seventy five mine workers met their watery grave for some tonnes of coal that the management should have best avoided to extract. Twenty years later, in 1995, the Gazlitand disaster claimed the lives of around 70 miners. And the recent one in Bagdigi just a few weeks back has again taken heavy toll, killing around 29. What is interesting, is the fact that all these accidents have proved to be a repeat of some previous one.

The same set of circumstances, the same round of motions and the same kind of accidents. The fact in many cases the seasons also have been the same; months, too. The tragedy in Badigi once again shows why the mistakes are repeated. The precipitating cause was an explosion to facilitate extraction of coal in the seam near an abandoned water logged mine. The impact of the explosion led to the collapse of the barrier between the two. The resultant inrush of huge quantity of water trapped the miners culminating in the tragedy. But the basic cause was disregard for safety considerations for some tonnes of coal. May be, to get a pat

on their backs from top bosses the superior officers risk the lives of lesser mortals.

Though some 600 persons have died in the past 25 years due to inundation of coal mines, the managements have failed to learn the lessons. In the rainy seasons highest flood levels are ignored and miners are sent in for mining. In the winter season which is close to the end of financial year, danger signals like seepages indicating weakness of barriers are ignored to catch up with production targets. Further, the standard thickness of barriers separating water logged mine with a working one is not maintained. Rather coal is extracted from these barriers. The inevitable happens. Unsafe acts leading to unsafe conditions result in disasters.

Managerial attitude, then, is the main reason why superiors force misadventure on their subordinates. In the process the mines visit the accidents, rather than the other way round. The reports of various courts of enquiry constituted to look into the causes of accidents have almost always held negligence and misadventure as a major cause. Yet, coal mine management do not learn. Or, do not want to learn.

More than accidents it is the attitude that kills. Roof falls account for more than one-third fatalities in coal mines. Interestingly, 60 to 80 percent of these arise from non-adherence to coal mines regulations. Human failures, then, must be examined thoroughly in all accidents. And culpability must be fixed to find the real kingpin. There seems to be an intrinsic feeling in coal mine managers that safety is incompatible with production and productivity. Experience however, proves that this is not so in the long run. Managers get

transferred, but the organisation remains and bears the cost.

#### **Avoiding the future accidents:**

Accidents are an intriguing reality for coal mine managements—less understood and even more damaging. They happen and they hurt. Coal mine Managements must therefore formulate a sound policy for effective accident management.

Such management must be integrated into a well-formulated safety policy of the company, which includes administrative, legal and technical aspects. Needless to say that there has to be special emphasis on training, motivation and participation—and not just of employees of the organisation. Even local residents, if trained well, can play a crucial role in helping the company combat accidents. More than technology it is the human response that is critical. Even the best of technologies can not substitute for highly motivated human teams.

Mining in the final analysis, is akin to war situations and the conventional wisdom is that the more you sweat in the peace the less you bleed in wars. You do not know from where the disaster will strike but you must know what has to be done when it strikes.

But this calls for a drastic change in attitudes of the officers. Misadventures, disregarding warning signals, have almost always been the main cause. Warnings have always preceded the accidents. But mine managers have failed to take a cue from these warning signals leading to heavy loss of life and property. For safer mining, the mine managers have to learn the lessons from their past mistakes and avoid repeating them. ■