CHAPTER VII

SUMMARY & CONCLUSIONS

Our ability to understand risks is limited by our experience and imagination. It was Benjamin Disraeli who said over a century ago “What we anticipate seldom occurs; what we least expect generally happens.” Mining is no different.

Mineworker’s health protection from the workplace hazards cannot be isolated from protection of the general environment. Strategies in the mine planning should ensure that control is not attempted at the cost of environmental degradation.

Risk management requires that actions pertaining to the workplace and the general environment be jointly planned and coordinated.

Prevention of occupational health hazards is much more effective and usually cheaper, if it is considered at the planning stage of the mining at the workplace, rather than as control solutions of already existing hazardous situations. There can be three Control Approach options in order of priority:

1) Plan out mining in such a way that no mineworker is exposed to any existing health hazards present in the mine.

2) If one is not feasible then prevent or minimize the hazard situation e.g. dust, gas, noise etc

3) If this is not possible or feasible by any method, then workers should be given personal protective equipment, including respiratory protective equipment to the workers and whoever else is at the mine during working hours and it must be ensured that it is worn /applied.

There is a need to bring out some positive changes in the following problem areas:

1) The workers of the Argada area in South Karanpura Coal Field accept that there is dust, gas, noise, vibration in the mine, which is a physical health hazard to them.
2) Huge heaps of overburden is haphazardly dumped within the quarriable area which also locks a major part of the balance reserve. This huge amount of the overburden will be needed to be removed in future if a systematic expansion of the mine and extraction of coal is required to be done.

3) The disposal of the waste and tailings from the Gidi Washery in the abandoned pits and surrounding areas may pose problems in future mining operations and it is unfriendly to the environment.

4) It appears that there has been mining in the past in a very unsystematic manner as everywhere there are abandoned waterlogged quarries and landscape is heavily distorted. Now, its reclamation doesn’t appear to be economically viable as it may incur heavy costs.

**Blasting Operation:**

Blasting releases a tremendous amount of energy for fragmenting and displacing rocks within a very short time. The blast should be designed so that the energy released by detonation performs useful work. Any imbalance between the distribution of the explosive energy, geomechanical strength of the surrounding rock mass, and confinement creates a potential hazardous condition by channeling the energy through the path of least resistance. Such imbalance can propel fly rock beyond the blast area and create a potential for serious injuries and fatalities. Case studies listed in Appendix A underscore this issue. Blasters should follow procedures required by local, state and federal statutes to guard against catastrophic consequences. The principal factors attributed to the fatalities were personal, task and environmental.

Intervention programs in the realm of behavioral/educational, administrative/regulatory, and engineering merit serious attention

Residents have reported that vibration from the present operational site can be felt in some homes, and this causes anxiety regarding possible structural damage. If the extension goes ahead, vibration may become a greater problem as
more homes are likely to be affected due to their closer proximity to blasting and excavation.

Environmental Aspects

The mining environment is very severe in SKCF. In addition to noise, smoke, dust, and uneven ground it presents numerous other environmental hazards. Movement of large equipment such as draglines, shovels, dumpers, dozers, drills, and service vehicles create distractions.

Coal Mining Prevention and Control system should be designed in the environment management plans (EMP’s) in such a way that effects on the general environment is minimum e.g. effect of fine dust particles on atmospheric visibility (dust), any damage to buildings (blasting, vibration, subsidence etc.) effects on natural vegetation and other vegetation and animals, aquatic biodiversity and people living in the adjoining area.

As in the mine area the first priority should be to prevent the generation of airborne dust, and if generation can not be prevented then, secondly its removal. Such measures should be adopted which minimize haphazard dumping of OB dumps and its disposal so planned as to avoid environmental damage.

Potential for environmental improvements

Potential environmental improvements may include:

The installation of dust abatement equipment, for example dust cyclones, waste sprays over stockpiles, grassing of overburden mounds, water browsers, wash down units for vehicles, paved areas within the site where practicable.

Dust can be reduced by practical housekeeping measures, such as the use of covered conveyors rather than trucks, the creation of sensitive areas in which operations are kept to a minimum and by progressive restoration of the site; the installation of boundary noise attenuation measures such as landscaped earth mounds and screening through tree planting.
The vegetation of exposed overburden mounds as soon as practicable; the provision of bunded containment areas for storage of chemicals such as oils and fuel for plant. Check on site remediation requirements and on relevant legislation; check landuse and other permits.

In Jharkhand not only mineworkers but mining affects the local inhabitants also. Mine areas are mostly on the acquired lands mainly from tribal people and either they are displaced with or without any compensation or they have joined mine as lower rung jobs for livelihood as they have lost their land. If they are not an employee, then they are engaged in some other related job.

Its not that those who are not displaced are not affected. Mining affects effects everybody living in proximity in way or the other.

“In Jharkhand externalities have further led to the deprivation of the tribal communities. If we ignore for the moment the consequent modifications to the environment by mining activities, the benefits of mining are considered to include the production of minerals in demand by commodity markets and of the income, capital, employment, exports, regional development, training, technology transfer etc. Similarly, costs are conceived as wages, supplies, construction, and finance and, in some abstract form, environmental impact on either side, benefits and costs are not tied to the mine itself. A road built for the mine might be used by the others and is thus an added benefit to someone who has not, at the same time contributed to the cost of building it. The mine might on the other hand, cause acid waters to be released into a river causing the destruction of fish stocks that were the livelihood of a fisherman downstream. The loss resulting to the fisherman doesn’t affect the mining company.” (Poulin et al, 1993)¹¹⁴

Suggestions

1) The haphazard/irregular dumping of overburden should be done somewhere else where it does not cover the tapped coal reserves.

2) There is requirement of educating and training the mineworkers especially daily rated and piece rated workers in prevention and control of dust at the workplace.

3) Officers and supervisors should motivate the workers to collaborate with each other.

4) Major pollution problems are confined in the opencast mine areas especially Gidi A and this mine along with the Gidi washery area should be given high priority.

5) Opencast mines are generating huge amount of OB dump, which are damaging the landscape as well as creating environment pollution. Land reclamation of the OB dump should be done on large scale.

5) Coal and wood burning in domestic sector must be replaced by LPG both in mining and tribal areas.

6) Local population mostly tribals should be provided with alternative source of livelihood apart from collection of illegal coal.

7) To protect the life line of the region i.e. Damodar River, its sub channels must be saved from getting choked by washed away overburden and coal waste from the mine area. Damodar Action Plan must be taken into consideration in the upper reaches like this one for immediate cleansing of the river.

8) To revive the free drainage flow in Damodar and its tributaries along the mine areas, desiltation should be initiated.

9) Environmental awareness programme should be conducted among the mineworkers and also in the adjoining rural areas for the protection of
forest, consuming good quality of drinking water and health and primary hygiene.

10) The conflict zone (Cultural heritage sites of Karanpura Valley) threatened by mining activities, should be avoided for any industrial expansion.

11) Land degraded due to mine fire, subsidence and OB dumps should be reclaimed and rehabilitated in the area.

*Flora & Fauna*

1) Forest coverage should be increased and scarce and threatened plant and tree species must be saved.

2) New forest policy for Damodar river basin should emerge to enhance forest cover to atleast 33% of the total land.

3) New forests and wildlife sanctuaries can be made in the abandoned mine areas, as it can enhance tourism and degraded land can be used without incurring heavy costs. Aquatic environmental safety programme may also be initiated to restore vanished fishes and other species of Damodar River.

*Noise*

1. Development of green belt, noise attenuation system like provision of acoustic walls should be done at each of the mining associated units (coal washeries, coke plants and open-cast mines)

2. Old machineries being used in industries should be replaced by modern equipment, fitted with silencers and noise absorbers.

3. Heavy earth moving machineries in coal mines should be properly maintained to reduce the noise level.

4. Plantation along the transportation corridors should be done.
Socio-economic aspects

1. In the mine area, basic amenities like potable water supply, medical facilities, educational institutions, power supply, transportation, communication and sanitation facilities should be strengthened.

2. Cooking gas facility for the domestic purposes must be provided to mine workers to prevent open coal burning.

3. Implementation of novel and appropriate family planning programmes and promotional activities should be attempted.