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Environmental impact due to iron ore mining in Chhattisgarh

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Abstract
Iron ore is an important mineral in Chhattisgarh. The production of iron ore is 5.50 million tones per year. Due to massive extraction of iron ore, it pollutes air, water and soil. When iron in solution reaches the water table it pollutes the ground water, while dissolved iron in surface water reacts with soil to cause soil erosion and effect the soil profile and sometimes minor particles of iron spread with air cause air pollution. Mining in Bailadila and Dalli-rajhra (Durg) have resulted into various environmental problems. Apart from these, the open cast mining which removes the top soil cover may invite occurrences of landslide. If the mining and industrial activities are carried out in an integrated planed way by continuous monitoring and taking effective mitigative measures in a timely manner then it will definitely prove to be economically beneficial in a sustainable manner.

Keywords: Iron Ore, Environmental Impact, Extraction, Mining.

INTRODUCTION

Iron ore deposits in Chhattisgarh are widespread and have been a backbone to industrial development in the state. In Chhattisgarh iron ore deposits are found in Bailadila (Dantewada), Dallirajhra (Durg) and Kawardha. The environmental impact of large scale mining activities in Bailadila and Dalli-rajhara includes soil erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from mining processes. In some cases, additional forest logging is done in the vicinity of mines to increase the available room for the storage of the created debris and soil. Besides causing environmental damage, the contaminations resulting from leakage of chemicals also affect the health of the local population. Mining companies in some countries are required to follow environmental and rehabilitation codes, ensuring the area mined is returned to its original state. Some mining methods may have significant environmental and public health effects.

Problem

Mining activities have damaged the region, especially Kirandul and Bacheli in Bailadila and Dallirajhra in Chhattisgarh. In Bailadila the Shankhini and Dankini rivers are the most polluted rivers in India. Shankhini is the main river in Bailadila, most of the people about 100 villages are dependent on this source but due to excess mining the color of river water is converted into red water, apart from this most of the drinking water wells are reaching to dry condition. Bailadila mines are not only polluting the river but also have damaged agricultural and forest land. About 35,000 ha of land is moderately affected. The Bailadila Hills are rich with dense deciduous forest, however deep and vast mining activity may cause a serious problem to environment.

Study Area

The proposed area is located in Kirandul and Bacheli (18.621110 N 81.281630E) areas of Bailadila hill range in district Dantewada and Dallirajhra (Lat 20.58"N and Long 81.08"E) in district Durg Chhattisgarh (Figs. 1.1, 1.2and 1.3). The Bailadila iron ore range extends for a length of about 40 km with a width of about 10 km, having iron ore deposits mostly on top of hill.

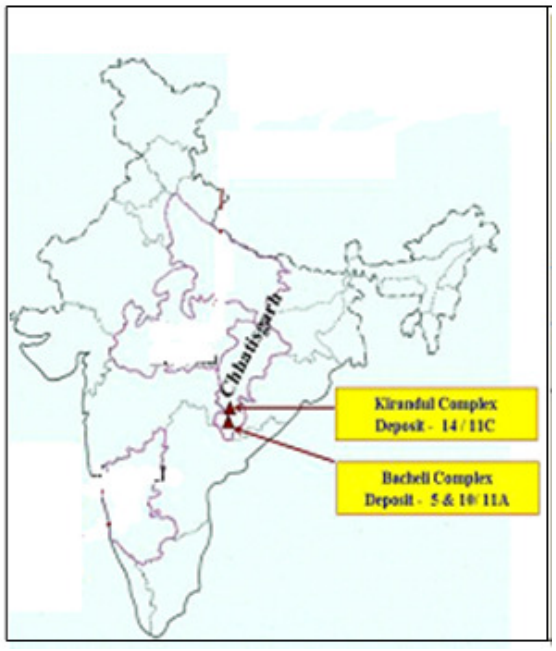

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Fig 1.1 shows the location of Bailadila mine in India

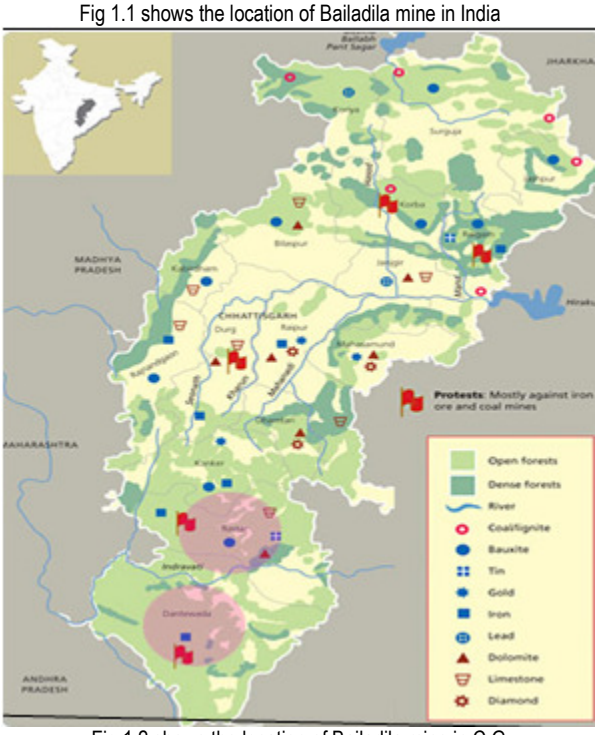

Fig 1.2 shows the location of Bailadila mine in C.G.

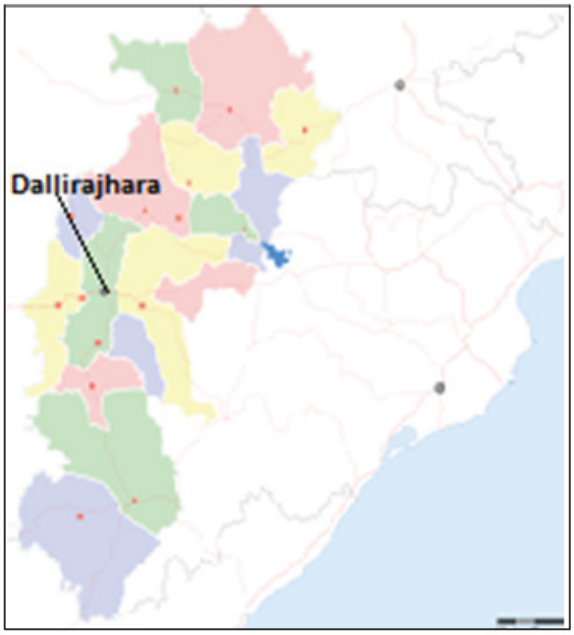

Fig 1.3 shows the location of Dallirajhra mine in C.G.

Observation

The open cast mining method, being most suitable for these deposits is being operated at these mines. Due to open cast mining, two severe problems arise, firstly the removal of top soil cover and secondly dumping of overburden. The loss of top soil cover is a major problem and should be minimized by scrapping of the upper layer in a manner that it can be laid elsewhere as a uniform layer. Top soil of the area which is being used as dumping place for the overburden has also be removed and replaces. Replacement of top soil on the earlier dumped over burden is one of the possible solutions.

The other impact of open cast mining activity is development of hollows in the earth, a proper planning of the mining activity i.e. dumping of overburden in the excavated portions of mines would help in reclaiming the land earlier used exploitation.

Aforestation on the reclaimed land is another important measure to be followed for maintaining the biodiversity and ecosystem.

Another problem involved with opencast mining is generation of dust due to operation of heavy machines such as dumpers, loaders and drilling machines. The dust generation is controlled by sprinkling of water at regular intervals. The water stored in the deep quarries during monsoon season is best utilized for this purpose.

Iron refineries can cause the drinking water supply to be hazardous. Sometimes, the mining may be deep enough to hinder with the water table.

DISCUSSION

Mining can have adverse effects on surrounding surface and ground water if protective measures are not taken. Runoffs of rock debris although non-toxic also effect the surrounding vegetation. The dumping of the runoff in surface waters is the worst option in mime site. Submarine tailings disposal is regarded as a better option. Land storage and refilling of the mine after it has been depleted is even better, if no forests need to be cleared for the storage of the debris. There is potential for massive contamination of the area surrounding mines due to the various chemicals used in the mining process as well as the potentially damaging compounds and metals removed from the ground with the ore. Large amounts of water produced from mine drainage, mine cooling, aqueous extraction and other mining processes increases the potential for these chemicals to contaminate ground and surface water. In well-regulated mines, hydrologists and geologists take careful measurements of water and soil to exclude any type of water contamination that could be caused by the mine's operations.

Iron is generally mined by open cast or strip mining. Rather than tunneling the earth this method include extracting minerals from an open pit. Heavy machinery is used to all the earth covering the mineral. This will cause an immediate impact on the environment. Open cast mining involves removing the top layer of soil in order to get at the ores underneath. The resultant soil erosion results in the difficulty for vegetation be it natural or crop, to re-establish itself. This is especially true if the removed soil is not replaced soon after the mining operation is finished. Some mining companies have a better record of reducing soil erosion than others.

CONCLUSION

The overall discussion, observation and study conclude that iron ore is such create bad effect of environment in mine site, like Soil erosion, Land

degradation, Water pollution Air pollution and Soil pollution. It's not only effects the environment but also affect the human beings. The pollute water and pollute air which cause some disease in human beings.

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