

Mineral Resources of Nagour (Makrana)

Introduction

Taj Mahal, the emotional signature of time engraved on rock owes its splendid look to the immaculate quality of marble from Makrana in Rajasthan. This fascinating rock concealed below the sands of the great. That desert is renowned the world over for its quality on which artists have been carving their feelings for centuries. During the last four decades several geoscientists have studied different geological aspects of this marvel of nature exposed at Makrana (Heron 1953; Raja Rao et al., 1971; Gupta et al., 1980; Paliwal 1991; Pareekh 1993).

Unfortunately the complete marble industry at Makrana in Rajasthan at present is in raw hands. In the absence of up to date information regarding its vertical and lateral extension its three dimensional geometry and also the latest technical know-how in the field of cutting and polishing technology the industry as a whole is still at a primitive stage. There is no proper planning for the mine layout. In addition, the inherent family subdivision of the parental property the marble mines are reducing in size every time.

In such circumstances mine layouts get spoiled. The size of the marble blocks mined out depends on the capacity of the mining equipment available with the individual mine owner and not on the maximum size of the material available in the mine. Small mine owners with their limited capacity of the equipments, break the larger blocks that could fetch more money into smaller ones, only because of the fact that they do not have adequate equipments to handle them as result the mines that could produce large blocks get spoiled and produce small and poor quality blocks of less economical value.

On the other hand, in the absence of proper state control, the mining operations in the individual mines have become haphazard. No safety measures are being taken into consideration to avoid accidents and casualties. It is quite interesting to note the popular belief that since independence not even a single case of mine accident has been registered with the police and local administration in the history of the marble mining at Makrana. It is almost impossible to believe that neither any accident has occurred in the mining activity nor any casualty has taken place so far at Makrana. Obviously, such accidents do occur in the mining industry every year and casualties take place frequently and same is the case with Makrana also. Only their reporting is not being done under pressure. It is said that there is a parallel system working in this democratic country that can sort out all such serious matters by mutual settlements, out side the courts. Any one can realize the gravity of the matter and the system that do exist at Makrana. To talk of human rights of the labourers engaged in the marble industry at Makrana is far off from the reality.

Recent investigation carried out around Makrana marble deposit revealed the structural style and deformation pattern of the marble body and its position in the Precambrian Stratigraphy of the northwestern part of the Indian peninsular shield (Paliwal, 1995; Pareek, 1993). The three dimensional picture of the marble deposit prepared by them and the mutual relationship so established amongst

different marble ranges exposed in the area would help calculating total reserves and also facilitate planning a suitable mine layout in the Makrana area.

Amongst several problems that the marble industry at Makrana is facing these days. Some of them are very serious and need urgent attention. The most important of these pertain to-

1. Degrading environmental conditions around Makrana town.
2. Hazardous and risky mining operations going on at Makrana mining sites.

Degrading Environmental Conditions

Uncontrolled and unplanned mining activities at Makrana are going on for the last many decades and as a result the environment around the town is deteriorating day by day. Factors that have been playing active role in the environmental degradation are related to-

1. Disposal of the Industrial Waste

Marble industry produces two type of industrial waste (1) Debris produced during mining operations and cutting of marble blocks (2) Sludge lime mud produced during cutting of marble and preparing tiles. There is a serious problem of the disposal of this waste. To some extent the former type of waste can be utilized in marble chips if it is of good quality. The second category of the waste has not found any industrial or commercial use so far. This industrial waste is dumped very irregularly degrading the environment. Many times this waste is dumped at the roadsides and it slowly creeps down to the road and roads are damaged costing a lot of revenue on their maintenance. At times this waste is dumped on cultivable land.

2. Deforestation and Degrading Fertile Agriculture Land

Marble industry has become so attractive and paying these days that people engaged in it may go to any extent to mint money even at the cost of degrading environment. People do not hesitate in cutting trees in their cultivable land even for the search of a marble deposit below it, what to talk of cutting trees from the mining areas of the factory sites. Trees are decreasing in number and there is no desire in the inhabitants for replantation. They are almost ignorant and unaware of the environment. Similar is the people's attitude towards dumping the industrial waste. Spoiling the cultivable land this way is a very common site around Makrana town.

3. Accumulation of Rain Water in Mines

Though marble deposits at Makrana have a linear geographical distribution along five ridges. But as far as mining is concerned it is segmented into a countless small mines, many of which are inherited and they are further subdivided into smaller ones as a family subdivision of the property goes on. As a result each small mine owner is concern with the development of his own mine only and the entire mining activity has become haphazard and irregular. Structurally the linear bands of marble have a sub-vertical attitude as a result the open caste mines become deeper and deeper with the progress in the mining activity. Obviously, both

ground water and rainwater accumulate and become a big hurdle in the mining activity. There is no planning to throw this water out and utilize it in a proper way. Secondly, there is a limit for the open cast mining at least in such deposits with subvertical attitude of beds. Ultimately the underground mining is the only answer.

4. Drainage Problem in the Town

The physiographic position of the Makrana town itself has given rise to a centripetal drainages system. The haphazard and unsystematic mining activity together with the irregular disposal of the industrial waste has worsened the situation of drainage and sewer system. This is the most conspicuous problem affecting public health in the town seriously and the environment as a whole is becoming worst. It is a very big day-to-day problem that further deteriorates during rainy season. What to talk of infectious diseases in the town, even movement on foot becomes very difficult.

5. Irregular and Unplanned Growth of the Town

Hectic growth of the marble industry at Makrana has given rise to a fast but irregular and unplanned expansion of the town. Such an expansion has produced many fold problems to development and the environment as a whole. Governmental agencies like municipality are losing their control on the situations on the clustering of shopping centers and residential areas is taking place around mines and industrial area and not at sites otherwise suitable for the purpose.

6. Roads and Transport Conditions in the Town

Because of administrative negligence the conditions of roads in the Makrana town are already awfully bad. The mine produces spread during transportation and the heavy equipments and machinery when transported, further worsen the road condition in the area. Virtually, the agencies engaged in the maintenance work cannot afford it and the road remains un-repaired for years together. Certainly the road maintenance budget of the Public Works Department at Makrana is more as compared to any other town of similar position in the state.

7. Water, Air and Noise Pollution in the Town

Residential areas of the Makrana township have a shoulder touch closeness with the mining sites and industries. As a result the industry, as a whole leaves a very strong environmental impact on the inhabitants of the town. Both drilling and blasting processes in the open cast mines cause air and noise pollution. In addition to this the age-old vehicles still engaged in the transportation of the material, produce dangerous smoke polluting air and intolerable noise round the clock. Cutting and polishing machines working day and night also add to it a lot. Water used in marble cutting industry gets polluted and in the absence of a proper drainage and dispose-off system it percolates down the surface and contaminate the ground water of the area.

Hazardous and Risky Mining Activities

In addition to the environmental degradation, several hazardous and risky mining activities are taking place round the clock around Makrana township. These activities are a serious danger to human life in and around Makrana town. Categorically, they are related to: -

1. Closeness of the Mining Sites to the Residential Areas

Unfortunately, mining sites and the residential areas at Makrana are so intricately intermingled that the latter are seriously affected by mining activities. What to talk of mining rules and environmental protection, even minimum required safety measures are also overlooked at mining sites. As a result day-to-day human life at Makrana has become quite risky. Frequent accidents and casualties is a common phenomenon at Makrana town.

2. Unscheduled and Untimely Blasting Activity

Despite dangerous closeness of mining sites to residential areas there is no fixed schedule for blasting activity in the mining areas of the Makrana town. Irregular and untimely blasting is a common site in the area without bothering about the risk of hurting physically the nearby living citizens or those who move on roads close to the mine sites, with the fragments of the blast material. What to talk of other safety measures and pollution they do not bother to alarm people of the blasting properly. Any time any one be hurt of a blast throw at any place in the industrial and mining sites of Makrana town.

3. Frequent Road Blockage and Age-Ole Vehicles Causing Road Accidents

Due to poor transport management system the marble blocks fall on their way to factory sites. These blocks lying on roadsides cause maximum road blockage and road accidents in the town. Secondly the vehicles engaged in the marble industry are also age old ones and cause frequent serious road accident.

4. Accidents at Mining Sites

Even if we do not believe in the saying that in the existing system prevailing at Makrana no case of accidents or casualties is reported to the police or the administration, the accidents have been occurring and casualties have been taking place invariably at the mining sites and industrial areas of Makrana. Mainly there are following reasons behind these accidents at Makrana.

- (a) Unplanned, irregular and unsystematic mining operations are going on at Makrana, which cause a large number of accidents and casualties due to procedural defects.
- (b) Workers engaged in mining and related industry are unskilled labourers. As a result they fail to handle the mining operation in a systematic way and ultimately accidents occur. Same is the case with the unskilled persons handling machinery.
- (c) At Makrana most of the equipments and machinery tools being used in the mining industry are out dated and age old ones. After a long tear and wear these equipments cease to operate properly causing frequent accidents and casualties.

- (d) There is no provision to provide required training to workers engaged in the mining and the related industry. As a result these untrained persons, through available at a comparatively low labour charges are unable to handle equipment and machinery and are unaware of safety measure, accelerate accidents and damage to the property.

Conclusion

Makrana in Rajasthan is renowned the world over for its immaculate quality marble deposits. Despite its tremendous economic significance the deposit is facing many fold problems these days. Mining activities currently in operation at Makrana are not only hazardous and risky but they have made the industry as a whole environmentally degrading. The matter is quite serious and needs urgent attention.

A complete three dimensional picture of the Makrana marble deposits has evolved through a detailed structural investigation of the area (Paliwal, 1995; Pareek, 1993) and it can help preparing a suitable mine lay out considering all the deposits as a single unit. This way a planned mining operation could be implemented in the area that will neither be risky and hazardous nor it will affect the surrounding environment adversely. Not only this but it will also come to be more economical beneficial and productive.