

**Environmental Aspects of Quarrying of
Minor Minerals**

Report of the Group

March, 2010

**Government of India
Ministry of Environment & Forests
New Delhi**

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Environmental aspects of quarrying of minor minerals – Evolving of Model Guidelines

1.0 Background:

Mines and Minerals (Development & Regulation) Act, 1957, under Section 15, empowers the State Governments to make rules in respect of minor minerals. There have, however, been reports regarding adverse impacts on lakes, river beds and groundwater due to quarrying / mining of minerals. Concerns have therefore been raised to address the issues and evolve guidelines for sustainable mining of minor minerals. It has also been felt that while proposals for mining of major minerals typically undergo rigorous environment impact assessment and environmental clearance procedure, less attention has been given to environmental aspects of mining of minor minerals.

While Environment Impact Assessment Notification, 1994 did not apply to mining of minor minerals; however, realizing the potential of such projects to adversely affect the different components of environment, minor minerals were brought under the ambit of the new re-engineered Environment Impact Assessment Notification, 2006. As per the provisions of this Notification, mining of minerals with lease area of 5 ha and above require prior environmental clearance under the provisions thereof.

2.0 Constitution of the Group:

Ministry of Environment & Forests vide order dated 24th March, 2009 had constituted a Group under the Chairmanship of Secretary (E&F) to look into the environmental aspects associated with mining of minor minerals. A copy of the said order is at Annexure-I.

The terms of reference of the Group so constituted are as under:

- (i) To consider the environmental aspects of mining of minor minerals (quarrying as well as river bed mining) for their integration into the mining process.
- (ii) Specific safeguard measures required to minimize the likely adverse impacts of mining on environment with specific reference to impact on water bodies as well as groundwater so as to ensure sustainable mining.
- (iii) To evolve model guidelines so as to address mining as well as environmental concerns in a balanced manner for their adoption and implementation by all the mineral producing States.

3.0 Working of the Group:

The Committee *Group* held its meeting on 7th July, 2009, wherein the issues relating to mining of minor minerals were brought out and deliberated. All the members / participants were requested to send their views / comments / inputs on the issues so identified. The minutes of the meeting are at Annexure-II. Based on the discussion held during the meeting and the subsequent inputs received, a draft report was prepared and circulated to all the members for their inputs. The report was further discussed during the meeting of the Group on 29th January, 2010 for its finalization. The observations / comments made during the meeting were incorporated in the report and again circulated to all the members for their concurrence. Based on the inputs received on the draft so circulated, the report has been finalized.

4.0 Issues and Recommendations:

4.1 Definition of Minor Mineral:

The term minor mineral is defined in clause (e) of Section 3 of MMDR Act, 1957 as "minor mineral means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes and any other mineral which the Central Government may, by Notification in the Gazette of India declare to be a minor mineral". The term

'ordinary sand' used in clause (e) of Section 3 of the MMDR Act, 1957 has been further clarified in rule 70 of the MCR, 1960 as "sand shall not be treated as minor mineral when used for any of the following purposes namely; (i) purposes of refractory and manufacture of ceramic, (ii) metallurgical purposes, (iii) optical purposes, (iv) purposes of stowing in coal mines, (v) for manufacture of silvcrete cement, (vi) manufacture of sodium silicate and (vii) manufacture of pottery and glass.

Additionally, the Central Government has declared the following minerals as minor minerals: (i) boulder, (ii) shingle, (iii) chalcedony pebbles used for ball mill purposes only, (iv) limeshell, kankar and limestone used in kilns for manufacture of lime used as building material, (v) murrum, (vi) brick-earth, (vii) fuller's earth, (viii) bentonite, (ix) road metal, (x) reh-matti, (xi) slate and shale when used for building material, (xii) marble, (xiii) stone used for making household utensils, (xiv) quartzite and sandstone when used for purposes of building or for making road metal and household utensils, (xv) saltpeter and (xvi) ordinary earth (used or filling or leveling purposes in construction or embankments, roads, railways, building).

It may thus be observed that minerals have been classified into major and minor minerals based on their end use rather than level of production, level of mechanization, export and import etc. There do exist some minor mineral mines of silica sand and limestone where the scale of mechanization and level of production is much higher than those of industrial mineral mines. Further, in terms of the economic cost and revenue, it has been estimated that the total value of minor minerals constitutes about 10% of the total value of mineral production whereas the value of non metallic minerals comprises only 3%. It is, therefore, evident that the operation of mines of minor minerals need to be subjected to similar some regulatory parameters as that of mines of major minerals.

Further, unlike India there does not exist any such system based on end usage in other countries for classifying minerals into major and minor categories. Thus, there is a need to relook at the definition of "minor" minerals per se.

It is, therefore, recommended that Ministry of Mines along with Indian Bureau of Mines, in consultation with the State Governments may re-examine the classification of minerals into major and minor categories so that the regulatory aspects and environment mitigation measures are appropriately integrated for ensuring sustainable and scientific mining with least impacts on environment.

4.2 Size of the Mine Lease:

Area for grant of mine lease varies from State to State. Maximum area which can be held under one or more mine lease is 2590 ha or 25.90 sq. miles in Jammu & Kashmir. Rajasthan prescribed a minimum limit of 1 ha for a lease. Maximum area prescribed for permit is 50x50 m. In most of the States area of permit is not specified in the rules. It has recently been observed by Punjab and Haryana High Court in its order dated 15.5.2009 that State Government are apparently granting short term permits by dividing the mining area into small zones in effect avoids environmental norms.

There is, thus a need to bring uniformity in the extent of area to be granted for mine lease so as to ensure that eco friendly scientific mining practices can be adopted. **It is recommended that the minimum size of mine lease should be 5 ha. Further, preparation of comprehensive mine plan for contiguous stretches of mineral deposits by the respective State Governments may also be encouraged. This may suitably be incorporated in the Mineral Concession Rules, 1960 by Ministry of Mines.**

4.3 Period of Mine Lease:

The period of lease varies from State to State depending on type of concessions, minerals and its end use. The minimum lease period is one year and maximum 30 years. Minerals like granite where huge investments are required, a period of 20 years

is generally given with the provisions of renewal. Permits are generally granting for short periods which vary from one month to a maximum one year. In States like Haryana, minor mineral leases are auctioned for a particular time period. Mining is considered to be capital intensive industry and considerable time is lost for developing the mine before it attains the status of fully developed mine. If the tenure of the mine lease is short, it would encourage the lessee to concentrate more on rapid exploitation of mineral without really undertaking adequate measures for reclamation and rehabilitation of mined out area, posing thereby a serious threat to the environment and health of the workers and public at large.

There is thus, a need to bring uniformity in the period of lease. **It is recommended that a minimum period of mine lease should be 5 years, so that eco friendly scientific and sustainable mining practices are adopted. However, under exceptional circumstances arising due to judicial interventions, short term mining leases / contracts could be granted to the State Agencies to meet the situation arising there from.**

4.4 – Cluster of Mine Approach for Small Sized Mines:

Considering the nature of occurrence of minor mineral, economic condition of the lessee and the likely difficulties to be faced by Regulatory Authorities in monitoring the environmental impacts and implementation of necessary mitigation measures, **it may be desirable to adopt cluster approach in case of smaller mine leases being operated presently. Further, these clusters need be provided with processing/crusher zones for forward integration and minimizing excessive pressure on road infrastructure. The respective State Governments / Mine Owners Associations may facilitate implementation of Environment Management Plans in such cluster of mines.**

4.5 Requirement of Mine Plan for Minor Minerals:

At present most of the State Governments have not made it mandatory for preparation of mining plan in respect of minor minerals. In some States like Rajasthan, eco friendly mining plans are prepared, which are approved by the State Mining Department. The eco friendly mining plan so prepared, though conceptually welcome, are observed to be deficient and need to be made comprehensive in a manner as is being done for major minerals. Besides, the aspects of reclamation and rehabilitation of mined out areas, progressive mine closure plan, as in vogue for major minerals could be introduced for minor minerals as well.

It is recommended that provision for preparation and approval of mine plan, as in the case of major minerals may appropriately be provided in the Rules governing the mining of minor minerals by the respective State Governments. These should specifically include the provision for reclamation and rehabilitation of mined out area, progressive mine closure plan and post mine land use.

4.6 Creation of Separate Corpus for Reclamation / Rehabilitation of Mines of Minor Minerals:

Mining of minor minerals, in our country, is by and large unorganized sector and is practiced in haphazard and unscientific manner. At times, the size of the leasehold is also too small to address the issue of reclamation and rehabilitation of mined out areas. It may, therefore, be desirable that before the concept of mine closure plan for minor minerals is adopted, the existing abandoned mines may be reclaimed and rehabilitated with the involvement of the State Government. **There is thus, a need to create a separate corpus, which may be utilized for reclamation and rehabilitation of mined out areas. The respective State Governments may work out a suitable mechanism for creation of such corpus on the 'polluter pays' principle. An**

organizational structure may also need to be created for undertaking and monitoring these activities.

4.7 Depth of Mining:

Mining of minerals, whether major or minor have a direct bearing on the hydrological regime of the area. Besides, affecting the availability of water as a resource, it also affects the quality of water through direct run off going into the surface water bodies and infiltration / leaching into groundwater. Further, groundwater withdrawal, dewatering of water from mine pit and diversion of surface water may cause surface and sub surface hydrologic systems to dry up. An ideal situation would require that quarrying should be restricted to unsaturated zone only above the phreatic water table and should not intersect the groundwater table at any point of time. However, from the point of view of mineral conservation, it may not be desirable to impose blanket ban on mining operation below groundwater table.

It is, therefore, recommended that detailed hydro-geological report should be prepared in respect of any mining operation for minor minerals to be undertaken below groundwater table. Based on the findings of the study so undertaken and the comments / recommendations of Central Ground Water Authority / State Ground Water Board, a decision regarding restriction on depth of mining for any area should be taken on case to case basis.

4.8 Uniform Minor Mineral Concession Rules:

The economic value of the minor minerals excavated in the country is estimated to contribute to about 9% of the total value of the minerals whereas the non metallic minerals contribute to about 2.8%. Keeping in view the large extent of mining of minor

minerals and its significant potential to adversely affect the environment, **it is recommended that Model Mineral Concession Rules may be framed for minor minerals as well and the minor minerals may be subjected to a simpler regulatory regime, which is, however, similar to major minerals regime.**

4.9 River Bed Mining:

4.9.1 Environment damage being caused by un regulated river bed mining of sand, bazari and boulders is attracting considerable attention including in the courts. The following recommendations are therefore made for river bed mining.

- (a) **In the case of mining leases for river bed sand mining, specific river stretches should be identified and mining permits / lease should be granted stretch wise, so that the requisite safeguard measures are duly implemented and are effectively monitored by the respective Regulatory Authorities.**
- (b) **The depth of mining may be restricted to 3 m / water level, whichever is less.**
- (c) **For carrying out mining in proximity to any bridge and/ or embankment, appropriate safety zone should be worked out on case to case basis, taking into account the structural parameters, locational aspects, flow rate etc. and no mining should be carried out in the safety zone so worked out.**

5.0 Conclusion:

Mining of minor minerals, though individually, because of smaller size of mine leases is perceived to have lesser impact as compared to mining of major minerals. However, the activity as a whole is seen to have significant adverse impacts on

environment. It is, therefore, necessary that the mining of minor minerals is subjected to simpler but strict regulatory regime and carried out only under an approved framework of mining plan, which should provide for reclamation and rehabilitation of the mined out areas. Further, while granting mining leases by the respective State Governments, location of any eco-fragile zone(s) within the impact zone of the proposed mining area, the linked Rules / Notifications governing such zones and the judicial pronouncements, if any, need be duly noted. The Union Ministry of Mines along with Indian Bureau of Mines and respective State Governments should therefore make necessary provisions in this regards under the Mines and Minerals (Development and Regulation) Act, 1957, Mineral Concession Rules, 1960 and adopt model guidelines to be followed by all the States.

Annexure-I

No. Z-11012/3/2009-IA.II(M)
Government of India
Ministry of Environment and Forests

Paryavaran Bhavan
CGO Complex, Lodi Road,
New Delhi-110003

Dated: 24th March, 2009

ORDER

Sub: Environmental aspects of quarrying of mining minerals – Evolving of Model Guidelines.

Cases have been coming to light from various parts of the country regarding damage to lakes, river beds and groundwater leading to drying up of water beds and causing water scarcity on account of quarry / mining leases and mineral concessions granted under the Mineral Concession Rules framed by the State Governments under Section 15 of the Mines and Minerals (Development and Regulation) Act, 1957. It appears that there is less attention on environmental aspects of mining of minor minerals as the leases / concessions individually are considered to have relatively small impact, although their collective impact in a particular area over a period of time may be significant.

In the above background, it has been decided to constitute a Group under the Chairmanship of Secretary (E&F) to look into the environmental aspects associated with mining of minor minerals. The composition of the Group is as under:-

- | | | | |
|----|---------------------------------------|---|----------|
| 1. | Secretary (E&F) | - | Chairman |
| 2. | Representative of M/o Mines | - | Member |
| 3. | Representative of M/o Water Resources | - | Member |
| 4. | Representative of CGWA | - | Member |
| 5. | Secretary (Env.), Govt. of Rajasthan | - | Member |
| 6. | Secretary (Mines), Govt. of Rajasthan | - | Member |

7.	Secretary (Env.), Govt. of Haryana	-	Member
8.	Secretary (Mines), Govt. of Haryana	-	Member
9.	Secretary (Mines), Govt. of Jharkhand	-	Member
10.	Secretary (Env.), Govt. of Uttarakhand	-	Member
11.	Secretary (Mines), Govt. of Chhattisgarh	-	Member
12.	Secretary (Env.), Govt. of Karnataka	-	Member
13.	Secretary (Mines), Govt. of Tamil Nadu	-	Member
14.	Secretary (Env.), Govt. of Gujarat	-	Member
15.	IGF (FC), MoEF	-	Member
16.	Advisor (NB), MoEF	-	Member Secretary

2. The terms of reference of the proposed Group will be as under:

- (i) To consider the environmental aspects of mining of minor minerals (quarrying as well as river bed mining) for their integration into the mining process.
- (ii) Specific safeguard measures required to minimize the likely adverse impacts of mining on environment with specific reference to impact on water bodies as well as groundwater so as to ensure sustainable mining.
- (iii) To evolve model guidelines so as to address mining as well as environmental concerns in a balanced manner for their adoption and implementation by all the mineral producing States.

3. The tenure of the Group will be for 6 months or till the Group submits its report / recommendations whichever is earlier. The Group may submit interim report, if so decided.

4. The Chairman of the Group may co-opt / invite any other Expert for the meeting as it may deem appropriate.

This issues with the approval of the competent authority.

Sd/-..
(Dr. S.K. Aggarwal)
Director

To

1. PPS to Secretary (E&F)

2. The Secretary, Ministry of Mines, Shastri Bhawan, New Delhi with a request to nominate a suitable Officer for the Group.
3. The Secretary, Ministry of Water Resources, Shram Shakti Bhawan, Rafi Marg, New Delhi with a request to nominate a suitable Officer for the Group.
4. The Secretary, Central Ground Water Authority (CGWA), Kasturba Gandhi Marg, New Delhi with a request to nominate a suitable Officer for the Group.
5. The Secretary (Environment), Govt. of Rajasthan, Secretariat, Govt. of Rajasthan, Jaipur-302 005.
6. The Secretary (Mines), Govt. of Rajasthan, Secretariat, Govt. of Rajasthan, Jaipur-302 005.
7. The Secretary (Environment), Govt. of Haryana, Secretariat, Chandigarh.
8. The Secretary (Mines), Govt. of Haryana, Secretariat, Chandigarh.
9. The Secretary (Mines), Govt. of Jharkhand, Secretariat, Ranchi.
10. The Secretary (Environment), Govt. of Uttarakhand, Secretariat, Dehradun.
11. The Secretary (Mines), Govt. of Chhattisgarh, Secretariat, Raipur.
12. The Secretary (Environment), Govt. of Karnataka, Secretariat, Bangalore.
13. The Secretary (Mines), Govt. of Tamil Nadu, Secretariat, Chennai.
14. The Secretary (Environment), Govt. of Gujarat, Sachivalaya, Gandhi Nagar.
15. IGF (FC), MoEF
16. Advisor (NB), MoEF

Copy for information to:-

1. PS to Principal Secretary to Prime Minister
2. PS to MOS (E)
3. PS to AS (JMM)

Ministry of Environment & Forests
(IA Division)

Sub: Summary record of the 1st Meeting of the Group to evolve model guidelines regarding environmental aspects of quarrying of minor minerals.

The first meeting of the Group constituted to evolve model guidelines regarding environmental aspects of quarrying of minor mineral was held on 7th July, 2009 at Paryavaran Bhawan, New Delhi under the Chairmanship of Shri Vijai Sharma, Secretary (E&F). The list of participants is annexed.

Welcoming all the participants, the Secretary (E&F) & the Chairman of the Group briefly highlighted the genesis for constituting the said Group. The Chairman said that while projects relating to major minerals are subjected to detailed EIA process; however, the projects relating to minor minerals, although covered under the provisions of the EIA Notification, 2006, do not address the environmental concerns and issues comprehensively. He pointed out that quarrying / mining of minor minerals have a potential to have significant adverse impact on river beds and groundwater leading to drying up of water beds. He further observed that individual mines of minor minerals, being small in size may have insignificant impacts; however, their collective impacts, taking into consideration various mines on a regional scale may have significant adverse impacts. Having recognized the potential environmental issues associated with mining of minor minerals, the said Group has been constituted. It was also brought out by the Chairman, in his opening remarks that some of the members have sent their inputs which have been collated. It would, therefore be necessary to consider these inputs and brainstorm on the various issues and come out with a comprehensive list of issues which could be deliberated in depth and discussed to find a way forward for evolving guidelines, which could be adopted and followed by all the States / UTs to address the environmental concerns for ensuring sustainable and scientific mining of minor minerals.

After the opening remarks of Chairman, a presentation was made by Director (Mining), Ministry of Environment & Forests, which highlighted the genesis of constitution of the Group, its terms of reference, the issues brought out in the inputs received from various members of the Group and based on their input and the experience and expertise available in house, the possible issues for consideration of the Group were brought out.

The issues so brought out inter-alia included; (i) the need to relook the definition of minor mineral, (ii) minimum size of lease for adopting eco friendly scientific mining practices, (iii) period of lease, (iv) cluster of mine approach for addressing and implementing EMP in case of small mines, (v) depth of mining to minimize adverse impact on hydrological regime, (vi) requirement of mine plan for minor minerals, similar to major minerals, and (vii) reclamation of mined out area, post mine land use, progressive mine closure plan etc.

The issues were deliberated and discussed by all the participants present during the meeting. The Chairman requested all the participants to send their views comments and inputs on the various issues discussed during the meeting as also on any additional issue relevant to the subject within 15 days so that a draft report could be prepared and circulated to all the members for their consideration and discussion thereafter before its finalization. All the participants agreed to send their inputs within a week to 10 days.

The meeting ended with a vote of thanks to the Chair.

Annexure

List of Participants

1. Shri Vijai Sharma, Secretary (E&F) - Chairman
2. Shri J.M. Mauskar, Additional Secretary, MoEF
3. Shri A.R. Singh, CCF(Environment), Govt. of Uttarakahnd
4. Shri Sankatha Prasad, Additional Secretary, Govt. of Rajasthan
5. Shri V.N. Baitha, Addl. Director (Mines), Govt. of Jharkhand
6. Dr. V.K. Joshi, A.S.O. UEPPCB, Dehradun
7. Shri Ravinder Kumar, CCF, Govt. of Uttarakhand
8. Shri Kanwerpal , Secretary (Ecology & Env), Govt. of Karnataka
9. Shri V.K. Mishra, Joint Director, Directorate of Geology & Mining, Govt of Chhattisgarh.
10. Shri Ram Mohan Mishra, Joint Secretary, M/o Water Resources, New Delhi
11. Shri R.K. Sinha, Controller of Mines, Indian Bureau of Mines, Nagpur
12. Shri B.R.K. Ranga, Govt. of Rajasthan
13. Shri S. Bhattacharya, Scientist D, Central Ground Water Authority, New Delhi
14. Ms Mythili K. Rajendran, Deputy Secretary (Mines), Industries Department, Govt. of Tamil Nadu
15. Shri Radhe Shyam, Scientist (Env), Govt. of Haryana
16. Dr. S.K. Nanda, Principal Secretary, Govt. of Gujarat
17. Shri Pravesh Sharma, State Mining Engineer, Mines & Geology Department, Govt. of Haryana
18. Dr. Nalini Bhat, Advisor, MoEF
19. Dr. S.K. Aggarwal, Director, MoEF
