

**A report on Workshop on Threshold Value of Minerals for Northern States
Organized by Indian Bureau of Mines, Ministry of Mines, Government of India
at Ahmedabad, Gujarat**

1.0 **Introduction:** Indian Bureau of Mines is a subordinate department under the Ministry of Mines, Govt. of India and is responsible to ensure Scientific and Systematic mining, Conservation of Minerals, Protection of Environment in 'major' minerals in the country. To ensure of conservation of minerals, Indian Bureau of Mines has initiated various measures, issued guidelines and also carried out Research and Development study for utilization low grade minerals. Recognising the importance of "today's waste is tomorrow's wealth", Indian Bureau of Mines is notifying **Threshold Value of Minerals (THV)** from time to time for important minerals. Threshold value of minerals defined in Minerals (Evidence and Mineral Contents) Rules 2015 is the limits prescribed by the Indian Bureau of Mines from time to time based on the beneficiability and marketability of a mineral for a given region and given time, below which the material obtained after mining can be discarded as waste. The first notification of threshold values of minerals was issued by Indian Bureau of Mines in 1990. Subsequently, Indian Bureau of Mines has revised the threshold values in October 2009. Since last notified threshold values of minerals in 2009, many representations have been received from various mining companies and stake holders, requesting Indian Bureau of Mines to review and revise the threshold values of minerals. Therefore, Indian Bureau of Mines decided to hold the workshops across the country in order to take stock of the situation and assess the stakeholder's views through deliberations. Fourth such workshop for Northern States comprising of Gujarat, Rajasthan, Himachal Pradesh, Uttarakhand & J & K etc. was organized at GMDC Auditorium, Khanij Bhavan, 132 Ft. Ring Road, Near University Ground, Vastrapur, Ahmedabad-380052, Gujarat on 7th October 2017 for covering Iron Ore, Manganese Ore, Limestone, Bauxite, Apatite & Rock Phosphite, Fluorite and Wollastonite minerals. About 103 delegates participated in the aforesaid workshop.

2.0 **Inaugural Session**

2.1 Shri. Arunkumar Solanki, IAS, Managing Director, Gujarat Mineral Development Corporation (GMDC) was Chief Guest while Shri Ranjan Sahai, Controller General, IBM presided over the function. At the outset, to mark the inauguration of the workshop, traditional lamp was lightened at the hands of dignitaries. Shri. K.S. Yadav, Regional Controller of Mines, Indian Bureau of Mines, Gandhinagar, Gujarat welcomed the dignitaries and participants. He briefed the past history of threshold value of minerals in India and highlighted the importance of threshold value in today's context in minerals industry. He also focussed on maximum utilisation of minerals with zero waste mining concepts.

2.2 Shri S.K.Adhikari, Chief Mining Geologist, IBM, Nagpur in his speech in stated that this is the 4th consecutive workshop during the year starting from Goa,

Noamundi and Bhubaneshwar. He expressed that during the workshop whatever suggestions of participants are there, it will be finally deliberated at Nagpur to finalise the revised threshold value of minerals. He highlighted various important aspect of threshold value of mineral including present threshold value with respect to different minerals being mined in the Northern States. Shri Adhikari also requested to the forum, to submit valuable suggestions/opinion by stakeholders after going through the proceedings of various workshops displayed on IBM website.

- 2.3 Dr. P K Jain, Chief Mineral Economist, IBM, Nagpur in his address emphasised on the technology of zero waste mining as per National Mineral Policy 2008 / Inter generational equity and National Minerals Inventory. He pointed out that, due to lowering of Iron ore threshold values in 2009 there was significant enhancement in reserves & resources..
- 2.4 Smt. Ritu Singh, Additional Director (Technical), Commissionerate of Geology & Mining (CGM) and Guest of Honour in her address, stressed that the workshop would be highly beneficial for the entire mining industry in Gujarat in terms of getting key inputs from the industry for revising the threshold value of minerals.
- 2.5 Shri Arunkumar Solanki, IAS, Managing Director, GMDC and Chief Guest of the function delivered his speech and highlighted the importance of conserving the minerals for the future generation and he said that minerals must be utilised judiciously as the resources are finite in nature and GMDC always stands with regulatory agencies like IBM, CGM for taking any R & D Project and implementation of new technology for mineral conservation.
- 2.6 Shri Ranjan Sahai, Controller General, IBM and President of function in his presidential address expressed that Gujarat State is among one of the 12 major minerals rich States and hence the workshop is being organised for the Northern part of the country in Gujarat. He informed the various changes that industry has been passing through and the technological changes that IBM has brought in the last few years. He deliberated on the Star Rating of Mines, Mining Tenement System (MTS), Mining Surveillance System (MSS) and amendment in rules and regulations..

Further, he also informed that, Mining Surveillance System has been implemented by IBM for the major minerals and capacity building programme of the various States is also being carried out so that States can implement Mining Surveillance System for the minor minerals too. Focussing on the skill development, he said that, IBM has already opened skill development centres at Udaipur and Kolkata and will shortly open third skill development centre in the Varanasi. These centres will impart training to the industry as well as to the States on the various technical aspects / skills.

3.0 **Technical Sessions:** In technical session of the workshop representatives from the various mining industry along with officials from Indian Bureau of Mines deliberated upon the existing threshold value of the minerals notified in 2009 and suggestions were received from mining industries on the threshold value of minerals like Iron Ore, Manganese Ore, Limestone, Bauxite, and Fluorite. The technical discussion is detailed as below.

3.1 **Technical Sessions-I: Iron Ore, Limestone, Manganese Ore, Bauxite and Fluorite.**

The first technical session was held for Iron Ore, Manganese , Bauxite, and Fluorite minerals. The session was co-chaired by Shri D U Vyas, Sr. General Manager (Geology), GMDC and Shri Sunil Pandey, DGM (Mines) M/s. Jindal Saw Ltd.

3.1.1 Shri Parag Tadlimbekar, Superintending Mining Geologist, IBM, Nagpur conducted technical sessions and made a detailed presentation on “Revision of Threshold Value of Minerals”. He highlighted the importance of threshold value of minerals and compared the threshold value of various minerals notified by IBM in year 1990 and 2009.

3.1.2 The second presentation was delivered by Dr. P K Jain, Chief Mineral Economist, IBM and he focussed on conservation of minerals by zero waste mining as per National Mineral Policy 2008. During the presentation, he made international comparison of various minerals. He further, emphasised about 100% extraction of minerals in the country namely Australia, Japan and Sweden. He also said that, threshold limit on judicious basis will avoid storage of non-usable minerals resulting in environmental related problems.

3.1.3 Shri Sunil Pandey, Head Mines, M/s. Jindal Saw Ltd. delivered his presentation on Iron Ore in view of existing and anticipated threshold values of Iron ore. During presentation, he give introduction on magnetite ore being mined by them in Bhilwara district of Rajasthan. He briefed that, this is first and large scale mechanised mine of Iron ore in Rajasthan. He also briefed on total reserves and resources scenario of Magnetite ore in the region, production pattern being adopted by JSW in their existing mine and total Magnetite ore production carried out so far. He also pointed out that, most of the Magnetic deposits are below 40% Fe content which is below the threshold value of the Hematite Iron Ore i.e. 45% and as per the current grade of Magnetite Ore, it comes under waste category. He also highlighted that, currently the royalty on Iron Ore Concentrate is based on ad valorem basis of Hematite Iron Ore which is very high considering very low grade Magnetite ore. He also added that, there is high processing cost of Magnetite Ore and requested the house for introduction of threshold value for Magnetite Ore as Fe 20%. He also suggested, the introduction of separate grading structure of low grade iron ore i.e. Fe 20 to 40%, re-introduction of separate of grading

structure of concentrate produced from low grade iron ore containing Fe 40% or less as existed up till 2009 and there should be no royalty for mining and processing below 20% Fe.

- 3.1.4 The fourth presentation was delivered by Shri D U Vyas, Sr. General Manager (Geology), GMDC on threshold value of Bauxite, Fluorspar and Manganese ore. He focussed and suggested that various factors may also be considered while revising threshold values of minerals like demand and supply scenario of minerals in the country, region-wise geology of the areas, economical viability, availability of technology/R & D, minerals development, environmental related issues and mineralogical and petrological aspects of deposits. He suggested for maintaining the same threshold value as of 2009 for bauxite, manganese and fluorspar. He also highlighted the efforts put by GMDC for utilisation of fine dust of bauxite in cement industry.
- 3.1.5 Shri S K Upadhyay, DGM, Mines of M/s. Ashapura Group of Industry invited attention and emphasised on consideration of market need, the bauxite having less than 38% alumina (Al_2O_3) are not having demand in market in present scenario. Ashapura Group of mines utilised the raw bauxite having alumina content 35 to 37% by blending with little bit good quality and upgrade composite quality up to 38% Al_2O_3 . He expressed that, in future, the demand of bauxite in domestic as well as export may go up to 30% Al_2O_3 and he proposed that threshold value of Bauxite should be kept at 30% Al_2O_3 and reactive silica 5% max.
- 3.1.6 Last presentation of this session was made by Shri Abhishek Tripathi, M/s. Radhakrishna Minerals and Mines on Bauxite. During presentation, he briefed about geological formation of Kheda with respect to occurrences of Bauxite mineralisation in different parts of Kheda district. He also gave the statistics on total number of mines being operated in Kheda district and total reserves/resources of Bauxite existing in the area. Being low grade (aluminous laterite of ferruginous Bauxite), he suggested threshold value of minerals for Kheda district should be considered on regional basis.

3.2 **Technical Sessions-II : Limestone**

The second technical session was held for Cement and Chemical grade Limestone. The session was co-chaired by Shri.N.V.Nitnaware, Dy. Director General, GSI, Shri Ajit Ostwal, Sr. Vice President, Ultra Tech Cement Ltd, Mumbai and Shri P.N. Rao, President, Gujarat Mineral Industries (GUJMIN).

- 3.2.1 In the beginning of this session, first presentation was made by Shri Deepak Mahule, Asstt. Vice President, of M/s. Ultratech Cement Ltd. In view of revising threshold value of Limestone minerals, he highlighted and urged that following considerations should be adopted while revising threshold value of Limestone

- Even after use of pet coke available, screening of run-of-mine, the cut off limit of CaO is around 40% as against threshold value of 34% - 35% for different regions.
- Due to better process control limiting value of MgO usage can be enhanced from the present 4% to 5% max.
- Deposits with high SO₃ content restricts usage of pet coke as resulting in consumption of limestone with high CaO% only thus limiting the use of low grade limestone.
- Coastal deposits in Gujarat having high SO₃ and Cl content cannot be utilised fully even after having by-pass system. Present clinker manufacturing process restricts usage of SO₃ more than 0.8% and Cl more than 0.16% based on their experience of 20-25% bypass system.
- Further, he added that, there is no much technological development in beneficiation techniques for upgrading limestone quality that will bring down CaO usage at threshold value.
- Resources should be considered up to a cut off of 38% CaO, 5% MgO, SO₃≤0.8% and Cl<0.16% considering the scope of beneficiation. These limits can be reviewed again after a period of 5 years.

3.2.2 The second presentation was made by Shri Deepak Kalla and Shri Rajneesh Kothari on limestone deposit of Nimbahera, Chittorgarh dist. of Rajasthan. They requested to classify threshold value of limestone region wise based on occurrence of limestone deposit(formations like Aravalli, Vidhyan etc.) based on present practices adopted for manufacturing of cement to overcome the problem of land degradation and environment by way of disposal as waste and used for other purpose. He also focussed on local and regional geology of formation of Nimbahera series of limestone deposit. Hence, for Nimbahera limestone, their opinion was to raise threshold value of limestone from 34% CaO to 38% CaO.

3.2.3 Third presentation of this session was made by Shri S. Banerjee of M/s. Nuvoco Cement, Rajasthan. He emphasised on Hon. NGT order on restriction of use of petcoke. Hence, due to restriction on petcoke there will be increase in operating cost for manufacture of cement. He suggested that, for increase in threshold value of CaO up to 41% and silica content 15% max may be considered.

3.2.4 Last presentation of this session was made by Shri C M Dwivedi, M/s. Tata Chemicals Ltd., Porbandar, Gujarat on threshold value of chemical grade limestone. He highlighted that cut-off grade of limestone for soda ash plant is CaCO₃ more than 92% and silica more than 4% which is already very much on higher side. In-house R &D (Effluent solid filtration), ESF technology has been developed to recover CaCO₃ from effluent discharge of soda ash plant. ESF cakes are utilised in cement manufacturing. Thus solid waste of soda ash is reused in cement manufacturing addressing environmental concern of solid waste disposal and consideration of cement grade Limestone. Undersize

limestone (-50 mm) is used in captive cement plant which is generated during the process of limestone sizing for soda ash plant. He further added, there is 100% utilisation of mine waste in their mine.

4.0 **Concluding Session:**

- 4.1. Shri Ranjan Sahai, Controller General chaired the concluding session along with Shri. S.K. Adhikari, Chief Mining Geologist, Shri. K.S. Yadav, Regional Controller of Mines, Gandhinagar, Dr. P K Jain, Chief Mineral Economist, IBM, Nagpur and Smt. Ritu Singh, Additional Director (Technical), Commissionerate of Geology & Mining. Shri Parag Tadlimbekar, Suptdg. Mining Geologist, IBM summarised the deliberation of the day's workshop and requested the participants to submit further suggestion if any with technical analysis supported by scientific data. Shri Ranjan Sahai, Controller General, IBM addressed the queries raised by various participants and assured that all their concerns will be taken care in determining the threshold value of minerals.
- 4.2 Shri. K.S. Yadav, Regional Controller of Mines, Gandhinagar, IBM presented vote of Thanks and thanked all the participants and speakers for their valuable contribution and fruitful discussion in the workshop.

The workshop ended with a vote of thank to the chair.

**List of participants in Threshold Value Workshop held at GMDC
Auditorium, Ahmedabad, Gujarat on 7th October 2017**

| Sr. No. | Name | Designation | Organisation |
|---------|-----------------------------|--------------------------------|------------------|
| 1 | Shri Ranjan Sahai | Controller General | IBM, Nagpur |
| 2 | Shri S.K.Adhikari | Chief Mining Geologist | IBM, Nagpur |
| 3 | Dr. P.K.Jain | Chief Mineral Economist | IBM, Nagpur |
| 4 | Shri K. S. Yadav | Regional Controller of Mines | IBM, Gandhinagar |
| 5 | Shri P.M Tadlimbekar | Suprintending Mining Geologist | IBM, Nagpur |
| 6 | Shri T. K. Sonarkar | SMG | IBM, Nagpur |
| 7 | Shri A.D Gupta | AMG | IBM, Nagpur |
| 8 | Shri Sanjay M Girhe | SMG | IBM, Gandhinagar |
| 9 | Shri D. D. Bhardwaj | Sr. ACOM | IBM, Gandhinagar |
| 10 | Shri Gumna Ram | Sr. ACOM | IBM, Gandhinagar |
| 11 | Dr. N. K. Mathur | AMG | IBM, Gandhinagar |
| 12 | Shri Snehal Patel | STA (ME) | IBM, Gandhinagar |
| 13 | Shri Umesh Sharma | Stenographer | IBM, Gandhinagar |
| 14 | Shri Chuna Ram | MTS | IBM, Gandhinagar |
| 15 | Shri M. Choudhary | SCD | IBM, Gandhinagar |
| 16 | Shri Arunkumar Solanki, IAS | Managing Director | GMDC Ltd. |
| 17 | Shri A.L. Thakor | Sr.GM (PRD, LP, M&M) | GMDC Ltd. |
| 18 | Shri L. Kulsrestha | Sr.GM (Fin)/CFO, I/C | GMDC Ltd. |
| 19 | Shri A.K. Makadia | GM (Mktg& CSR & IT) | GMDC Ltd. |
| 20 | Shri D.U. Vyas | GM (Geology) | GMDC Ltd. |
| 21 | Shri Joel Evans | Co. Sec. | GMDC Ltd. |
| 22 | Shri PulakMathur | Dy.GM(Buss. Dev.) | GMDC Ltd. |
| 23 | Shri S.G.Patel | GM (Project) –Gadhsisha | GMDC Ltd. |
| 24 | Shri G.K.Patel | GM (Project) – Kadipani | GMDC Ltd. |
| 25 | Shri N.B.Patel | I/C GM (Project) –Mevasa | GMDC Ltd. |
| 26 | Shri Piyush Shah | Geologist | GMDC Ltd. |
| 27 | Shri Dhaval Patel | Geologist | GMDC Ltd. |
| 28 | Shri Anil Patel | Geologist | GMDC Ltd. |
| 29 | Shri J. D. Raj | Geologist | GMDC Ltd. |
| 30 | Shri S. N. Patil | Geologist | GMDC Ltd. |
| 31 | Shri H. M. Tailor | HR | GMDC Ltd. |
| 32 | Shri Bharat Kewat | IT Dep. | GMDC Ltd. |

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|----|--------------------------|----------------------|----------------------------|
| 33 | Shri S. G. Bera | Manager | GMDC Ltd. |
| 34 | Shri R. M. Shah | Manager | GMDC Ltd. |
| 35 | Shri D. S. Pathak | Sr Manager (Geology) | GMDC Ltd. |
| 36 | Shri P. R. Shah | Sr Manager (Geology) | GMDC Ltd. |
| 37 | Shri G. C. Dag | Sr. Manager (Surevy) | GMDC Ltd. |
| 38 | Shri Shital Patel | Technical | GMDC Ltd. |
| 39 | Shri K. A. Sahu | Technical | GMDC Ltd. |
| 40 | Shri Ankur | Management Trainee | GMDC Ltd. |
| 41 | Shri Vijay Singh Rathore | AVP (Mines) | ABG Cement Ltd |
| 42 | Shri Lalasanjiva Prasad | Geologist | ACC Ltd |
| 43 | Shri Y. K. Sharma | MD | Almora Magnesite Ltd. |
| 44 | Shri Ajay Kumar Jain | Dy. GM | Ambuja Cement ltd. |
| 45 | Shri Ramsingh Chauhan | Dy. GM (MR) | Ambuja Cement ltd. |
| 46 | Shri Akhilesh Singh | GM, Mines | Ambuja Cement ltd. |
| 47 | Shri Santanu Chatterjee | Manager Geology | Ambuja Cement ltd. |
| 48 | Shri Manish Joshi | Agent (Mines) | Atulya, Gujarat |
| 49 | Shri P.S. Bhatt | T.A. | Atulya, Gujarat |
| 50 | Shri Jaydip Singh | Project Scientist | BISAG |
| 51 | Shri Vijay Shah | Project Scientist | BISAG |
| 52 | Shri J.V. Bhatt | Consultant | BMC Ahmedabad |
| 53 | Shri S. K. Upadhyay | DGM (Mines) | Bombay Minerals Ltd |
| 54 | Shri Vivek Shah | Manager (Geology) | Bombay Minerals Ltd |
| 55 | Shri Rakesh Dodia | Mining Engg. | CarborundamUni.Ltd. |
| 56 | Shri Abhay Kumar Sahu | Project Head | CarborundamUni.Ltd. |
| 57 | Shri A. Y. Talat | Assi. Geology | CGM, Gujarat |
| 58 | Shri Sanjay Dave | Geologist | CGM, Gujarat |
| 59 | Dr. S. K. Handw | ADO | CMA |
| 60 | Shri Arjun Singh | Mines Manager | D C W Ltd |
| 61 | Shri S. K. Tiwari | Manager, Mines | Dalmia Refractories Ltd |
| 62 | Shri R. K. Pathak | Geologist | GHCL Ltd. |
| 63 | Shri K. J. Dave | Ex. Sec. | GMIA |
| 64 | Shri N. V. Nitre | DDG | GSI |
| 65 | Shri D. Varma | Sr. Geologist | GSI |
| 66 | Rajeev Ranjan Singh | DGM(Mines) | Gujarat Sidhee Cement Ltd. |
| 67 | Shri Deepak Kalla | Dy. GM | J K Cement Ltd. |
| 68 | Shri Rajneesh Kohari | Manager (Geology) | J K Cement Ltd. |

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|-----|------------------------|--------------------------------|---------------------------|
| 69 | Shri A. K. Gupta | DGM (Mines) | J K Lakshmi Cement Ltd. |
| 70 | Shri R. C. Nyati | VP Mines | J K Lakshmi Cement Ltd. |
| 71 | Shri Jagdish T Shah | Agent | JaishreeKirshna |
| 72 | Shri Lalit Mohan Garg | Head Technical | Jindal Saw Ltd. |
| 73 | Shri Sunil Pandey | Head of Mines | Jindal Saw Ltd., Bhilwara |
| 74 | Dr. T.K. Shah | AP OBG | Medical Collage Raigarh |
| 75 | Dr.Dipika Singh | AP OBG | Medical Collage Raigarh |
| 76 | Shri K. N. Patel | Advisor | Nirma Ltd. |
| 77 | Shri Harshit Shah | Geologist | Nirma Ltd. |
| 78 | Shri Govind Khatri | Sr. Geologist | Nirma Ltd. |
| 79 | Shri S. Banerjee | DGM, Mines | NUVOCO (Nirma Ltd.) |
| 80 | Shri Abhishek Tripathi | Geologist | Radha Krishna Mines |
| 81 | Shri M. K. Choubay | DGM (Mines) | Sanghi Cement Ltd. |
| 82 | Shri Gaurang Bhatt | Sr. VP | Sanghi Cement Ltd. |
| 83 | Shri P. K. Deshpandey | HOD, Mines | Saurashtra Cements Ltd |
| 84 | Shri Siyaram Mishra | Sr. Geologist | Saurashtra Cements Ltd |
| 85 | Shri A. R. Panda | Sr. Manager Mines | Saurashtra Cements Ltd |
| 86 | Shri S. N. Singh | MANAGER | Shri Digvijay Cement Ltd |
| 87 | Shri S. K. Bhakta | AVP | Tata Chemicals Ltd. |
| 88 | Shri MayankShrivastava | Dy. Manager – Mining | Tata Chemicals Ltd. |
| 89 | Shri C. M. Dwivedi | Sr. Manager Geology and Mining | Tata Chemicals Ltd. |
| 90 | Shri Vivek Shukla | Geologist | Ultratech Cement Ltd. |
| 91 | Shri Deepak Mahule | AVP | Ultratech Cement Ltd. |
| 92 | Shri Vinay S Chitale | Sr. General Manager | Ultratech Cement Ltd. |
| 93 | Shri AjitOstwal | Sr. Vice President | Ultratech Cement Ltd. |
| 94 | Shri VivekUplanchiwar | Vice President & Agent | Ultratech Cement Ltd. |
| 95 | Shri Rajesh Sambrer | VP Mines | Ultratech Cement Ltd. |
| 96 | Shri Ganpat Singh | Geologist | Wolkem Ind. Ltd. |
| 97 | Shri O.P. Rajpurohit | DGM | Wonder Cement Ltd. |
| 98 | Smt. Parul | Project Manager | BISAG |
| 99 | Shri Baroria | Editor | Daily Newspaper |
| 100 | Shri Jalin | Editor | DD News |
| 101 | Shri B. T | Editor | Hindustan Samachar News |
| 102 | Shri Narendra Joshi | Editor | Nirmal Metro |
| 103 | Shri R. M. Vyas | Editor | Vani Pravah |



Distinguished Guests on the Dias from left Shri K. S. Yadav, Regional Controller of Mines, IBM, Gandhinagar. Smt. Ritu Singh, Additional Director (Technical), Commissionerate of Geology & Mining, Shri Ranjan Sahai, Controller General, IBM, Shri Arunkumar Solanki, IAS, Managing Director, (GMDC), Shri S. K. Adhikari, Chief Mining Geologist, IBM and Dr. P.K. Jain, Chief Mineral Economist.



Lightening the lamp by the Guests



Participants interacting in the workshop

Speakers and presenters of the Threshold value Workshop at Ahmedabad



Shri Ranjan Sahai, Controller General, IBM.



Shri. Arunkumar Solanki, IAS, Managing Director, GMDC



Smt. Ritu Singh, Additional Director (Tech.), CGM.



Dr. P K Jain, Chief Mineral Economist, IBM



Shri S.K. Adhikari, Chief Mining Geologist, IBM



Shri. K.S. Yadav, Regional Controller of Mines, IBM



Shri Parag Tadlimbekar, Suptdg. Mining Geologist, IBM



Shri Sunil Pandey, Head of Mines,
M/s. Jindal Saw Ltd. Rajasthan



Shri D U Vyas, Sr. General Manager
(Geology), GMDC, Gujarat



Shri S K Upadhyay, DGM, Mines,
M/s. Ashapura Group, Gujarat



Deepak Mahule, AVP, M/s.
Ultratech Cement Ltd.



Shri Rajneesh Kothari, Manager
(Geology), M/s. JK Cement Works,
Nimbahera



Shri S. Banerjee, DGM Mines, M/s.
Nuvoco Cement, Rajasthan.



Shri C M Dwivedi, Manager (Geology),
M/s. Tata Chemicals Ltd.,



Shri Abhishek Tripathi, M/s.
Radhakrishna Minerals and Mines

