

**A Report on Workshop on Threshold Value of Minerals for Eastern States  
Organized by Indian Bureau of Mines, Ministry of Mines, Government of  
India at Bhubaneswar, Orissa.**

## **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 the conservation of minerals Indian Bureau of Mines has initiated various measures, issued guidelines and also carried out Research and development studies for utilization of low grade minerals. Recognizing 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 is a cut off value below which mineral obtained after mining can be discarded as waste. The first notification of Threshold value 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 THV 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 value of minerals. Therefore Indian Bureau of Mines decided to hold five work shops across the country in order to take stock of the situation and assess the stake holder's view through deliberations. Third such workshop for Eastern states comprising Orissa was organized at Bhubaneswar on 23.08.2017 for Chromite, Bauxite, Limestone and Graphite minerals.

## **2.0 Inaugural session**

**2.1 Shri Harkesh Meena, Regional Controller of Mines, IBM, Bhubaneswar** welcomed all dignitaries and participants to the workshop. He emphasized the role and objectives of Indian Bureau of mines in implementation of various vital aspects of National Mineral Policy 2008.

**2.2 Shri S. K. Adhikari, Chief Mining Geologist, IBM** threw light on the evolution of the concept of threshold value of various minerals and need for its revision time to time. He appealed that State Government should play vital role to ensure time bound exploration in all the leasehold areas. Shri Adhikari also suggested to submit valuable suggestions/ opinion by stakeholders after going through the proceedings of various workshops displayed on IBM website.

**2.3 Shri Ranjan Sahai, Controller General, IBM** in his presidential address mentioned new initiatives like SDF star rating, Mining Surveillance System, use of Space technology etc., being taken by IBM. Shri Sahai asked to give more thrust on demand-supply, R & D, environmental issues and cost viability aspects during the deliberations on threshold values of minerals. He also highlighted the salient features of Mining Tenement System (MTS) project being undertaken by

Indian Bureau of Mines. He expressed confidence that deliberation of the workshop would be helpful to review and revise the threshold value of minerals.

**2.4 Shri R.K Sharma Principal Secretary to Govt. of Odisha** and Chief Guest of the function suggested to have a balance in mineral conservation and commercial viability in view of the available technology. He acknowledged the IBM's vast experience in the field of mining regulation and development.

**2.5** The Inaugural session ended with vote of thanks proposed by **Shri Parag M. Tadlimbekar, Superintending Mining Geologist, IBM, Nagpur** to all the dignitaries and participating members. The inaugural session was followed by the technical sessions on Limestone, Bauxite, Chromite & Graphite Ore, where the threshold value of these minerals were reviewed and discussed.

### **3.0 Technical Session**

In this technical session of the workshop representatives from the mining industry along with officials from Indian Bureau of Mines deliberated upon the existing threshold value of the above minerals notified in 2009 and suggestions were received from mining industries on the threshold value of minerals- Limestone, Bauxite, Chromite & Graphite Ore. The technical discussion is detailed below.

**3.1 Shri S K Adhikari, Chief Mining Geologist, IBM** In his presentation on Revision of Threshold Value of Minerals, explained how Indian Bureau of Mines had fixed the threshold value for 15 (fifteen) minerals in the year of 1990 and their subsequent revision for the 12 (twelve mineral) in 2009. He gave broad outlook on minerals like Chromite, Bauxite, Limestone and Graphite.

### **LIMESTONE**

**3.2 Shri S. K. Rout, Asst. Executive Director of M/s OCL India Ltd.:-** In his presentation, suggested that, MgO content in limestone may be enhanced to 5.0-5.5% resulting benefits to the industry like automatic up-gradation of existing resource to reserve, enhancement of life of mine, reduction reject ratio, operational flexibility, cost reduction, mineral conservation etc.

**3.3 Shri Sujoy Kundu, Manager Mines of M/s ACC Ltd.:-** In his presentation, suggested that, THV of lime stone may be fixed on CaO: 35% (Min), SiO<sub>2</sub>: 20% (Max), MgO: 4% (Max) & Alkalies-0.5% (Max).

**3.4 Dr. Alok Kumar Mohapatra, Manager (Geology), Bisra Stone Lime Co. Ltd.** Gave a brief account of Dungri Limestone Quarry. He suggested the enhancement of Si O<sub>2</sub> content in lime stone up to 20 % (Max).

**3.5** Dr Alok Mahapatra of M/s Bisra Stone and Lime Company Ltd., stated that captive mines may be sustained with low grade limestone by blending and consuming in their plants. But merchant mining industries are finding it difficult. He suggested that CaO % for the Threshold Value of limestone should be revised to 40 %.

## **BAUXITE**

**3.6 Shri S. K. Pattnaik, DGM, Mines of M/s NALCO Ltd.** Gave an elaborated presentation about mining activity, infrastructure facilities with NALCO etc. In his presentation, has suggested the following revision in the threshold of Bauxite and Aluminous Laterite:

<b>Bauxite</b>	<b>Al<sub>2</sub>O<sub>3</sub>%</b>	<b>+20%</b>	<b>(In place of 30% of existing)</b>
	<b>SiO<sub>2</sub>(T)%</b>	<b>-7%</b>	<b>(Equivalent of 5% reactive silica %)</b>
<b>Aluminous Laterite</b>	<b>Al<sub>2</sub>O<sub>3</sub></b>	<b>&gt;20%</b>	
	<b>SiO<sub>2</sub>(T)%</b>	<b>&gt;7%</b>	

He substantiated the proposal by showing specific borehole data and augmentation of reserves base in their inventory. During this presentation, Shri Mahapatra of M/s Hindalco and others actively participated in interaction regarding the practicability of the approach.

**3.7 Shri Pradyumna Das of M/s Utkal Alumina Ltd. Gave brief account of his company profile.** In his presentation on threshold value of bauxite, he suggested the following revision with respect to the thresh hold limit.

Threshold value of Bauxite	>=40% Al <sub>2</sub> O <sub>3</sub> and <=5% T. Silica
Aluminous Laterite	+20% Al <sub>2</sub> O <sub>3</sub> and >=7% T. Silica

## **CHROMITE**

**3.8 Dr. D.R. Kanungo, Superintending Officer (Ore Dressing), IBM** gave a brief account of beneficiation studies on chromite ores carried out by Indian Bureau of Mines. He suggested thorough characterization of ore before adopting any mineral processing technique for upgradation of low grade ores. With the adoption of technological upgradation, beneficiation of low grade ores, plant and mine rejects, tailings are the need of hour which will be resulting in the augmentation the reserves.

**3.9 Shri Rajesh Patel, Agent and Chief, Sukinda Chromite mines of M/s Tata Steel Ltd.** while making a brief account of chromite mining beneficiation and end use, indicated that the tonnage between 10-15 % Cr<sub>2</sub>O<sub>3</sub> is hardly 0.73 %. He also compared the world lowest grade production is 18 % Cr<sub>2</sub>O<sub>3</sub>, which is more than the present threshold value i.e. 10 %. He further emphasized that the lab test by IMMT indicated possibility of recovery of 44% Cr<sub>2</sub>O<sub>3</sub> from a feed grade of 17- 18% Cr<sub>2</sub>O<sub>3</sub> which cannot be used as stand-alone for producing Ferro Chrome grade chromite ore. M/s Tata Steel Ltd. suggested the upward revision of threshold up to 15 % Cr<sub>2</sub>O<sub>3</sub>. Tata Steel representative and scientist from IMMT, Bhubaneswar participated actively in the interaction on recovery of chrome ore from friable and lumpy zones.

**3.10 Shri P. Behera, Vice President Mines of M/s IMFA Ltd.** gave a brief account on utilization of chrome ore produced from their mines. He also supplemented data on ore characteristics and wall rock characteristics. In his presentation on threshold value of chromite, he has recommended that the threshold value of chromite should be continued as 10% Cr<sub>2</sub>O<sub>3</sub> on viewing the present circumstances.

### **GRAPHITE**

No presentation was made for the graphite. Suggestion received from the mining lessee of Sri Prabhas Chandra Agrawal and Pramod Kumar Agrawal was shown to the house for their opinion. Received suggestion was as follows:

- Threshold limit of amorphous graphite to be revalued.
- Threshold limit of Flaky graphite may be kept at 4% F.C.
- Royalty for graphite below 5% F.C. to be fixed @ Rs.5/- per Tonne to help the extract of the total carbon content in such type of ore.
- Allow to Store such Threshold limit mineral outside the lease hold area which will not be a part of lease hold area.

### **4.0 Question answer during technical Session:**

**Q. What is the resource of +20% Al<sub>2</sub>O<sub>3</sub> and <7% SiO<sub>2</sub> at Panchpatmali Bauxite Mines which is utilized after blending at the refinery?** [ Shri B.K. Mahapatro, DGM, (Geology)]

**Ans:** In reply of same Sri S. K. Pattnaik, DGM, Mines of M/s NALCO said that the Quantity of same is not estimated, however, initially it seems that the quantity of same will be very less, which is automatically got bended with high Grade Bauxite material during the excavation process.

**Q. What is the grade of limestone in M/s OCL Limited is considering as a waste?** [Dr. B. Nayak, CSIR-IMMT, Bhubaneswar.]

**Ans.** Sri S.K. rout replied that presently the material below existing threshold vale is being considered as waste.

Besides that **Dr. B. Nayak, CSIR-IMMT, Bhubaneswar** has given following Suggestion:

**Bauxite:** - Existing 30% Al<sub>2</sub>O<sub>3</sub> may be considered for threshold value along with total silica instead of reactive silica.

**Limestone:** - CaO of 35 % threshold value may not be changed.

**Chromite:** - 10 % Cr<sub>2</sub>O<sub>3</sub> to be kept as the threshold value.

Finally, **Dr. V.G.K.Bhagawan Gumma, Regional Mining Geologist ,IBM Nagpur** summed up all the presentations and deliberations and thanked all the participants for their valuable contribution in the workshop.

The list of participants is enclosed as Annexure.

**Annexure**

**THRESHOLD VALUE WORKSHOP ON 23<sup>RD</sup> AUGUST 2017 AT BHUBANESWAR, ODISHA**

**LIST OF PARTICIPANTS**

<b>S.NO.</b>	<b>NAME</b>	<b>NAME OF MINES / ADDRESSES</b>
	S/SHRI	
1.	RANJAN SAHAI	CONTROLLER GENERAL ,IBM,NAGPUR
2.	R.K.SHARMA	PRICIPAL SECRETARY,GOVERNMENT OF ODISHA
3.	S.K.ADHİKARI	CHIEF MINING GEOLOGIST,IBM,NAGPUR
4.	HARKESH MEENA	REGIONAL CONTROLLER OF MINES,IBM,BBSR
5.	PARAG TADLIMBEKAR	SUPRINTENDING MINING GEOLOGIST,IBM,NAGPUR
6.	Dr. V.G.K.BHAGAWAN GUMMA	REGIONAL MINING GEOLOGIST,IBM,NAGPUR
7.	T.K.SONARKAR	SENIOR MINING GEOLOGIST,IBM,NAGPUR
8.	A.D.GUPTA	ASSISTANT MINING GEOLOGIST,IBM,NAGPUR
9.	SUDIP RANJAN MAZUMDAR	SENIOR MINING GEOLOGIST,IBM,BBSR
10.	DILIP JAIN	JUNIOR MINING GEOLOGIST,IBM,BBSR
11.	PRASHANT SHAHU	SENIOR TECHNICAL ASSISTANT ,IBM,BBSR
12.	SALILA DASH	STENOGRAPHER GRADE I ,IBM,BBSR
13.	DR.ALOK KUMAR MOHAPATRA	MANAGER, BISVA STONE LIME CO. LTD.
14.	BIPIN BOHARI BISWAL, DY. MANAGER	Dy. MANAGER BARGARH CEMENT WORKS & ACC. LTD., BARGARH
15.	S.KUNDU	B.C.W, ACC LTD.,
16.	B.K.MAHAPATRA	HINDALCO, LOHARDAGA
17.	S.CHOUDHURI	GM(MINES) NALCO
18.	S.K.PATNAIK	DGM(MINES) NALCO
19.	PURUSOTTAM DANDIA	UTKAL ALUMINA HINDALCO
20.	AKSHAY KUMAR JENA	UTKAL ALUMINA
21.	GAJENDRA PRASAD SAHU	SR.MANAGER MINES SHIVA CEMENT LTD.
22.	RAHUL KUMAR JHA	SR.MANAGER RESOURCE TCCPL
23.	MD.KHALID	SR.MANAGER, CHOTANAGPUR, GRAPHITE P.LTD.
24.	VICTOR BASU	HINDALCO , LOHARDAGA
25.	TAPAS KUMAR GACAHHAYAR	HINDALCO, SAMRI MINES CHHATTISGARH
26.	DR.UDAYANATH SAHOO	OCL INDIA LTD.
27.	S.K. RAUT	OCL INDIA LTD.
28.	BIJAY KUMAR MAHANTA	JSL.BBSR
29.	SABYASACHI MAHAPATRA	JINDAL CHROMITE MINES, M/S JSL,
30.	SHAKTI BISWAL	JINDAL CHROMITE MINES, M/S JSL,
31.	SUBHRANSU BHUSAN SAHOO	UTKAL ALUMINA
32.	PRADYUMNA DAS	UTKAL ALUMINA
33.	SUBASH CHANDRA JAYASINGH	AGRAWAL GRAPHITE INDUSTGRIES
34.	RAJIB MOHANTY	TATA STEEL LTD., G.....
35.	ASHIS MOHANTY	TATA STEEL LTD.,
36.	MAJOJ KUMAR SINHA	M/S ACL (DBCL), MEGHALAYA
37.	S.C.NAYAK	PROFESSIONAL MINING ENGINEER MINESKETCH CONSULTANTS (P) LTD., BBSR
38.	H.K.SAHOO	PROFESSIONAL GEOLOGIST GEOMAC SOLUTIONS(P) LTD.BBSR

39.	P.S.ACHARYA	PROFESSIONAL GEOLOGIST GEMTERL CONSULTANTS
40.	B.R.B	OMC LTD.
41.	P.R.MISHRA	....
42.	S.SETHI	---
43.	T.P.M	---
44.	C.R.PANI	BALASORE ALLOYS LTD.
45.	S.P.BISWAL	JINDAL STAINLESS LTD.
46.	DR.B.NAYAK	IMMT, BHUBANESHWAR
47.	JAGAMATHU	MMPL
48.	SUNDEEP PRADHAN	PRADHAN INDUSTRIES
49.	R.R.SARPATHY	G M RAMD TATA STEEL
50.	P.L.DAS	B.C.MOHANTY & SONS
51.	S.K.BISWAL	M/S FACOR OSTAPAL CHROMITE MINES
52.	M.C.THOMAS	TATA STEEL
53.	B.K.GIRI	M/S B.C.MOHANTY
54.	S.M.PATRO	GEMTECH CONSULTANTS PVT. LTD.
55.	A.K.PRADHAN	OMC
56.	P.BEHERA	IMFA,BBSR
57.	A.K.CAMANTA	IMFA, BBSR
58.	SIDDHARTA MOHANTY	B.C.MOHANTY & SONS
59.	AJAY KHARE	ACC LIMITED, JHINKPANI
60.	U.K.SINHA, CHIEF EXECUTIVE	M/S MISRILAL MINES PVT. LTD.
61.	RAJESH PATEL AGENT & CHIEF (M)	TATA STEEL SUKINDA



Distinguished Guests on the Dias from left Shri S. K. Adhikari, Chief Mining Geologist, IBM, Shri Ranjan Sahai, Controller General, IBM, Shri R.K.Sharma, Principal Secretary Govt. of Odisha, Shri Harkesh Meena, Regional Controller of Mines, IBM, Bhubaneswar , Shri Parag Tadlimbekar, Superintending Mining Geologist, IBM, Nagpur



Lightening the lamp by the Guests



## Participants in the workshop

