

Gold in Bihar and Gujarat

Until recently Karnataka was the only State producing gold in India, the two producing mines being at Oorgum in Kolar District and Hutti in Raichur district, both falling within the limits of Karnataka State. Although old workings for gold exist in other States of the Indian Union, commercial production of gold has not been attempted in any other State in recent times.

Volcanogenic polymetallic sulphide deposits in other countries are known to be important producers of by-product gold. Indian Bureau of Mines for the first time reported a production of 'secondary' gold in 1985, a footnote to the table explained that it represented by-product gold recovered from copper slimes at Ghatsila plant in Bihar. My efforts to elicit more information from the Bureau as to the source of this gold and the gold content in the ore, did not meet with any success, the Bureau stating it has no information.

Although this question was raised more than four years ago, there is still no effort on the part of the Bureau to trace the source of this gold and make an assessment of this new source and its potential.

Gold in Bihar

While statistics compiled by the Bureau shows gold recovered from copper slimes at Ghatsila smelter of Hindustan Copper, the exact source of ore containing gold values has not been furnished. Massive base metal deposits in other parts of the world are known to have produced substantial amount (as much as 40% of the total gold output) of by-product gold and there is no reason why such source should not be identified and developed in India. We give below (Table 1) details of the reported quantity of by-product gold produced in Bihar and its value. That this much of gold is being produced in Bihar is generally not known.

Table 1. Secondary gold produced from the State of Bihar

Year	Gold recovered (kg)	Gold Value (rupees)
1985	120	19,267,000
1986	111	19,747,000
1987	155	34,535,000
1988	109	26,882,000
1989	90	24,187,000
1990-91	192	50,006,000
1991-92	284	91,267,000
1992-93	291	105,816,000
1993-94	437	157,816,000
1994-95	480	214,326,000
1995-96	375	170,540,000
1996-97	610	260,505,000
1997-98	612	236,160,000

Is it 'Secondary' or 'By-product' Gold?

The categorisation of this production as 'secondary' gold is not strictly correct. The term 'secondary' is normally used for gold obtained from placers, where gold occurs as a product of

weathering and gets concentrated in stream gravels and river alluvium. Gold associated with primary massive sulphides cannot be classed as 'secondary'. It is as much primary as lode gold in quartz veins of deep seated origin. By-product gold is a more appropriate term for gold occurring in association with copper, silver, cobalt etc. The economic importance of a deposit becomes enhanced when correct assessment is made of the value of the associated metals that can be profitably extracted from it.

Gold Production in Gujarat

Monthly statistics of Mineral Production issued by IBM since April 2000 has another surprise in store for us. It shows a production of 5 tonnes of gold from Gujarat making it take a leading position in production of gold in India in 2000-2001. Except for a footnote stating that the increased production is due to gold recovered as by-product during refining of copper extracted from imported copper concentrates by Indo Gulf Corporation Ltd. (unit of Birla Copper) no other details are furnished.

This lack of interest and reluctance in furnishing full information on the new source of gold has resulted in overlooking what could form an important source of gold.

While the Bureau has thought it fit to furnish production data on gold – a 'by-product' recovered in the process of producing refined copper – it does not furnish any information on the tonnage of copper concentrates treated, grade, quantity of copper metal produced and such other details of importance in correctly assessing the significance of this new source. Surprisingly Gujarat does not figure in the list of States producing copper! Incidentally the monthly statistics of gold produced for Gujarat is defective as the figures do not total to make up 5097 kg.

Besides the smelter and refineries operated by Indo Gulf (Birla Copper) and others in Gujarat, another smelter at Tuticorin in Tamil Nadu has started functioning. However, details of copper concentrates imported, country of origin, quantity of copper produced are not furnished. Whether the associated refineries have equipment for the recovery of by-product gold is not clear. As a consequence, Tamil Nadu does not figure either in gold or copper production.

Copper Smelters in Gujarat and Tamil Nadu

Setting up refineries for the production of copper metal in Gujarat and Tamil Nadu from imported concentrates, and production of as much as 5 tonnes of gold as a by-product are by any standard major developments and ought to be highlighted, furnishing fuller details. Instead we find in the Indian Mineral Year Book 2000, which is the latest publication issued by the IBM, the following footnote: "Birla Copper Ltd. and Sterlite Industries consume copper concentrates data for which is not available and hence not included". Can an organization solely charged with the collection of information on minerals shirk its responsibility by an expression of helplessness? How can the summary of mineral production it furnishes be considered adequate in the absence of vital information on the production of copper in the country.

It is obvious that large quantities of concentrates have been imported by smelters operating in the private sector (Birla Copper in Gujarat and Sterlite in Tamil Nadu). The share of Gujarat and Tamil Nadu in this trade is not known. While smelting operation by Birla Copper in Gujarat resulted in a production of as much as 5 tonnes of by-product gold, similar figures for the State of Tamil Nadu are not available. Are we to believe that copper concentrates imported by Sterlite had no gold values or is it because they have not installed a gold recovery plant?

Indian Mineral Yearbook 2000 furnishes information on new plants set up for production of

copper metal. Sterlite Industries (India) Ltd. set up a smelter at Tuticorin in the coastal belt of Tamil Nadu which commenced operation in November 1996 and is the largest producer of continuous copper rods in India. Production of 4,974 tonnes of fine copper in 1997-98 and 45,212 tonnes in 1998-99 is indicated. This production, however, does not figure in the monthly statistics of mineral production. Reason for not including it is not made known.

Birla Copper (Indo Gulf Fertilizers) smelter/refinery is located at Dehag, Bharuch District of Gujarat, having a capacity of one lakh tonnes per year, which it proposes to increase to 1.5 lakh tonnes per year by 2000-2001. Production of copper during 1997-98 and 1998-99 was 2545 tonnes and 54,694 tonnes (p.105). This production too has not been shown in the monthly statistics of mineral production issued by the Bureau.

Two other plants SWIL and Metdist are also stated to be coming up at Jhagadia in Bharuch District and Rampur-Rajela in Amreli district, Gujarat. The present status of these two projects is not known.

Production of copper and gold in Gujarat State figure under State Reviews and Mineral Reviews in the Mineral Yearbook 2000. Information on tonnage of copper concentrates imported, the country of origin, metal content (Cu, Au, and Ag) in the concentrates is not available. The nation has a right to this information which should not be denied as it is the duty of official organisations to keep the nation fully informed.

Mining and Metallurgy Review in its September issue states that the copper smelter plant in Tuticorin, Tamil Nadu is currently evaluating two mines in Australia and the US for possible acquisition. Sterlite is stated to have already acquired two sick and abandoned mines – one each in Queensland and Tasmania of Australia at an approximate investment of around \$43.5 millions. These two mines, it is stated, would meet 50% of Sterlite copper raw material requirement. The report does not mention whether the plant has made provision for the recovery of by-product gold.

Lack of Interest in Mineral Resource Development

There is unfortunately in our country a lack of interest in our mineral resources and their utilisation. Official agencies and even the media have not evinced much interest in reporting of new developments. Gold production in the country has descended to very low levels and yet, here in a State like Gujarat, in a matter of couple of years of the announcement of liberalisation of mineral policy, a major copper producing unit has been set up capable of producing not only more than one lakh tonnes of copper metal but also as much as five tonnes of gold valued at over 250 crores of rupees. The public and even the earth science community in the States of Bihar and Gujarat are not aware of gold being produced at their very door step.

India made a beginning in the early sixties of the last century in attaining self-sufficiency in the production of copper with exploration effort being intensified and many seminars held, focussing attention on the production of metals like copper, lead and zinc. Rajasthan, which had remained neglected for too long a time in mineral exploration, took a giant leap forward, producing copper metal at Khetri and lead-zinc at Rampur-Agucha. A world-class copper deposit was discovered at Malanjkhand in Madhya Pradesh. Yet, the total production of copper did not reach even 50,000 tonnes a year inspite of pumping in a good deal of money to the Khetri complex. Singhbhum copper belt remained neglected, the existing mine at Jaduguda is threatened with closure. Against this background should be viewed the efforts of Birla Group in Gujarat and Sterlite in Tamil Nadu. Within a matter of couple of years of the announcement of liberalisation policy, these firms in the

private sector have created a smelter capacity of 250,000 tonnes of copper metal and what is more, the unit in Gujarat has not only produced copper but, in addition, added no less than 5 tonnes of gold!!. Why did not this idea of importing copper concentrates and producing metal in smelters to be set up along the coast strike the minds of our planners at Delhi!

My main object in raising this topic is to highlight the production of gold in Bihar and Gujarat, an achievement which has gone largely unnoticed by the geological community. IBM, the custodian of mineral information, has not focussed attention on this achievement. The media too has not taken notice of this fact with the result that the intelligentsia of the country continues to remain in the dark about these important developments.

Massive base metal deposits in other parts of the world have produced substantial amounts of by-product gold and there is no reason why serious attempts should not be made to explore occurrences of massive sulphide ore and sulphide facies iron formations for their gold content. There is a strong case for setting up a refinery at Khetri for the recovery of gold. In that event Rajasthan can also become an important producer of gold.

B.P. RADHAKRISHNA