While a group of Scientists in Calcutta are busy to meet the challenge of As-poisoning by ad hoc curative measures, it is high time that intensive work is carried out for a permanent solution for blocking the pathway of anthropogenic As-entry and accumulation into the deltaic area.

Arsenic contamination in the region has been generally localised in the middle aquifer zone of 50-90 m, leaving the shallow and deeper horizons relatively uncontaminated. As such, shallow bore holes as well as the deeper ones show little or negligible contamination. This can be well explained by change of chemical environment of the percolating surface water with depth, so that the soluble arsenic species in the percolating water precipitate arsenic compounds over grain surfaces. Precipitation of arsenic compounds in the intermediate zone till saturation, prevents the deeper horizon from arsenic contamination. Similarly the dissolved (mobile) arsenic keeps the upper aquifer relatively free from the element except in having the background at sublethal level. It is someway similar to the mechanism of the classical secondary enrichment of copper mineralization, so familiar to a geochemist. Thus the lethal intermediate zone is likely to move on either fronts with time.

It is also pertinent to note that, down south in the brakish water region, the aquifer contamination is less, since the element is kept mobile by the presence of a similar electron donor like chlorine.

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THE INDIAN GOLD SCENE

In the lead article [JGSI, v.48(3) September 1996, pp.253-256], Curtis and Radhakrishna have graphically described "The Indian Gold Scene - 1995-96". It is very true that gold deservation and so-called liberalisation policy of the government have not made any impact and stagnation continues in the gold mining industry. Their repeated writings in the Journal have not moved the concerned authorities and have largely remained a cry in the wilderness which in itself reflects the sorry state of affairs prevailing in the country. "The governmental apathy and bureaucratic inaction", therefore, continue to plague this industry. The authors put it succinctly — 'the liberalised import of gold has not been of general benefit to the industry or to the country'. The country's ample gold resources remain to be harnessed and developed.

I doubt whether a 'Gold Commission' in the present political climate will achieve its purpose, unless it is very independent and manned by really knowledgeable and experienced people. Otherwise, it may provide another haven for parking people with vested interest. What is immediately required is encouraging private enterprise by providing necessary facilities to attract the required capital for a speedy development of known gold resources say, within the next decade and also give thrust to exploration programmes by application of advanced technology and methods.
The editorial mentions the quantum leap in gold production achieved by China. I would like to elaborate the results obtained in China based on a recent article (Weidong and Tien, 1996). Although the Chinese Government has the ownership and is the actual operating authority of all gold operations in their country, in its attempt to move toward a market economy, the actual management is being gradually transferred from the hands of the government into those of the many newly formed gold mining companies at various levels. "The autonomy of these gold enterprises in decision making based on their own management needs has been strengthened". Some of the companies have formed joint ventures with other international mining companies for undertaking major expansion programmes. "In terms of annual gold production, level of technology, and equipment used, most of China's gold mines are small underground mines with a low level of mechanisation. Most typical are the large number of local government-owned gold mines with a treatment capacity of 100-200 metric tonnes/day, and annual gold production of 7,000-15 Koz".

China produced 105 metric tonnes of gold in 1995, 16% over 1994 levels. It is now the world's sixth largest producer. Another important aspect of China's achievement is the methodology of regional and detailed geochemical exploration developed and practised. The approach based on the conceptual recognition of broad distribution patterns of ultrafine gold is laudable. (Xueqiu et al. 1995). Lowering the analytical detection limit and anomaly threshold has resulted in the discovery of many new gold deposits. For regional exploration, the methodology includes - gold analysis with a detection limit of 0.2 ppb and delineation of broad patterns of regional anomalies using threshold values in the 2 to 4 ppb range. Regional gold anomalous areas are delineated by a 2.5 ppb contour line. Detailed survey conducted over the low concentration anomalies at the 5 ppb level resulted in the discovery of a large gold deposit. We have never adopted such an approach in this country. It is earnestly hoped that we learn from the experience of others and embark on a programme of rapid development of established resource potential as well as add to the resource potential substantially.

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References