

Paper Number: 805

Artisanal and small-scale gold mining and related mercury usage in India

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Numerous gold occurrences are spread all over peninsular India. Geologically, gold deposits and prospects are mainly confined to the Precambrian rocks of Dharwar craton in south India. Other primary gold occurrences are scattered in central and eastern India: in Mahakoshal belt in eastern Uttar Pradesh and parts of Madhya Pradesh, in the Sakoli basin of Maharashtra, in the Dongargarh Group in Chattisgarh and in the Singhbhum region of Jharkhand state. In the west, gold occurrences are known in the Banswara district of Rajasthan. However, production of gold in India is rather low, around 2-3 tons per annum from only 4 working mines. Several abandoned mines, near-surface primary occurrences and alluvial placer deposits in these geological tracts have fostered extensive artisanal and small-scale gold mining (ASGM) activity in the country, concentrated mainly in the states of Kerala, Karnataka, Tamil Nadu and in Maharashtra and Jharkhand. A conservative estimate, based on field surveys in these states, indicates that such mining activity generates about 50-60 kg of gold on the average per annum (contributing about INR 156 million to the GDP at current price) which generally land up in small jewellery shops in the vicinity through middlemen. While much of the gold is recovered by amalgamation with mercury on the spot, there are instances, such as, in Subarnarekha River alluvium near Chandil in Jharkhand or in Cheriya River near Nilambur town in Kerala, where gold is recovered just through repeated panning without the use of mercury. Probably, the short distance of transportation of the coarse gold grains from their source allows such mercury-free recovery.

In India, there is no national law on mercury itself, only on mercury wastes. This hazardous metalloid is not mined in the country but is only imported. However, there is unregulated trade in mercury taking place openly. While India is a signatory to the UNEP Minamata convention on mercury, 2013 and strives to have a mercury-free country, 192.7 metric tons of mercury was imported in 2006 -2007 which came down to 165 metric tons in 2012-2013, according to government data [1]. Lack of mercury inventory leads to gap in information on various usages. However, taking into account the use of mercury in various known sectors of application, according to one estimate [2], about 38% of available mercury has unknown use. Our studies of ASGM indicate that this unorganized sector in India uses about 6-8 tons of mercury per annum [3]. An equal or larger amount of mercury must be finding use in the jewelry shops in the vicinity of the artisanal mining clusters. Thus about 20 tons of mercury can be roughly accounted for by ASGM activity under unknown uses. The health impacts of mercury use in ASGM are now widely recorded [4]. No such data however, is available in India although mercury concentration above the permissible limit (1ppb) in water, soil and river sediments have been noted in our studies [3] in all the sites sampled near the small towns of Nilambur and Attapaddy in south India. Till ASGM in India is recognized by the Government and finds a place in its mineral development policy, any effort to educate the mining communities and jewelers to develop mercury-free processing is bound to face serious roadblocks.

References:

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