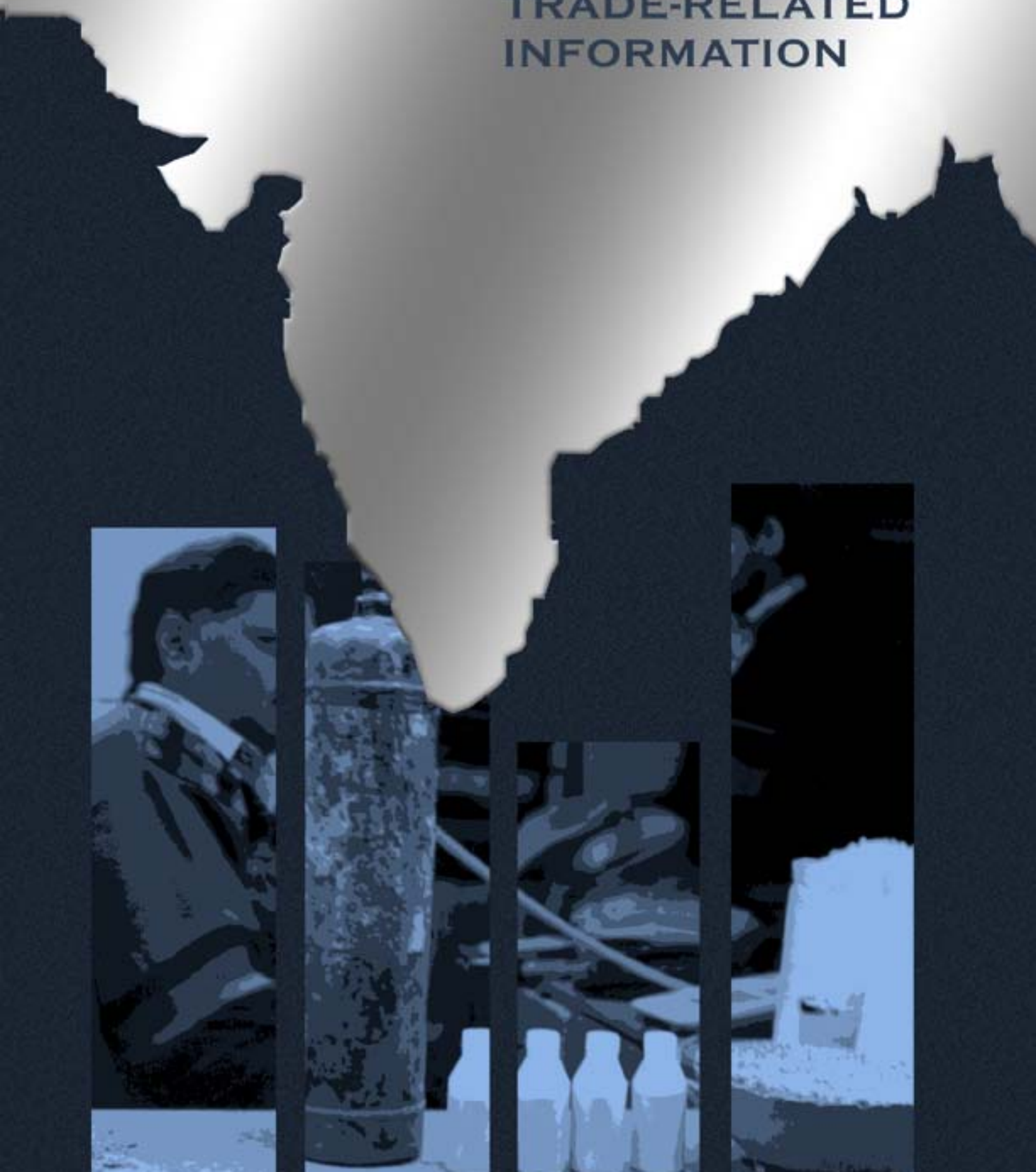
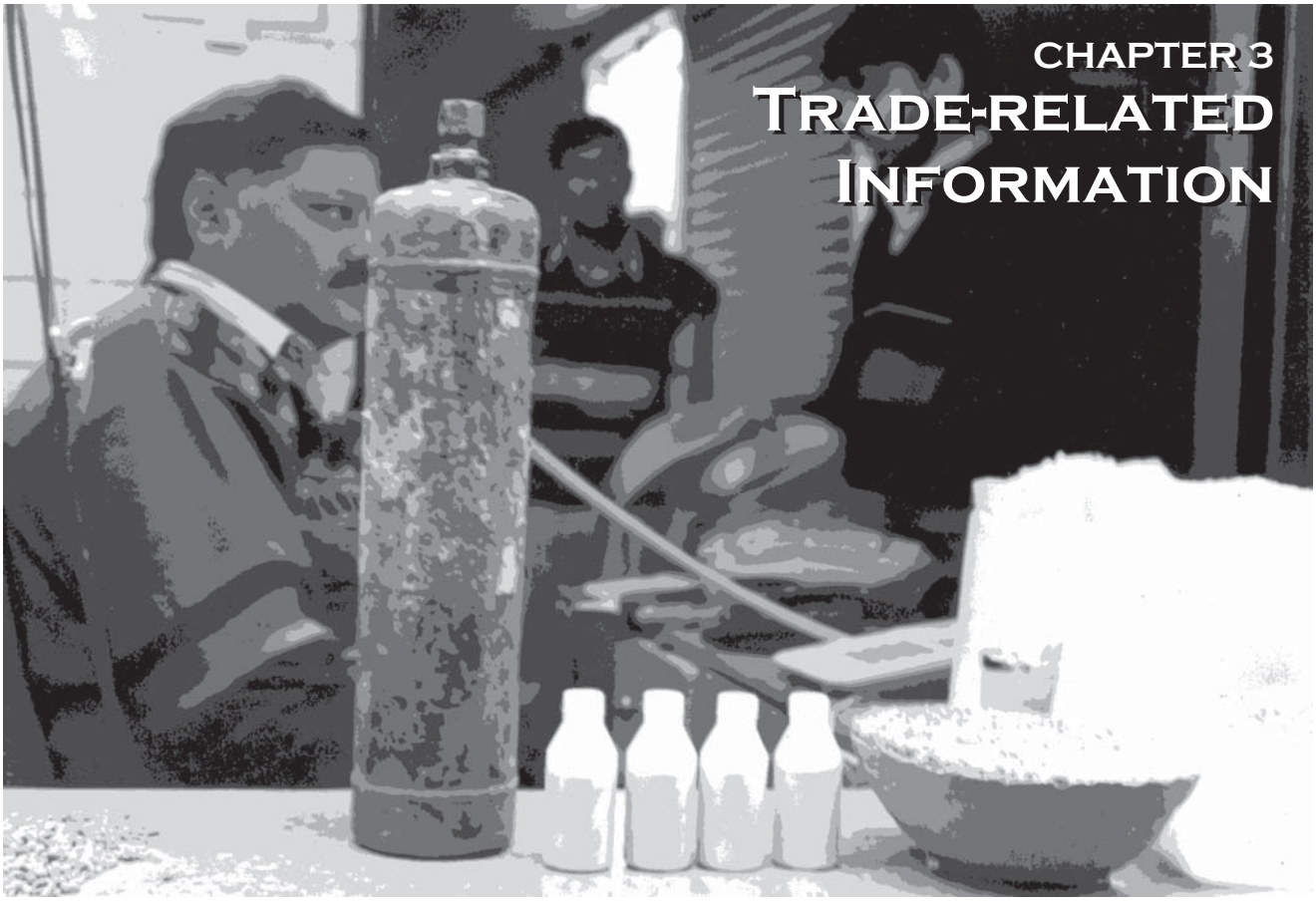
MERCURY IN INDIA

TRADE-RELATED INFORMATION



MERCURY IN INDIA

- **The annual primary world demand for mercury approximates 5,000 tonnes**
- **By far the largest consumers are the industrialised countries of the OECD family, but an 'eastward' shift is observed. This trend is related to the phase out of industries using mercury or mercury-based compounds in industrialised countries and to the growing habit of shifting these industries to developing countries.**
- **Mercury is not mined in India and is completely imported.**
- **Despite mercury's toxicity and related-hazards, the Free Import Policy (1997-2002) has licensed mercury as a free product for imports**
- **The current major mercury exporting countries to India are the USA, the UK, Spain, Russia, the Netherlands, Finland and Algeria.**
- **Beside the import of virgin or elemental mercury, mercury compounds are also traded in India. In fact, mercury compounds such as oxides, chlorides and sulphides are both imported as well as exported from India.**



CHAPTER 3
Trade-related Information

Mercury is a rare element. It is found in many areas, including the United States and Mexico, Southern Europe (Spain, Italy, the Balkans) and several states of the former Soviet Union and Central Asia. Not surprisingly, the natural mercury content in soil and water is relatively high in these areas.

The most important ore for production is cinnabar (HgS). Important deposits are found in mountain areas of late formation and in volcanic areas, particularly in the belt from Spain to the Himalayas and in the one around the Pacific Basin. Five areas within these belts have, for a long time, dominated mercury production: Almaden in Spain, Monte Amiata in Italy, Idria in Slovenia, California in the United States and Huancavelica in Peru. These days, due to environmental concerns and subsequent reduction in its use, it is only mined in Almaden, in Spain.[30]

The annual primary world demand for mercury is uncertain but approximates 5,000 tonnes, or 360 m^3. The value of the total world mercury market was estimated at $75 million in 1982, but this came down to just one-third of that figure, $25 million, 10 years later in 1992. It is difficult to get a detailed picture of global mercury flows. By far the largest consumers are the industrialised countries of the OECD family, but an 'eastward' shift is observed.[31] This trend is due to the phasing out of industries using mercury or mercury-based compounds in the developed world and the growing habit of shifting such industries to developing countries.

Trade in India

Mercury is not extracted in India; it is totally imported. Given its high density, the commercial unit for handling mercury is cast iron 'flask', which weighs about 2.5 litres. A mercury content of 34.5 kg is priced $150 to $250 on the international market.

Trade Policy

In exercise of the powers conferred by Section 5 of The Foreign Trade (Development and Regulation) Act, 1992 (No 22 of 1992), the Central Government has made mercury and its various forms (chloride, oxide and sulphide) freely importable to India.

Despite mercury's toxicity and related-hazards, the Free Import Policy (1997-2002) has licensed mercury as a free product for imports and *"Items which do not require any license under the export and import policy have been denoted as 'free' subject to licensing notes"*. Though mercury can be freely imported in India, its wastes and compounds are included in the waste streams of the

Free Import of Mercury

Exim Code	Articles/item/goods	Policy	Duty
280540 00	Mercury	Free	67.086
282739 01	Mercuric chloride	Free	67.086
282739 05	Mercurous chloride	Free	67.086
282590 04	Mercury oxide (mercuric oxide)	Free	67.086
283329 02	Mercuric sulphates	Free	67.086

Exim code 280540 00 includes quicksilver (as mercury) vide policy circular no 49 (RE-99)/97-02 dated Jan 20, 2000.

Free Import of Mercury-based Products

Exim Code	Item/goods	Policy	Duty
902511 00	Thermometers (all types)	Free	53.816
853932 00	Mercury or sodium vapour lamps, metal halide lamps	Free	67.086
853939 01	Mercury vapour lamps	Free	67.086
300640 00	Dental fillings	Free	67.086

Basel Convention on trans-boundary movements of hazardous waste and their disposal. Mercury compounds are also included as hazardous and toxic chemicals in the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989.

Mercury and its various compounds are all 'free' for import to India. Import of other mercury compounds included as hazardous waste in the Hazardous Waste Rules, is permitted against a license and only for the purpose of processing and reuse.

Mercury and its various forms licensed as free for import are listed in the table above.

Along with mercury, other mercury-based products, items or goods can also be freely imported. These are listed in the table above right.

Since mercury is used in a number of products in India, it is difficult to monitor all of them.

Policy in International Trade: With effect from August 1, 1998, mercury oxide and some mercury-based products have been mentioned as free to import under the conditions that the listed items/goods are in new/prime condition and that they originate from SAARC countries (South Asian Association for Regional Cooperation), in accordance with the Customs Tariff (Determination of origin of goods under the agreement on SAARC Preferential Trading Arrangement) Rules, 1995.

The mercury goods/items included in the list to be free for import are listed in the table at right.

Trade in Mercury

Pre-1992: Mercury, though imported, has to go through various hands before reaching its final consumer, like any other product. It is thus traded like any other good. Prior to 1992, the Minerals and Metals Trading Corporation India Ltd (MMTC), a public sector undertaking, was the most important trading corporation. All major metals, ferrous, non-ferrous, heavy metals, were traded and canalised through the MMTC in the country. Mercury, like any other non-ferrous and heavy metal, was also imported and traded by MMTC and was imported as an industrial raw material.

All the users, traders, industries interested in mercury placed their order, for the required quantity, with the MMTC. The total quantity of mercury to be imported was then calculated.

Before 1992, therefore, MMTC was the only trading corporation in India dealing with the import of mercury. Industries, end-users and traders in India were totally dependent on MMTC for their mercury requirements.

Post-1992: The process of de-canalisation which took place during the liberalisation policy in the post-1992 period ended the domination of MMTC over the trade of non-ferrous metals including mercury.

There are two ways by which metals, including mercury, are traded and imported by MMTC:

- High seas sales
- Godown sales

High Seas sales: In the high seas sales' process, the dynamic is the same as the one mentioned earlier. Tenders are floated, supply order placed, expected ar-

Import Items Free for Import

Exim Code	Item/goods	Usage
850630 00	Mercuric oxide	Battery industry
853932 00	Mercury or sodium vapour lamps, metal halide lamps	Lighting purposes
853939 01	Mercury vapour lamps	Lighting purposes

The Process of Import of Mercury by Minerals and Metals Trading Corporation (MMTC) till 1992

- Floating of tender in the international market for
  required amount of mercury needed.
- Interested parties or brokers send their quotations with a price to MMTC.
- Lowest quoted price of mercury is selected by MMTC, also explaining their terms and conditions regarding price, etc.
- Order is booked for the purchase of mercury
- The required mercury is then bought, stored and
  later sold to various buyers interested in mercury, after adding the service charges of MMTC.

rival time of vessel carrying the supply calculated, deal is done before the vessel touches the port, payment taken, handing over of documents; custom clearance done by customer, custom papers on the name of customer. This process benefits big users and traders who import mercury in large quantities because they get tax exemptions.

Godown sales: In the godown sales' process, the price of mercury is declared as an ex-godown sales price, and the tax is paid by MMTC. The custom clearance papers are on MMTC's name and not on the customer's. Generally, small customers who require small orders of mercury are more interested in this type of sale.

These days, the traders and importers carry out the trade and import of mercury. Since mercury is mentioned as a 'free' item and no licence is required, the big industries, which use mercury in large quantities, do not depend on any trader anymore, and they directly import from the international market. Anyone can import mercury from anywhere and in any quantity.

Thus the policy of de-canalisation has tremendously helped all users, especially the small ones, as they do not have to be dependent on the MMTC any more for mercury and they can buy from the open international market.

Earlier, out of the total amount of imported mercury, 20 per cent remained with the importing agency, MMTC, and users and consumers such as the chlor-alkali industry would purchase the rest. The mercury trade carried out in the open market is explained by the flow diagram opposite:

Important mercury importers are:

- British Metal Corp (I) Pvt Ltd, Mumbai.
- Eastern Metallic, Kolkata.
- Global Marketing Company, Mumbai.
- Kejriwal Alloys and Metals Pvt Ltd, Kolkata
- Metal Link International. Mumbai.
- Enkaay Associates, Delhi.
- HBR Sales (Pvt) Ltd

The details of these traders have been enclosed in the Annexure.

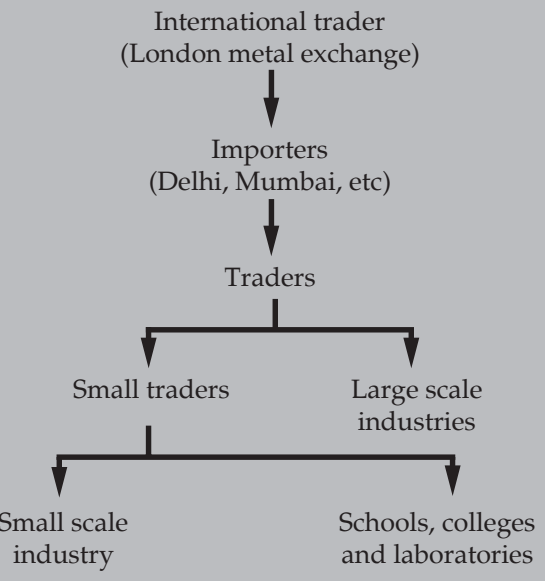
These importers buy mercury directly from the international market and later sell it to traders in Delhi, Mumbai, etc. In Delhi, for example, Tilak Bazaar in Chandni Chowk is a major market where all types of chemicals and heavy metals are traded and supplied to other parts of India. All the traders in Tilak Bazaar buy the required amount of mercury from importers in Delhi, such as Enkaay Associates, or through a broker in Mumbai called Padam Dalal, and later supply all major consumers in Delhi and North India.

Traders like Jagannath Janki Das supply mercury to companies such as Dabur, Baidhnath or Zandu, for the production of ayurvedic medicines. You can also buy mercury packaged in 1 litre bottles here, without any quantitative restrictions! Enkaay Associates, a Delhi-based importer, provides mercury to the Tilak Bazaar traders. From Tilak Bazaar, the mercury is directly sold to the consumer, mainly small-scale users.

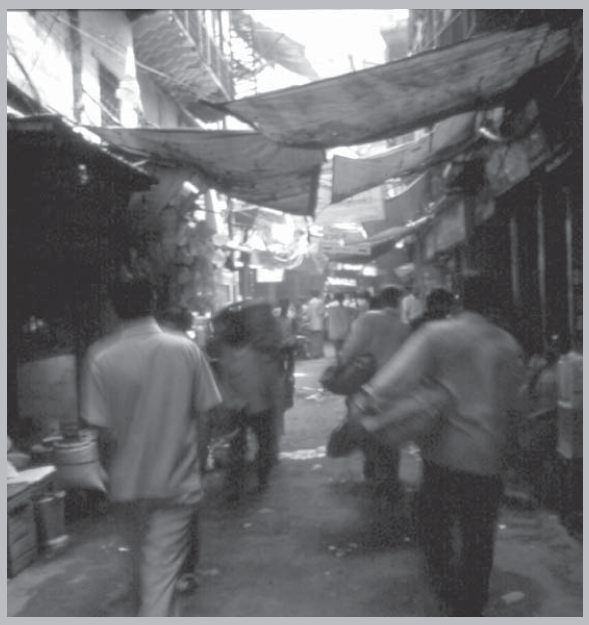
It seems that the traders and importers are aware of the environmental hazards of mercury and of the various kinds of pressures faced by mercury trade, because the traders at Tilak Bazaar were very reluctant to speak about the trade, and it took a lot of convincing from our side before they spoke. The importer in Delhi, Enkaay Associates, also refused to speak.

This made us believe that something was wrong, and made us aware of the fact that there is pressure on the mercury trade in India.

MERCURY TRADE IN THE OPEN MARKET



Visit to Tilak Bazaar



Tilak Bazaar, situated in Khari Baoli, Chandni Chowk, Old Delhi, is a combination of a few dingy lanes and small congested shops. The market is a specialised chemical market; everything is available there. The market caters to the chemical needs of North India, and sometimes of other parts of India too. Your first look at the market leaves you horrified: the congestion, chemicals' smell, labourers and other workers unaware of the dangers of their surroundings… There is no concept of chemical safety in this market.

Tilak Bazaar mostly caters to the demand of mercury in North India. All the major thermometer companies, especially the industries using mercury on a small-scale basis, buy the required amount of mercury from this market. Beside industries, many schools, colleges and laboratories buy mercury from here.

Many traders deal with mercury: Girdharilal & Sons, Jagannath Janki Das, Pioneer Chemicals, Kamal Traders, Vishnu Sharma, etc.

There is a general lack of awareness about mercury and other chemicals and their ill effects on human health among workers and labourers.At Jagannath Janki Das's shop, I was horrified to see two boys pouring mercury from one flask to another, with bare hands and uncovered faces, as if they were merely pouring water from one jar to another one! The boys and the trader seemed fully unaware of mercury's toxicity. It was a gross violation of Indian Standard: 7812 (1975) 'Code of Safety of Mercury'.

Import of Mercury

As mentioned earlier, mercury is imported to India from various countries as it is not found or mined in the country. Mercury import in India depends on usage as well as the demand pattern in the country. Besides the industry, institutes' research laboratories schools, colleges, etc, also represent an important consumer in India.

India imports mercury from a number of countries which keep on changing over time. The current major mercury exporting countries to India are the USA, the UK, Spain, Russia, the Netherlands, Finland and Algeria. The detail of country-wise import data of mercury for the decade is enclosed in the Annexure.

The import figures as well as the rates vary from one country to another one. The rate or value of mercury also varies from country to country on a monthly basis. It shows how unpredictable mercury is in the international market.

The import data of mercury for the decade do not follow a smooth trend, as shown in the table below. The quantity of mercury imported has fallen from 603.5 tonnes in 1993-94 to as low as 124.8 tonnes in 1998-99. The influence of demand pattern of mercury in the industries is clearly influencing the import pattern over the years.

In the figure on the next page, the decade shows a

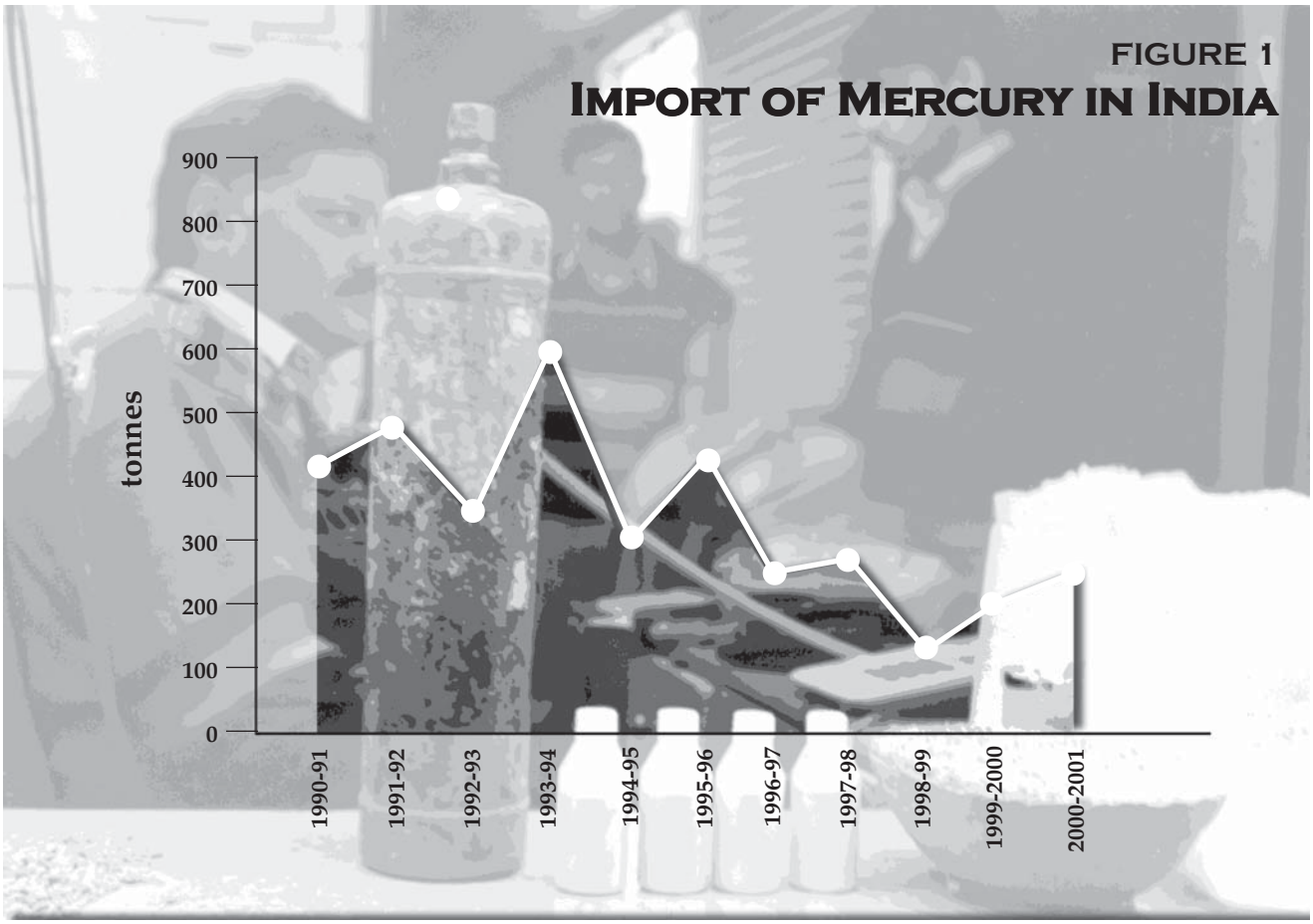
Import of Mercury in India

Years	Quantity (tonnes)	Value (Rs)
1990-91	426.5	45,448,934
1991-92	482.9	39,780,816
1992-93	338.9	30,682,572
1993-94	603.5	49,933,144
1994-95	292.2	25,522,551
1995-96	428.4	49,225,076
1996-97	253.7	31,526,640
1997-98	267.7	43,945,502
1998-99	124.8	20,617,946
1999-2000	207.3	29,233,141
2000-01	251.8	48,336,371

(Source: Monthly Statistics of the Foreign Trade in India, Annual no. (imports), 1990-2000.)

FIGURE 1

IMPORT OF MERCURY IN INDIA



very fluctuating import pattern for mercury in India. As said earlier, the fluctuating demand of mercury influences the import pattern of mercury in India. Though the import of mercury shows a decline, the import of mercury still hovers around 200-250 tonnes annually.

The table *(on page 52)* shows the quantities of mercury imported by the major consumers for 1999-2000 and 2000-01.

The table for import data shows that industries like Champa Purie-Chem Industries, DCW Ltd, GE Lighting India Ltd, Indian Dyestuff Industries Ltd, Shriram Alkalies & Chemicals Ltd, Surya Roshni Ltd, Beri Merurio Ltd, Excel Industries Ltd, Goa Instrument Industries Ltd, Mehta Flint, L S Chemicals & Pharmaceuticals Ltd, Shriram Vinyl & Chemical Industries Ltd, Lalwani Industries Ltd, etc, are major industries which import mercury themselves.

Big importers such as Enkay Associates, Major Metals Ltd, HBR Sales P Ltd, etc, were the major importers of mercury for 1999 and 2000.

Export of Mercury

As the report mentions earlier, India does not mine mercury, and has to import to meet the needs of mercury-based domestic industries. But sometimes India re-exports some of its imported mercury to other countries. It exports to both developed as well as developing countries such as Sri Lanka and the USA. The detail of country-wise export data of mercury is enclosed in the Annexure.

Though it is difficult to understand the dynamics of international trade as far as mercury is concerned, the only logical conclusion must be that this trade exercise must be very profitable. The data in the table opposite shows that exporting mercury has been a regular phenomenon for the last two years.

EXPORT OF MERCURY FROM INDIA

Years	Quantity (in kg)	Value (Rs)
1993-94	2,500	437,780
1999-00	35,837	2,502,254
2000-01	359,534	31,179,773

(Source: Monthly Statistics of the Foreign Trade in India, Annual No (Exports), 1990-2000.)

Import of Mercury Compounds

Years	Mercury oxide		Mercuric chloride	
	Quantity (kg)	Value (Rs)	Quantity (kg)	Value (Rs)
1990-91	-	-	863	73,059
1991-92	-	-	-	-
1992-93	-	-	-	-
1993-94	-	-	-	-
1994-95	-	-	-	-
1995-96	-	-	251	38,289
1996-97	21,435	2,634,356	600	1,011,020
1997-98	-	-	60	64,204
1998-99	2,725	1,300,019	22,225	3,317,458
1999-2000	2,041	268,900	16,876	2,563,937

(Source: Monthly Statistics of the Foreign Trade in India, Annual No (Imports), 1990-2000.)

Trade in Mercury Compounds

Beside the import of virgin or elemental mercury, mercury compounds are also traded in India. In fact, mercury compounds such as oxides, chlorides and sulphides are both imported as well as exported from India. As mentioned earlier, this trade of importing and later re-exporting is probably profitable.

Apart from being traded, these compounds have a wide industrial usage in India.

The import data for both mercury oxide and mercuric chloride do not show any pattern. There is no trend for their import over the years. Only 60 kg mercuric chloride was imported in 1997-98, but in 1998-99, the import of mercuric chloride was to the tune of 22,225 kg. The story is the same for mercury oxide: 21,435 kg was imported in 1996-97, dropping to 2,041 kg in 1999-2000.

The export data for mercuric chloride does not show any pattern either. There is no trend for its import over the years. In 1996-97, 6,620 kg of mercuric chloride was exported but the next year it dropped to 3,350 kg.

Trade of Mercury-based Products

A number of mercury-based products are traded (imported and exported) in the country, on an annual basis. These products, such as caustic soda and chlorine, are either raw materials or end products, such as fluorescent lamps and mercury vapour lamps. They represent a big market. Industries related to these products command a presence in the international market because of these products and their trading pattern in the international market. The wide trading pattern and usage of these products underline the importance of mercury and its compounds as raw materials.

Major Importers of Mercury

Importer's name	Quantity (2000-01)	Quantity (1999-2000)
Champa Purie-Chem Industries Ltd	6,900 kg	3,450 kg
DCW Ltd	60 nos.	-
Enkay Associates	1,622 kg	-
GE Lighting India Ltd	25 pc	50 nos.
Indian Dyestuff Industries Ltd	50 kg	1,725 kg
Indian Dyestuff Industries Ltd	50 nos.	-
Major Metals Ltd	47,334 kg	-
Major Metals Ltd	954 nos.	-
Shriram Alkalies & Chemical Industries Ltd	8,493 kg	-
Surya Roshni Ltd	1,725 kg	3,450 kg
Beri Merurio Ltd	-	16,380 kg
Excel Industries Ltd	-	3,174 kg
Goa Instrument Industries Ltd	-	6 nos.
HBR Sales Pvt Ltd	-	1,000 kg
L S Chemicals & Pharmaceuticals	-	500 nos.
Mehta Flint	-	2,000 kg
Shriram Vinyl & Chemical Industries Ltd	-	1,725 kg
Lalwani Industries Ltd	-	2,000 kg

(Source: Minerals and Metals Review, 2000.)

EXPORT OF MERCURY COMPOUNDS

Years	Mercuric chloride		Mercury oxide		Mercurous chloride	
	Qty (kg)	Value (Rs)	Qty (kg)	Value (Rs)	Qty (kg)	Value (Rs)
1990-91	11,950	1,866,146	3,151	484,250	-	-
1991-92	12,829	1,812,998	475	169,452	13,151	1,608,804
1992-93	30,250	7,498,134	-	-	26,750	8,118,193
1993-94	4,000	971,523	-	-	1,000	270,769
1994-95	12,900	1,934,742	16	14,072	96	30,720
1995-96	18,076	1,556,951	-	-	4,065	739,401
1996-97	6,620	1,811,201	-	-	-	-
1997-98	3,350	1,277,674	-	-	-	-
1998-99	3,900	741,935	-	-	-	-
1999-2000	54,602	27,146,132	-	-	20,630	691,660
2000-01	74,416	4,942,059	11,000	6,110,120	2,400	420,082

(Source: Monthly Statistics of the Foreign Trade in India, Annual No (Exports), 1990-2000)

Import of Mercury-based Products

Some major articles imported by India, which use mercury or mercury compounds as raw materials, are:

- Primary cells and batteries of mercuric oxide.
- Fluorescent, hot cathode discharge lamps.
- Mercury or sodium vapour lamps, metal halide lamps.
- Blood pressure instruments (sphygmomanometers).
- Clinical thermometers.

These products, though made in India, are also imported to meet the wide Indian consumption pattern.

The import data in the table on the next page bottom does not show any import pattern: primary cells were widely imported in 1996-97, but this figure dropped down to a mere seven in 1998-99. While there is a steady increase in the import of fluorescent and mercury vapour lamps, only 10 blood pressure monitoring instruments were imported in 1996-97, and this figure jumped to 5,780 the next year. Clinical thermometers are also imported in very unpredictable patterns, from about 6 lakh in 1996-97 to around 3 lakh in 1999-2000.

IMPORT OF MERCURY-BASED PRODUCTS

Years	Quantity (in numbers)				
	Primary cell (mercury oxide)	Fluorescent lamps	Mercury vapour lamps	Sphygmo-manometers	Clinical thermometers
1996-97	1,170	405,885	2,126	10	670,283
1997-98	70	1,228,210	32,114	5,780	308,808
1998-99	7	4,520,184	34,038	2,541	431,322
1999-2000	NA	9,692,561	115,487	170	338,990

(Source: Monthly Statistics of the Foreign Trade in India, Annual No (Imports), 1996-2000)

Export of Mercury-based Products					
Years	Quantity (in numbers)				
	Primary cell (mercury oxide)	Fluorescent lamps	Mercury vapour lamps	Sphygmo-manometers	Clinical thermometers
1996-97	-	3,569,477	235,849	1,958	4, 497,326
1997-98	2,104,100	2,312,740	166,680	22,786	1,873,458
1998-99	1,030,000	1,313,505	91,165	-	6,057,029
1999-2000	200,172	9,692,561	NA	NA	3,799,636

(Source: Monthly Statistics of the Foreign Trade in India, Annual No (Exports), 1996-2000.)

Export of Mercury-based Products

As discussed in earlier chapters, mercury and its compounds have a very wide usage pattern in India. End products such as chlorine and caustic soda are used as raw materials in many industries. Besides, mercury-based products have a great export potential.

Some of the major articles exported, which use mercury or mercury compounds as raw materials, are:

- Primary cell and batteries of mercuric oxide.
- Fluorescent, hot cathode discharge lamps.
- Mercury or sodium vapour lamps, metal halide lamps.
- Blood pressure instruments (sphygmomanometers).
- Clinical thermometers.

Beside these products, chlorine and caustic soda also have a great export potential for India. However, it is difficult to estimate the amount of chlorine and caustic soda (produced from mercury cell technology) that is exported. There is no break-up for this category in the export data.

The export data in the table above does not show any import pattern: Nearly 20 lakh primary cells were exported in 1996-97 and this figure dropped to 2 lakh in 1999-2000. There is an increase in the export of fluorescent lamps and a prominent decrease in the export of mercury vapour lamps. Blood pressure monitoring instruments are also exported in a very unpredictable manner. This position is not different for clinical thermometers: around 60 lakh were exported in 1998-99, and this number dropped to 37 lakh in 1999-2000. This is probably due to the closure of the HLL thermometer plant in Kodaikanal in 2001.

The export pattern of these products shows a gradual rising pattern for blood pressure monitors, but it is difficult to predict the rising trend due to the unavailability of data. There is a decrease in the export of clinical thermometers, though the export of mercury oxide primary cell, fluorescent and mercury vapour lamps has been steady over the years.

Beside the above-mentioned products, chlorine and caustic soda both have a great export potential to developing countries. They are exported to Asian countries on a regular basis. Every year, on an average, around 225 tonnes of chlorine and 6,000 tonnes of caustic soda, both in solid form and flakes, are exported out of India to Asian as well as African countries.

Summary

It can be concluded that the intricacies of the mercury trade are very difficult to understand. As we have seen, articles which are not produced in India are imported from developed countries but later re-exported. Goods and products made in India are also imported and re-exported. The logical conclusion that can be applied to this kind of trade is maximisation of profits by the traders.

We can say that mercury plays an important role in the international trade of India.

References

30. Vonkeman, Gerrit H., 'Data and Trends on Mercury', Institute for European Environmental Policy.
31. Ibid.