

After Bhopal: INDIA RULES

SPECIAL FOCUS

Col (Dr) Ram Athavale explains how management of the Indian chemicals industry can act as a beacon for developing countries

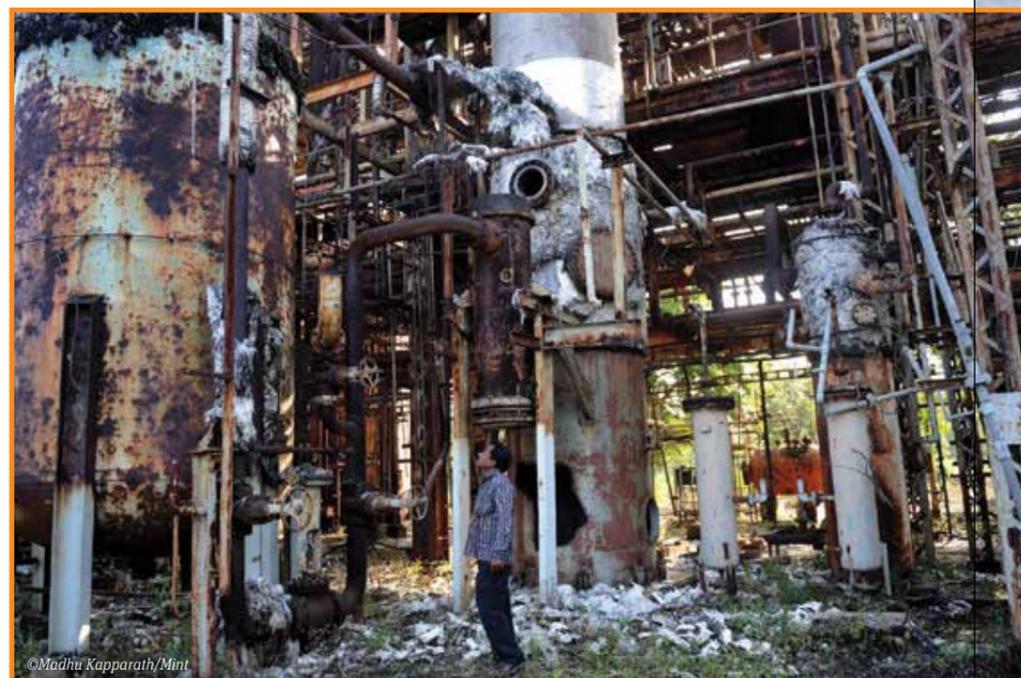
INDIA'S CHEMICAL INDUSTRY

- The Indian chemicals industry is the sixth-largest industry in the world and the second largest in Asia in terms of volume
- It is currently valued at around US\$35 billion. India has a diversified manufacturing base with a capacity to produce quality chemicals for world consumers
- The chemical sector accounts for about 17.6% of the manufacturing sector output, 13 to 14% in total exports and 8-9% of total imports of the country
- Government of India (GoI) plans to invest US\$33 billion in three approved Petroleum, Chemicals and Petrochemicals Investment Regions (PCPIRs). It has also established port-based chemical parks in special economic zones (SEZs)
- Most exports are dyes, dyestuffs, pharmaceuticals and alkali chemicals
- India has a strong base for innovation in its network of 200 national laboratories and 1,300 R&D units, which can be leveraged for the shift towards an innovation-based industry
- The chemical industry in India is witnessing increased focus towards R&D, which in turn provides opportunities for growth of R&D hubs and industry specific institutes.

India's chemical industries are mostly housed in the western and southern Indian states while major users are located in the northern states, especially with respect to consumption of agrochemicals. Since western Indian states are the major chemical producing zones, these are also the major hazardous waste-generating states.

Hazardous waste initiatives

Initiatives have been taken with respect to hazardous waste management by providing common facilities like secured landfill sites, installation of state-of-the-art incinerators, and common effluent treatment plants for wastewater treatment. Individual facilities are also provided by large and medium industries.



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The chemical industry is one of the oldest in India. It not only plays a crucial role in meeting the daily needs of the population, it also contributes significantly towards the industrial and economic growth of the nation. It is also one of India's most diversified industrial sectors, covering more than 70,000 commercial products

The major concerns and thrust areas of environmental pollution, at present, are hazardous waste handling, its storage and disposal and minimisation of volatile organic compounds, besides ensuring proper operation and maintenance of pollution control devices.

The Ministry of Chemicals and Fertiliser also encourages training courses. In addition, various non-governmental bodies such as the Indian Chemical Council (ICC), Federation of Indian Chambers of Commerce and Industry (FICCI), and Confederation of Indian Industry (CII) also conduct training courses on chemical management, safety, health and environment. The training programmes are designed for the personnel responsible for implementation of MSIHC (Manufacture,

Tank 610 on the deserted site of the Bhopal disaster.



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Storage and import of Hazardous Chemical) Rules on the units, workers and public.

Legislation

As for legislation dealing with chemicals, India is very well placed. Almost all steps of chemical management from cradle-to-grave legislation have been laid down. The most important aspect is that this wide spectrum of legislation is mutually exclusive and overlapping is not significant. These Acts, Rules and Regulations can be classified into following groups:

The Environment (Protection) Act, 1986 serves as an umbrella Act and can link other Acts without interfering with the autonomy of any other Acts or Rules. Various ministries at central and state level with their regulatory agencies are responsible for implementing the respective laws.

The Ministry of Environment, Forest and Climate Change (MoEF&CC) is the nodal ministry for enforcement of the Environment (Protection) Act, 1986. It is therefore the coordinating ministry for management of chemicals and functions in close coordination with the Ministry of Chemicals and Fertilisers.

Key areas of concern

The following are the key areas of concern in chemicals management in India.

- **Insufficient database.** There is a need for a well organised database for chemical management. The thrust areas should be ground water quality, chemical residue in food, public and occupational health, storage and disposal of obsolete chemicals, chemical poisoning and chemical accident during transportation. These databases need to be analysed with respect to risk assessment and risk

reduction programmes on priority basis.

- **Inspection, vigilance and public awareness.** The inherent limitation is lack of trained manpower and standardisation of procedures for inspection and vigilance. This can be overcome by establishing standardised procedures and strict oversight mechanisms.

Private consultancy firms can be contracted for auditing and inspection of chemical facilities. Moreover, India has a large number of research institutes, universities, industry associations, NGOs, labour unions and professional organisations.

This vast resource can be utilised for activities like data collection, training & awareness and monitoring. Such reputed organisations and industry associations can play a valuable role in policy framing, risk analysis and implementation of risk reduction programmes.

- **Inventory of chemicals.** While multiple agencies are no doubt involved in the overall effort, synchronisation is needed. The national data is available with concerned ministries, departments and agencies, but there

Left: The Union Carbide plant in Bhopal – site of the world's worst industrial disaster on 2 December 1984.

Below: Dirty and illegal ship breaking in Gujarat.



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has been no major effort to harmonise the data collected by different agencies for data analysis.

The National Informatics Centre (NIC) can play an important role in computerising the existing database of various government departments. There are numerous institutes and laboratories spread out over the country with varying capabilities.

Most laboratories, even though recognised by the Government of India, should be accredited by the National Accreditation Board for Testing and Calibration Laboratories (NABL) – and other international accreditation agencies for maintaining standards.

International support

India is also a party to all international conventions and protocols relating to chemical management, such as the Basel Convention, Rotterdam Convention, Stockholm Convention, Globally Harmonized System of Classification and Labelling of Chemicals (GHS), and The Chemical Weapons Convention.

The participation and involvement in international agreements concerning management of chemicals is well developed in India. Most of the major international organisations such as the WHO, ILO (International Labour Organisation), World Bank, UN Industrial Development Organisation, Food and Agriculture Organisation and others are working actively in India.

There are well-defined procedures and structures to help in ensuring coordination between ministries and agencies and those responsible for health and safety activities. Compliance to TSCA (Toxic Substances Control Act, USA),



The chemical industry in India is the world's sixth largest.

REACH (Registration, Evaluation, Authorisation & Restriction of Chemicals, EU), RoHS (Restriction of Hazardous Substances) and CLP (Classification, Labelling & Packaging) in India is currently essentially for the exports market, especially to Europe and the US.

Major international programmes active in India are International Programme of Chemical Safety (IPCS), Strategic Approach to International Chemicals Management (SAICM), International Register for Potentially Toxic Chemicals (IRPTC) and the UNEP clean production programme. With respect to awareness and understanding of workers and the public, the Central Pollution Control Board and the National Safety Council organise various courses on chemical

safety, health and pollution control.

National Action Plan

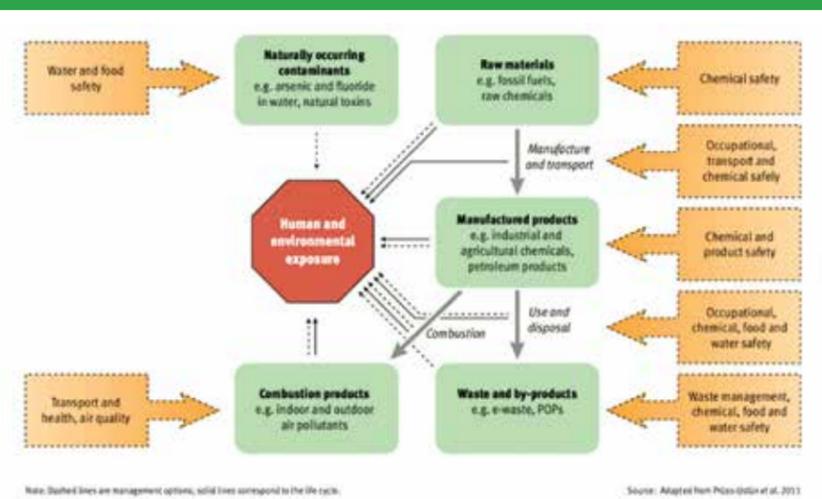
The Government of India's MoEF&CC constituted in April 2017 a National Coordination Committee (NCC) for preparation of a National Action Plan for Chemicals (NAPC) under the World Bank-aided Capacity Building for Industrial Pollution Management (CBIPM) project. This is to be a comprehensive plan to remove all shortcomings and enhance compliance to meet global chemical management standards. The finalised NAPC was expected to be ready in 2019.

Overall, it is seen that India has all the necessary legislation and infrastructure for implementing effective chemical management in the country. What is needed is the availability of data for evolving action plans and prioritisation, inventory of chemicals, and a strong oversight mechanism for audit, inspection and vigilance. While there are some domestic shortcomings the NAPC should see India as a more responsible global chemical player.

Col (Dr) Ram Athavale, PhD has been a Key Adviser to the Government of India on CBRN security. For the past three years he was a Key CBRN Expert for the EU CBRN Risk Mitigation Centres of Excellence and advised governments of Eastern and Central Africa on CBRN risk mitigation matters. Presently he is a CBRN Risk Mitigation, Incident Management and Security Consultant based at Pune, India.

Detailing the life cycle analysis of chemicals.

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