Environmental regulations and challenges in their implementation: The case of SMEs in India

環境規制および実施課題：インドにおけるSMEs事例

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Prosanto Pal
Senior Fellow, TERI, New Delhi, India.
Email: prosanto@teri.res.in

Outline 概要

- SME sector in India
- Development of environmental regulations in India
- The metallurgy (foundry) industry in Howrah
- Role of judiciary in implementation of environmental regulations in Howrah
- TERI's work in Howrah
- Barriers to implementation of environmental regulations among SMEs
- Possible remedial measures

SME sector in India インドのＳＭＥ

- 26 million SME units
- Contributes for about 8% of India's GDP
- Responsible for 40 % of India's total exports
- Accounts for 45% of manufacturing output
- Provides employment for about 60 million people

Polluting industries in SMEs
ＳＭＥｓの汚染産業

- Metallurgy (foundries)-particulates, sulphur dioxide, slag, used sand
- Leather tanning- sludge containing chromium, scrap leather
- Electroplating-heavy metals, toxic organics, oils, emulsions, spent chemicals
- Chemicals – toxic effluents
- Pulp & paper – toxic chlorinated organic compounds
- Textile processing – high total dissolved solids (TDS)
- Dyes – color, high COD, pH
- Pesticides - toxic effluents
- Bearings – waste oils & emulsions, grinding sludge, solvents, heavy metals

Chronology of development of environmental regulations in India
インドにおける環境規制

Event	Year	Impact
Stockholm Conference	1972	India starts focusing on regulations to protect environment
Water (Prevention & Control of Pollution) Act	1974	Central Pollution Control Board (CPCB) and various State Pollution Control Boards (SPCB) established
Air (Prevention & Control of Pollution) Act	1981	Expanded powers of SPCBs
Environmental (Protection) Act* * After major industrial disaster in Union Carbide factory in Bhopal in 1994	1986	Framework for management, storage, handling, disposal & treatment of hazardous wastes as well as identification of landfill sites

Howrah cluster
ハウラ市クラスター

- Howrah, twin city of Kolkata (Calcutta), in the state of West Bengal
- High population density (> 2,500 persons per km^2)
- Co-existence of many polluting SMEs & residential areas
- Ambient air quality poor
  - RPM (Respirable Particulate Matter) about 114 $\mu g/m^3$ compared to air quality standard of 60 $\mu g/m^3$
- Ground water quality poor
  - Concentration of heavy metals (Pb, Cd, Cr) very high

West Bengal

Metallurgy (foundry) industry in Howrah
ハウラ市治金産業

- Established in 1940-50s to cater to jute, textile & engineering industries in the region
- Proximity to Calcutta & good rail links
- Mostly family owned & managed
- Very little modernisation has taken place

Environmental regulation & judicial intervention among foundries in Howrah
ハウラ市鋳造所への環境規制・司法介入

- The maximum concentration of pollutants (particulate matter & sulphur dioxide) was notified for foundries in 1990 under the Environmental Protection Act
- No foundry installed pollution control system (PCS) till 1995 because of lax implementation by the pollution control board & high investment of PCS
- A PIL (public interest litigation) filed in Supreme Court by Mr M C Mehta, leading environmental lawyer
- 1995 – Supreme Court orders all foundries in Howrah to install PCS
- Foundries install low cost, low performance PCS to escape law

TERI's Demonstration Plant at Howrah

ハウラ市での実証プラント

- Commissioned 1998
- DBC – Divided Blast Cupola
- Bucket charging system
- PCS – Pollution Control System (venturi-scrubber)
- 100 ft free standing chimney

Performance of the demonstration project
実証プロジェクトの業績

- Energy efficiency improvement of the melting furnace (cupola)
  - Energy (coke) saving of 33% compared to conventional
- High efficiency venturi-scrubber pollution control system
  - Reduced particulate emission from 2000 mg/Nm^3 to 50 mg/Nm^3 (standard 150 mg/Nm^3)
  - Significant reduction in sulphur dioxide emissions

Environmental Excellence Award

2000-2001

West Bengal Cleaner Production Centre

West Bengal Pollution Control Board

Indian Chamber of Commerce

confers the Environmental Excellence Award 2000-2001

on

M/s. Bharat Engineering Works

Kona, Howrah, West Bengal

for their proactive and appreciable environmental management practices during the year, 2000 - 2001

A. V. Lodha
President
Indian Chamber of Commerce

Manabendra Mukherjee
Minister-in-Charge
Environment and Information Technology
and
Chairman, West Bengal Pollution Control Board

Barriers to implementation of environmental regulations among SMEs
ＳＭＥｓに環境規制を実施するにあたっての障害

- Pollution control is a high cost investment with no payback
- Lack of awareness among enterprises of health & other environmental hazards
- Insufficient knowledge of existing legislation
- Pollution control boards (PCBs) poorly staffed and cannot effectively monitor implementation in SMEs that are geographically dispersed over large area
- PCBs do not provide technical guidance but only act as an enforcement agency

Remedial actions 改善措置

- Demonstration projects on cleaner technologies for SMEs needs to be supported
- Government has to support establishment of local delivery systems (fabricators, engineering firms etc) for replicating the demonstrated cleaner technologies among SMEs
- Government needs to provide attractive financial incentives to SMEs desirous of upgrading to cleaner technologies
- Pollution control boards needs to play an advisory role & provide guidance on appropriate technologies – both emission reduction-at-source & end-of-the-pipe to SMEs
- There is a need to simplify procedures (and bring about transparency) in grant of environmental clearances so that SMEs are motivated to adopt cleaner technologies
- Government needs to encourage establishment of downstream industries for recycling, recovery & reuse of industrial wastes

Thank you for your attention