

**Background to contaminated site remediation in India –
from MGK Menon to
National Program for Rehabilitation of Polluted Sites (NPRPS)**

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**At
Conference on Contaminated Site
Remediation**

**New Delhi
August 18-19, 2017**

Introduction

- SC Order, 14.10.2003 accepted grim reality of non-compliance of HW Rules in the country
- Realized adverse effects of indiscriminate dumping of HW in India imported from developed countries
- SC had constituted High Powered Committee with Prof. MGK Menon, FRS, as its Chairman in 1997
- Menon Committee submitted report in Feb, 2002
- Taking Cognizance of Menon Committee report, SC passed order, 14.10.2003 & set up SCMC under Chairmanship of Dr. G. Thyagarajan

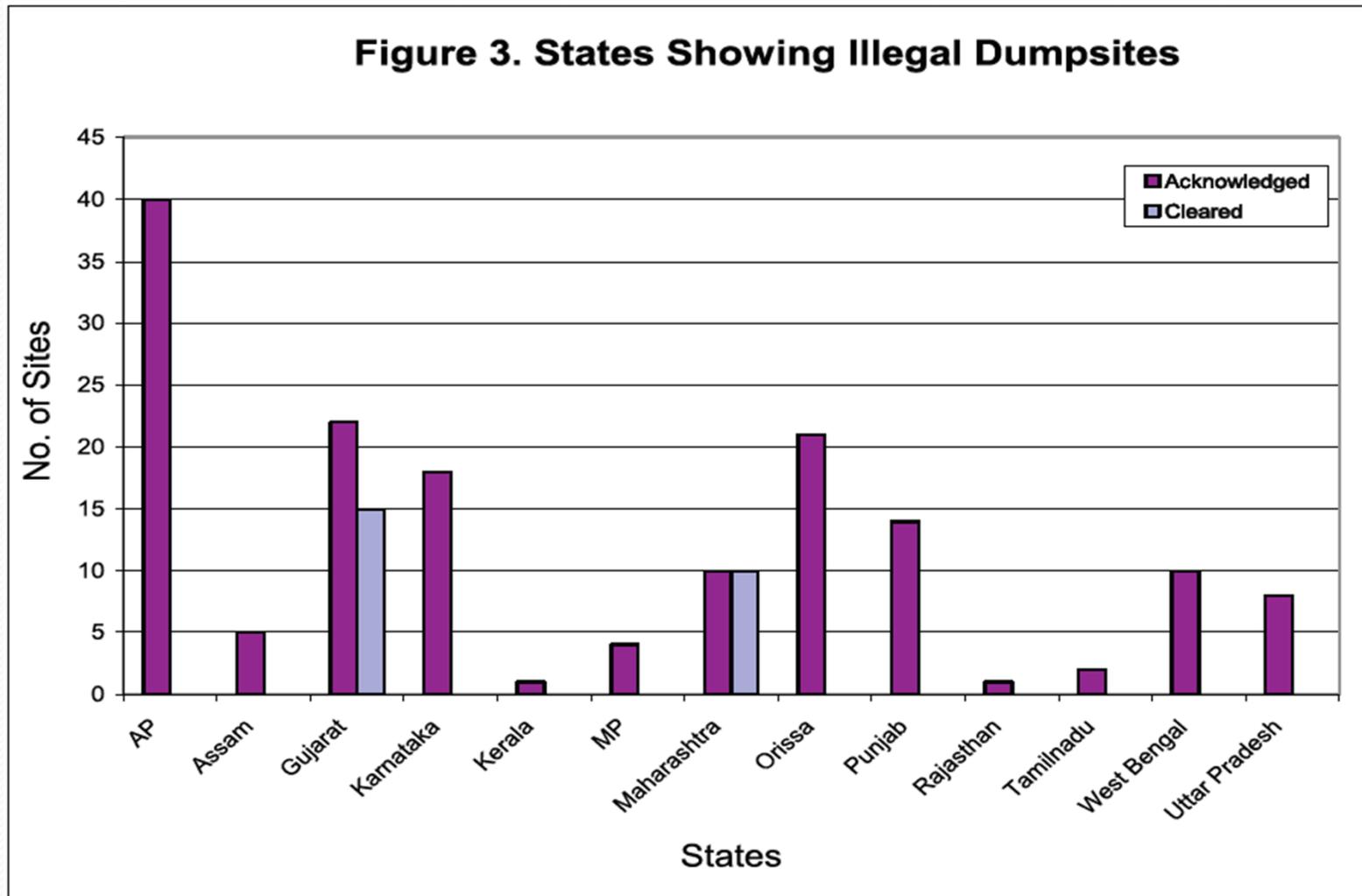
Impact of SC Order

- Removal and safe disposal of HW lying in industrial estates and illegal dumps sites
- Reduction in illegal imports of HW
- Removal and safe disposal of HW lying at Ports, *Polluters Pays Principle*
- Action plan for rehabilitation/remediation of contaminated sites

Directions regarding domestic HW

(vi): National Inventory of illegal HW dump sites

- The Court was seriously concerned with the several illegal HW dump sites and their impact on health & environment



Directions regarding domestic HW

National Inventory of illegal HW dump sites



Directions regarding domestic HW

National Inventory of illegal HW dump sites

Major Problem HW dumping sites needing special attention



Hema Chemicals - Vadodara



Tamilnadu Chromates & Chemicals
- Ranipet



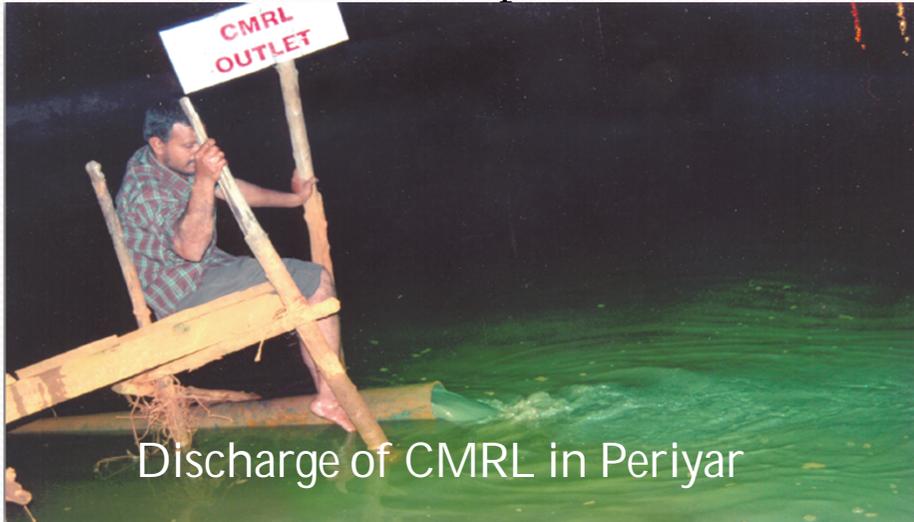
Hindutsan Lever-mercury
contamination-Kodaikanal

The SCMC was not able to inventorise or get inventorise HW lying abandoned in units that are permanently closed or are under Court receivers in different parts of country

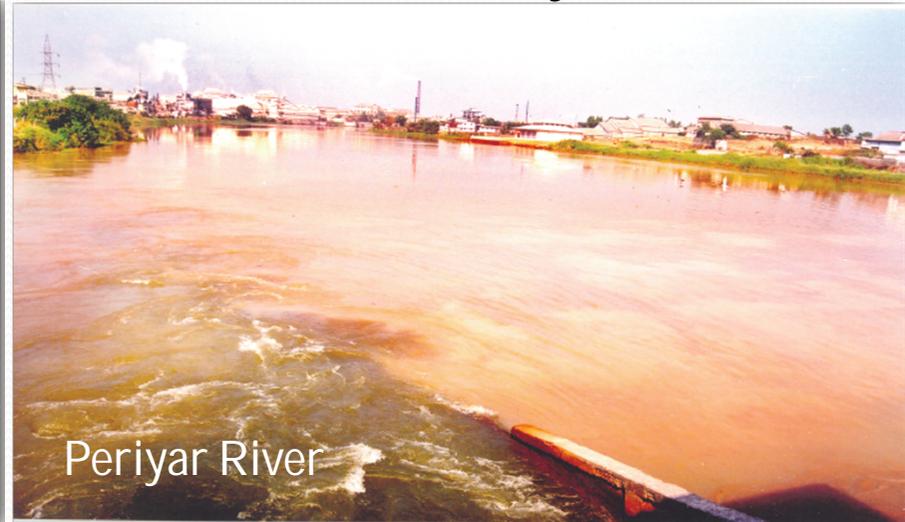
Directions regarding domestic HW

National Inventory of illegal HW dump sites

Clean – up of river bed and restoration of life in Periyar river



Discharge of CMRL in Periyar



Periyar River



Fish kill due to toxic effluents in Periyar River, some highly acidic. (Left) a villager demonstrates bluish industrial HW sediments on the river bed which form a cloud on being disturbed



Directions regarding domestic HW

National Inventory of illegal HW dump sites

Clean – up of river bed and restoration of life in Periyar river

- SCMC brought entire industrial estate to heel
- Fined Rs. 2.5 Cr to 247 units to set aside money for rehabilitation of the river. SCMC set up LAEC
- Board closed down several industries in coordination with LAEC
- Discovered clandestine discharges at night
- Undiscovered more than 60 illegal outlets
- After a year of these actions pH of the river improved (5-5.5) from a low of 2 (highly acidic)
- Representative of fishing community met SCMC to thank the SC for restoring condition of the river and for bringing the fish back into the water body.
- At the time of filing report, certain actions still remain to be completed (e.g. – removal of sediment from the river bed)

Directions regarding domestic HW

National Inventory of illegal HW dump sites

Clean-up and rehabilitation of Katedan lake and other lakes in AP

- Polluting industries discharging HW in lakes were ordered to shut. 60 units ordered to move out of the area
- STP installed and sewage entering the lake is diverted.
- ETPs installed by industries. HW & other solid wastes to TSDF.
- Dredging of the lake completed. However, fractured rock bottom was reported. This could lead to leaching in to the GW.
- HDPE liners, geotextiles, sand/gravel lining of the lake bottom is not done, although it was part of the WB Funded project.
- Since, the cause of contamination has been restricted considerably, natural purification over the years would help restoration to certain extent.
- AP Board reported remarkable reversal of the processes affecting the lake due to complete cessation of HW entering water body

Directions regarding domestic HW

National Inventory of illegal HW dump sites

Burial of Arsenic waste at Zuari Industries, Goa

- Industry was directed to treat and dispose about 450 MT of Arsenic waste in "hermit storage". Work is completed at the cost of Rs. 70 lacs.
- Recommended levy of fine of Rs. 10 lacs for not taking timely steps as per SC Order of 14.10.2003
- The "hermit storage" technique of encapsulating the HW was later adopted by SPIC in Tuticorin and others

Directions regarding domestic HW

National Inventory of illegal HW dump sites

Case of HW dumping by Aventis Pharma in Gujarat

- Industry was found discharging HW in agricultural fields. SMCB filed FIR and GPCB ensured closure of the unit.
- Rs.25 lacs BG was taken for remediation. **GPCB reported satisfactory completion of remediation.**
- This incident had led to the GPCB recalling and reviewing hundreds of such authorisations and tightening the controls over the movement & disposal of HW.



SCMC travelling through Gujarat was horrified to be taken to these agricultural fields while dumping of extremely toxic solvents was in progress.

Directions regarding domestic HW

National Inventory of illegal HW dump sites

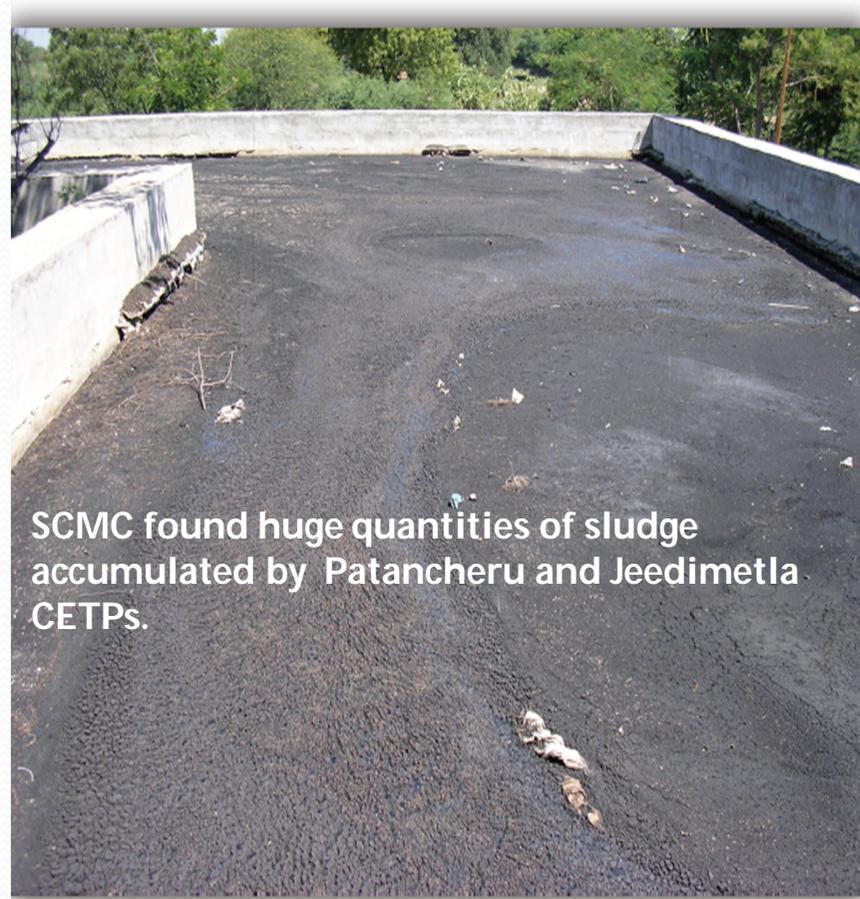
Case of Volatile Organic Compounds

- In Cuddalore industrial estate (TN) the VOCs were found being discharged into open environment by several industries.
- SCMC asked CPCB to evolve necessary standards. This is done now.
- Many of the VOCs found in the atmosphere of Cuddalore were found carcinogenic.
- Most of the industries were asked to install MEE, RO and CETP.
- CETP status ??

Directions regarding domestic HW

National Inventory of illegal HW dump sites Improvements in CETPs w.r.t HW

- 23 MLD CETP at the cost of Rs. 18 Cr. completed at **Tarapur**
- 10 MLD CETP at the cost of Rs. 7.26 Cr completed with six months at Buti Bori, Nagpur
- HW Sludge from CETP at Patancharu and Jeedimetla was sent to TSDF.
- Delhi faces a piquant situation. It has CETPs but no TSDF.
- SCMC asked SPCBs to tighten the CETP effluent standards and see that HW does not get in to it.



SCMC found huge quantities of sludge accumulated by Patancheru and Jeedimetla CETPs.

Directions regarding domestic HW

National Inventory of illegal HW dump sites

Rehabilitation of contaminated ground water aquifers

- SCMC is acutely anxious that in several areas, ground water has been rendered un-potable
- There is threat to public health due to the contamination from HW leaching their toxins into soil
- Side pics are from Gujarat.
- Progress is tardy in this matter.



Directions regarding domestic HW

National Inventory of illegal HW dump sites

Loss of Ecology

- An Authority is urgently required to be set up to ensure that the rehabilitation of abandoned and illegal HW dumps is completed.
- SC directed for National Inventory and AP.
- MoEF initiated Rs. 1800 Cr. project with WB support in the of NPRPS.
- Progress is tardy.



Directions regarding domestic HW

Supply of water to communities affected by ground water contamination due to HW

- Faced with the problem of contaminated GW from industrial wastes in Gujarat and MP, the SCMC requested SC to direct the supply of water to the affected communities before the summer of 2004
- SC accepted the plea and issued order on 7th May, 2004
- In Gujarat , the order was complied for 26 villages at a cost of Rs. 5.5 Cr.
- For Bhopal water supply was 40 MLD in affected area around UCIL.



Directions regarding Imported HW & Basel Convention: Disposal of HW impounded at Ports and ICDs

- Consignments of waste oils lying at Tuticorin incinerated under TNPCB
- HW at ICD Bangalore sent to TSDF after solidification
- 47 containers of waste oil at MbPT incinerated at TSDF Taloja
- DPCC in association with CPCB was asked to verify HW lying at ICD Tuglakhabad and decide disposal options
- Punjab PCB in association with CPCB was asked to verify and decide in respect HW lying at Ludhiana ICD
- Commissioner of Customs, Mumbai was asked to verify and confirm the quantity of HW lying in JNPT and then decide disposal options in consultation with MPCB

Directions regarding Imported HW & Basel Convention:

(iii): Destruction by Incineration of 133 containers of waste oil illegally imported at JNPT (SC Order dated 5.01.2005)

- 133 Containers moved to TSDF Talaja
- SCMC sub-committee supervised
- MPCB ensured that incineration followed norms
- Cost of incineration Rs. 2.86 Cr. Paid by Customs



Conclusion (SCMC)

Achievable vision for effective & total management of HW

Considering the gravity of the scenario depicted by the Menon Committee the **Court** passed a comprehensive order, which among other things, required authorities concerned to :

- **Prepare Nation-wide Inventory of Polluted Sites**
- **National Program for Rehabilitation of Polluted Sites.**
- **Ensure clean up of illegal HW dumps**

This has resulted in formulation and implementation of National Program for Rehabilitation of Polluted Sites by MoEF & CC .

National Programme for Rehabilitation of Polluted Sites: NPRPS

What is NPRPS

- The National Program for Rehabilitation of a Polluted Site (NPRPS) is a framework for scaling up followed by the clean up and rehabilitation of polluted sites and facilitate the reduction of environmental and health risks associated with the legacy of polluted sites.
- There are 3 major activities under NPRPS which the MoEF&CC took up with financial assistance from the World Bank.
 - Inventory and Mapping of Probably Contaminated Sites,
 - Development of Methodologies for NPRPS and
 - Development of the NPRPS.
- The NPRPS reviews and updates the available information on polluted.

National Programme for Rehabilitation of Polluted Sites: NPRPS

How it was done

- There are fourteen Steps in the site assessment and remediation process which are divided into four groups.
 1. Identification
 - Step 1: Identification of probably contaminated sites
 - Step 2: Preliminary investigation
 - Step 3: Notification of polluted site
 - Step 4: Priority list addition
 2. Planning
 - Step 5: Remediation investigation
 - Step 6: Remediation Design, DPR
 - Step 7: DPR approval and financing

National Programme for Rehabilitation of Polluted Sites: NPRPS

How it was done

3. Implementation
 - Step 8: Implementation of remediation
 - Step 9: Approval of remediation completion
4. Post remediation
 - Step 10: Post remediation plan
 - Step 11: Post remediation action
 - Step 12: Cost recovery
 - Step 13: Priority list deletion
 - Step 14: Site reuse

National Programme for Rehabilitation of Polluted Sites: NPRPS

What NPRPS include

- Review the nature and type of hazardous waste polluted sites in India
- Overview of international practices
- Review of national and international approaches to remediation
- Review of current systems
- Identify Options and recommend standards for remediation of polluted sites
- ...continued

National Programme for Rehabilitation of Polluted Sites: NPRPS

What NPRPS include

- Develop Guidance Document on Methodology for Design,
- Implementation and Monitoring of Remediation Plans
- Identify options for legal and institutional strengthening
- Stakeholder Consultations
- Identify capacity building requirements
- Prepare a plan for the implementation of NPRPS

National Programme for Rehabilitation of Polluted Sites: NPRPS

State-wise Action Sites

State	Number of Sites
Andhra Pradesh	1
Assam	1
Bihar	1
Chhattisgarh	2
Goa	1
Gujarat	9
Haryana	3
Himachal Pradesh	1
Jharkhand	2
Karnataka	5
Kerala	4

State	Number of Sites
Madhya Pradesh	5
Maharashtra	3
National Capital Territory	6
Orissa	22
Punjab	6
Rajasthan	2
Tamil Nadu	5
Uttar Pradesh	16
Uttarakhand	1
West Bengal	4
Total	100

National Programme for Rehabilitation of Polluted Sites: NPRPS

Status of NPRPS today

- Inventory and Mapping of Probably Contaminated Sites, Development of Methodologies for NPRPS and its Notification under the EPA, 1986, for implementation issued by MoEF&CC.
- Guidelines are in place.
- Pilot NPRPS activity is ongoing at:
 - Noor Mohammad Kunta site in Andhra Pradesh
 - Kadappa in Andhra Pradesh
 - Dhapa in West Bengal

National Programme for Rehabilitation of Polluted Sites: NPRPS

Few examples of remediation/restoration In Maharashtra

- > 4,50,000 MT of HW lying at various industrial sites was removed by the SPCB order, followed by excavation of contaminated soil, its treatment and safe disposal was done in several cases such as Mahesh Chemicals, Golden Chemicals, TATA Motors, Glen Mark etc. Cost recovered from industries by SPCB.
- > 40,000 MT of hazardous chemicals sludge from the tank bottoms of CETPs from MIDC was removed and disposed safely. Cost recovered.
- 2,25,000 MT of HW dumped at MIDC Tarapur was excavated. SLF constructed at site. Safe disposal completed under the directions of NEERI. Cost recovered from MIDC by SPCB.
- 133 containers of hazardous waste oil seized by Customs and lying at JNPT were removed, site scrapping done and waste disposed by incineration at TSDF. Cost recovered from Customs.



Thanks very much!

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