

**Central Pollution Control Board**  
Waste Management Division-I

**Status of Contaminated Sites in India**

**Background**

There are several contaminated dumpsites in various parts of country where hazardous and other wastes dumped historically, which resulted in contamination of soil, groundwater and surface water thereby posing health and environmental risks. Most of the contaminated sites created when industrial hazardous wastes disposed by occupiers in unscientific manner or in violation of the rules prescribed. Some of the sites were developed historically when there was no regulation on management of hazardous wastes. In some instances, polluters, responsible for contamination, have been either closed down their operations or the cost of remediation is beyond their capacity, thus the sites remains a threat to the environment.

Contaminated sites may include production areas, landfills, dumps, waste storage and treatment sites, mine tailings sites, spill sites, chemical waste handler and storage sites located in various land-uses. Basic types of contaminated sites are as under;

- "Point" sites, such as dumps of waste or individual contaminated facilities;
- "Area" sites, a site within a broader area of on-going and legacy contamination where the site of concern needs to be addressed in this wider context. An example of this is an individual dump within an industrial area, where there are also other sources of pollution;
- Municipal dumps, which may contain hazardous substances dumped before the municipality gained effective control;
- Brown-fields, which may, or may not, have clear ownership and which have development potential if the contamination problems can be successfully resolved.

Contaminated sites often pose multi-faceted health and environmental problems. Dumping or spillage of hazardous wastes or chemicals would adversely impact/affect the surrounding environment, particularly soil, surface water and groundwater and as result, people in impact zone are knowingly or unknowingly exposed to toxic substances. These sites need to be investigated in detail and thereafter remediation activity should be carried out to reduce human health risks and environmental impacts by adopting appropriate remediation technologies.

Remediation of contaminated sites involves cleaning of contaminated media i.e. soils, groundwater, surface water and sediments by adopting various in-situ or ex-situ clean-up technologies up to a predefined remediation target levels for each identified constituent.

**Definitions**

As per the guidance document published by MoEF&CC, definition of probably contaminated and contaminated sites is given below:

**Probably Contaminated Sites:** "Sites with alleged (apparent, purported) but not scientifically proven presence of constituents of contaminants or substances caused by humans at concentrations and characteristics which can either pose a significant risk to human health or the environment with

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regard to present or future land use plan [pattern] or exceeding specific concentrations or standards prescribed for human health and or the environment"

**Contaminated Sites:** "Contaminated sites are delineated areas in which the constituents and characteristics of the toxic and hazardous substances, caused by humans, exist at levels and in conditions which pose existing or imminent threats to human health and/or the environment".

**Brief Summary – Status of Contaminated Sites in India**

1. Total No. of Sites covering in 21 states (As submitted before Hon'ble NGT)	280*
2. No. of Probable contaminated sites (Assessment needed)	168
3. No. of Contaminated sites (Confirmed)	112

\* Inventory of contaminated sites in India is given at 'Table-I'.

**Implementation of Assessment and Remediation works**

There is limited experience in the country on remediation of contaminated sites. Projects initiated by MoEF&CC under Capacity Building for Industrial Pollution Management Project (CBIPMP) and National Clean Energy Fund (NCEF) helped CPCB and SPCBs to understand the gaps in existing institutional & legal framework and also for deriving an implementation framework by undertaking actual remediation projects as pilot basis. Some progress has been observed in 112 confirmed sites in terms of preparation of DPRs, initiation and execution of remediation works. The details of the same are as below:

- i. Remediation works have been initiated in 8 sites, in States namely; Gujarat (2), Jharkhand (1), Maharashtra (1), Tamil Nadu (2) and Uttar Pradesh (2). These remediation works have been taken up primarily by the responsible party/industry as per the directions or monitoring of SPCBs. Details of these sites is given at **Table-1 (A)**.
- ii. CPCB/MEF&CC have carried out a project for detailed site assessment and preparation of Detailed Project Reports (DPRs) has been prepared for 20 sites with funding under NCEF/CBIPM Projects. The initiative was to carry out pilot studies to guide future assessment and preparation of DPRs for remediation works. It is expected that these DPRs would form basis for to execute remediation works by Responsible Parties if identified or the State Government in case of orphan sites. In this context, orphan sites are those sites where polluter is not identified or the polluter is not in a position to bear remediation cost (**Ref: Table-2**).
- iii. In remaining identified contaminated sites, the SPCBs/PCC are required to direct the responsible party to carry out detailed investigation and remediate the sites scientifically as per the guidance document provided by CPCB/MoEF&CC. Funds for remediation may be borne by the responsible party. In case of orphan sites, SPCBs may approach State Government for assessment and remediation in larger public interest of protecting health of people living in impact zone.

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- iv. Maharashtra and Andhra Pradesh States have informed that environmental site assessment is in progress at 7 sites. These sites include Uranium Corporation of India, Kadapa, Andhra Pradesh and LG Polymers site in Vishakhapatnam, Andhra Pradesh. 5 Sites in Maharashtra are Mithi River, Industrial areas of Deonar, Tarapur and Nashik (**Ref: Table-2**).
- v. With regard to directions of Hon'ble NGT that 5 sites should be remediated within a period of 6 months, remediation works have been initiated in 3 sites in Odisha and 2 sites in UP where tendering process is underway. In addition, one more site in Kerala has also been initiated tendering process (**Ref: Table-1(B)**).

**Table-1 (A) List of 08 sites for which remediation works initiated by Responsible Parties:**

S. No.	Name of the Site	Action taken/Initiated by SPCB	Suggestions of CPCB
<b>Gujarat (02)</b>			
1.	Effluent Channel Project Limited (ECPL), Baroda Effluent Canal, Vadodara District	<p>i) In groundwater samples <b>Color, Phenolic compound, Sulphate, Chloride &amp; TDS</b> are reported higher than acceptable limit of BIS.</p> <p>ii) Remediation work is undertaken by Dye-manufacturing and Pharmaceutical industries (Responsible Parties).</p>	<p>GPCB may carry out GW, SW and sediment sampling and submit analysis result of CoCs, general parameters and heavy metals to CPCB.</p> <p><b>GPCB may also submit progress report on remediation works undertaken by Responsible party to CPCB from time to time.</b></p>
2.	Swastik Organic, Sabar Dairy Road, Piplodi, Gujrat	<p>i) Hazardous waste lying at the site was already lifted and shifted to TSDF. However, soil contamination may still remain at the site.</p> <p>ii) In the downstream at village Boriya Khurad, about 7 to 8 bore wells reported as contaminated with reddish <b>brown coloured</b> water.</p> <p>iii) In this regard, it is also reported that crops like wheat, cotton &amp; castor are irrigated with this colored water.</p> <p>iv) GW samples collected and reported <b>about 200 Pt Co yellowish color</b>.</p> <p>The responsible party has awarded the remediation work to GITCO.</p>	<p>GPCB may carry out GW, SW and sediment sampling and submit analysis result of CoCs, general parameters and heavy metals to CPCB.</p> <p><b>GPCB may also submit progress report on remediation works undertaken by Responsible party to CPCB from time to time.</b></p>
<b>Jharkhand (01)</b>			
3.	Roro hills, Jharkhand - 833201	Detailed investigation report on "Rehabilitation of Roro abandoned asbestos mines" along with remediation status as per direction of Hon'ble NGT is	<b>Jharkhand PCB may submit progress report on remediation works undertaken by Responsible</b>

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S. No.	Name of the Site	Action taken/Initiated by SPCB	Suggestions of CPCB
		submitted. It was informed that, remedial action has been taken by Dept. of Mining, Jharkhand.	party to CPCB from time to time.
<b>Maharashtra (01)</b>			
4.	M/s Godavari Bio-Refineries, Ahmed Nagar District, Maharashtra	Contaminated groundwater is being remediated by applying Bioremediation technique since September, 2017 and the same is underway.	<b>MPCB may submit progress report on remediation works undertaken by Responsible party to CPCB from time to time.</b>
<b>Tamil Nadu (02)</b>			
5.	M/s HUL, Kodaikanal, Tamil Nadu	Trail remediation has been done by M/s HUL. TNPCB had approved Consent to Establish for execution of soil remediation activity. All requisite machineries have already been installed for soil remediation.	<b>TNPCB may monitor the remediation works undertaken by Responsible party and submit progress report to CPCB from time to time.</b>
6.	Tondairpet, Chennai, Tamil Nadu	Remediation work is undertaken by M/s BPCL since 2016.	
<b>Uttar Pradesh (02)</b>			
7.	Industrial Area Meerut Road, Ghaziabad, Uttar Pradesh	Cr(VI) in groundwater is remediated by applying:	<b>UPPCB may monitor remediation work undertaken by Responsible Party and submit progress report to CPCB from time to time.</b>
8.	Lohia Nagar C Block, Ghaziabad	(i) Pump & Treat (P&T) technique, (ii) Bioremediation technique, Remediation work is underway since 2012.	

**Table-1 (B) In compliance of Hon'ble NGT direction dated 01.07.2020 that is immediately 5 sites should be taken for remediation and executed; wherein, 03 sites in Odisha have been initiated remediation works and other 02 sites in UP has been initiated tendering process. In addition, one site in Kerala has also been initiated tendering process. Details of 6 sites are given below:**

S. No.	Name of the Site	Action taken/Initiated by SPCB	Suggestions by CPCB
<b>Odisha (03)</b>			
1.	Dumpsite JCL-I (Outside the Premises of M/s Jayshree Chemicals Ltd Near Rushikulya River)	DPR is prepared under NCEF project of MoEF&CC and CPCB. Remediation work has been initiated. Progress is as below:	<b>Odisha SPCB may monitor the remediation works and submit the progress report to CPCB from time to</b>
2.	Dumpsite JCL-III (Outside the Premises of M/s Jayshree)	- Unit had constructed new guard pond	

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S. No.	Name of the Site	Action taken/Initiated by SPCB	Suggestions by CPCB
	Chemicals Ltd Near Rushikulya River)	for storage of treated effluent.	<b>time.</b>
3.	Jayashree Chemicals, Ganjam	- NOC obtained from CGWB for installation of abstraction wells to remediate groundwater as per DPR.  OSPCB has directed unit to set-up New secured landfill to dispose of hazardous waste as a part of remediation activity.	
<b>Kerala (01)</b>			
4.	Kuzhikandom Thodu (Creek), Kerala	DPR is completed under NCEF project of MoEF&CC and CPCB.  Tendering process is under progress for execution of remediation work by Kerala State/ Kerala SPCB.	<b>Kerala SPCB may monitor the remediation works and submit the progress report to CPCB from time to time.</b>
<b>Uttar Pradesh (02)</b>			
5.	Khanchandrapuri, Rania Kanpur Dehat	DPR is prepared under NCEF project. Accordingly, CPCB communicated final DPR along templates of tender document to State of UP and UPPCB for execution of Remediation work.  It was submitted by UPPCB that Tendering process is underway for execution of remediation works by UPSIDA and UPPCB.	It is submitted that Remediation work is not yet initiated and also hazardous waste is still lying at the site.  <b>Further, UPPCB may monitor the remediation works and submit the progress report to CPCB from time to time.</b>
6.	Shivnathpura, Rania, (Kanpur Dehat) Ramabai Nagar, Kanpur, Uttar Pradesh		

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**Table-2: Revised list of sites giving details of assessment and actions initiated by SPCBs/PCC**

S. No.	States/UTs	Updated status as Dec, 2020			HW lying at site	Preliminary Assessment	Identified site for remediation	
		Total Sites <sup>1</sup>	Probable Sites (PCS)	Contaminated Sites (CS)			Detailed Investigation and DPRs	Remediation Works
1	Andhra Pradesh	4 <sup>1</sup>	4	0		2		
2	Assam	4	2	2				
3	Chhattisgarh	5	3	2				
4	Delhi (NCR)	23	12	11				
5	Goa	2	1	1				
6	Gujarat	23	15	8				2
7	Haryana	14	10	4				
8	Himachal Pradesh	4	3	1				
9	Jharkhand	14	12	2				1
10	Karnataka	25	19	6				
11	Kerala	9	5	4	1		3	1 <sup>2</sup>
12	Madhya Pradesh	20	14	6	1		3 <sup>3</sup>	
13	Maharashtra	6	3	3		5		1
14	Odisha	32	9	23	4(3 <sup>4</sup> )		1	3 <sup>2</sup>
15	Punjab	9	3	6				
16	Rajasthan	10	8	2				
17	Tamil Nadu	11	5	6	1		1	2
18	Telangana	9	7	2			1	
19	Uttar Pradesh	43 <sup>1</sup>	22	21	1		7	4 (2 <sup>2</sup> )
20	Uttarakhand	6	5	1				
21	West Bengal	7	6	1			1	
<b>Total</b>		<b>280</b>	<b>168</b>	<b>112</b>	<b>8</b>	<b>7</b>	<b>17</b>	<b>14</b>

<sup>1</sup> New sites.

<sup>2</sup> As per directions of Hon'ble NGT direction dated 01.07.2020 that is immediately 5 sites should be taken for remediation and executed within a period of six months, 3 in Odisha have been initiated remediation works and other 2 sites in UP tendering process is underway. In addition, 1 site in Kerala has also been initiated tendering process.

<sup>3</sup> DPR preparation is underway.

<sup>4</sup> Remediation work initiated, however shifting of HW in a SLF is about to execute