Chapter 3

Control of Industrial Pollution

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Various pollution control measures are required to be taken up by industries to ensure that emissions and effluents are as per the standards. This largely consists of ensuring that (i) effluents and emissions are treated before their release into the environment and (ii) these meet the quality standards laid down by CPCB.

3.1 Control of pollution through 'Consent to Operate (CTO)' process

As per the Air and Water Acts[61], industrial units, that had started operations after obtaining CTEs issued by the WBPCB had to apply to State Pollution Control Board for 'Consent To Operate' (CTO). No industry can operate without a valid CTO. This is granted to an industry stipulating (i) name of the products/ by-products and quantity to be produced per month (ii) parameters with prescribed standards and frequency of effluent and emission sampling (iii) type and quantity of fuel used etc. Thus, through CTO, WBPCB monitors the compliance of environmental laws and standards in terms of raw materials consumed, emissions, effluents and waste discharges. The validity of the CTO of Red industries was increased (June 2016) by WBPCB from three to five years. The renewal of applications should be filed by the industry at least 120 days prior to expiry of the CTO.

Audit observed that during 2013 to 2016, out of 13 field offices[62], two regional offices *viz*. Siliguri and Malda did not issue any notices or reminders to 156 industries for renewal of their expired CTOs. Out of 5,452 Red category industries in the State as per the database of the ROs, only 1,908 units, *i.e.* 35 *per cent* were running with valid CTOs whereas 2,797 units were running with CTOs which had already expired. Information regarding validity of CTOs of the remaining units (747) were not available with WBPCB. Thus, due to nondelayed renewal of CTOs, compliance of environmental laws by the industries could not be ensured.

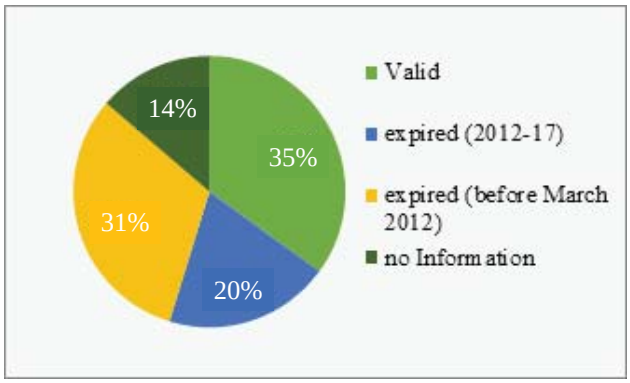

Chart 3.1: Status of validity of CTO

Joint Physical Inspections (May 2017) of 51 red category industries revealed eight industries were operating without a valid CTO. Further, 33 units had operated without any valid CTO for a period ranging from 2 to 60 months before getting their CTOs issued/ renewed.

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[61] *Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 and Section 25 of the Water (Prevention and Control of Pollution) Act, 1974.*

[62] *Regional Offices (RO) at Salt Lake, Howrah, Hooghly, Barrackpore, Camac Street, Malda, Alipore, Haldia, Asansol, Durgapur, Siliguri and Circle Offices (CO) at Kankinara and Camac Street.*

Some illustrative examples of violations of CTO conditions revealed during joint physical inspections of the selected industries are detailed below:

3.1.1 Dyeing and Bleaching Sector - M/s. Techno Dyeing and Bleaching Works

The industrial unit had been operating in Kolkata without renewal of CTO from December 2010. Audit observed that during 2012-17, WBPCB had not conducted any inspection of this unit. During joint physical inspection on 9 May 2017, it was observed that the Effluents Treatment Plant (ETP) was not operational. Effluents were being discharged into nearby canals unabated. Further, no plantation was noticed within the available open area as against 33 *per cent* stipulated by WBPCB in CTO. Accepting the audit observation the Department stated (December 2017) that the WBPCB had directed (22 May 2017) the unit not to operate the plant without CTO from the Board.

Fig.No.3.1: ETP in broken condition in Techno Dying and Bleaching

3.1.2 Thermal Power Plant- M/s. Durgapur Projects Limited

Units 7 and 8 of Durgapur Projects Limited (DPL), a thermal power plant, had received EC (April 2007 and July 2009) from MoEF&CC. **Audit observed that CTO was renewed by WBPCB in August 2015 despite repetitive violations of EC and also the directives of CPCB** as detailed below.

- WBPCB had conducted 18 stack samplings[63] of air quality during June 2014 to April 2017. Analysis of reports of the stack sampling revealed that in 12 stack samplings, Particulate Matter (PM) was between 106-620 mg/ Nm^3 against the prescribed limit of 50 mg/ Nm^3.

- Further as per CPCB directives (February 2014) WBPCB was to ensure installation of Online Continuous Stack Emission Monitoring (CSEMS) and Online Effluent Quality Monitoring System by June 2015. DPL had three stacks connected to Units[64] 6, 7 and 8. However, DPL had installed (June 2017) only one CSEMS in stack of 8th Unit. Further, the CSEMS installed was not monitoring particulate matters[65] as envisaged in the directives of CPCB.

- EC of 7th and 8th Units specified that coal with not more than 34 *per cent* ash content should be used in the plant. During the years 2012-17, the average ash content of coal used by DPL ranged between 38 *per cent* and 48 *per cent.* Using coal with higher ash content resulted in generation of more fly ash and bottom ash thereby causing excess pollution.

[63] *Emission samples from the chimney attached to the units of thermal power plant.*
[64] *An integrated power generating system within a power plant.*
[65] *Only SO_2 and NO_2 were being monitored.*

- The local people of nearby township had complained (September 2015) to WBPCB about the massive air pollution due to dust emission. Another adjoining village petitioned (June 2016) against coal dust contaminations to the nearby ponds. Noise and the flying ash of uncovered dumpers transporting ash though village roads also disrupted the village life. During joint inspection, Audit observed that (i) coal crusher house was in dilapidated condition, (ii) the coal conveyor belts were not covered and (iii) the emission control devices of the conveyor belt and the unloading yard were not operational. There was no sprinkler in the coal crusher area and coal stock yard to arrest the fugitive emission[66]. As such, pollution was continuing unabated.

Fig. No. 3.2: Conveyor belt and stack yard of DPL

In reply, the Department accepted (December 2017) that the PM was found to be higher in some instances due to high ash content of the coal and the work was under construction. It further stated that to mitigate dust pollution the Industry reported to have taken some remedial measures. The reply was not tenable as the Department could not give details of the remedial action taken by the industry. However, WBPCB was required to revalidate the CTO only after compliance of the EC conditions.

3.1.3 Cement industry – M/s. Durgapur Cement Works

As per EIA Notification 2006, stand alone grinding units were classified as Category 'B' while other cement plants were classified as Category 'A' and were required to receive EC from MoEF&CC. Durgapur Cement Works (DCW) produces cement in a grinding mill. SEIAA granted (January 2012) EC for expansion of production capacity to DCW.

Fig. No.3.3: Granulation pond of M/s.Durgapur Cement Works

[66] *Fine particles of coal (in this case) escaped from the machinery and mixed in air.*

However, joint inspection revealed besides the grinding units, the plant had a granulation unit also which prepared slag from molten lava. Therefore, the plant was to be treated as Category 'A' project and was to be sent to MoEF&CC for clearance, which was not done. During joint inspection, Audit also observed the following deviations of the conditions of CTO Issued in December 2016:

- Raw materials like slag, coal, *etc*., were stored in open.
- The conveyor belts at material handling section, wagon tippler *etc*. were not covered. The loading areas did not have any fugitive emission control system.

As such, pollution control in the unit was not effective.

In Reply, WBPCB accepted the Audit observation and stated that (December 2017) necessary regulatory action was being initiated against the unit.

3.1.4 Sponge Iron Industry- M/s. K B Sponge Iron Limited

The unit received EC from SEIAA in February 2016 for expansion of capacity. Audit noticed that CTO was issued to the Industry in March 2016 despite violations of EC conditions as revealed during Joint inspection of the unit in July 2017.

- According to EC, at least four Ambient Air Quality Monitoring Stations (AAQMS) were to be set up and data of AAQMS and stack monitoring reports were to be submitted to WBPCB on six monthly basis. However, the unit did not submit the report. WBPCB also had not inspected the unit or conducted stack monitoring during 2012-17.

Fig. No.3.4: Pollution control device in dilapidated condition in M/s. K B Sponge Iron Limited

- **Pollution control devices[67] were found defunct.** The duct of bag filter was detached from the stack. Stack height was found inadequate against the prescribed 30 meters. Emission from the furnace was being released without the control devices.
- The unit also had not undertaken any plantation or rainwater harvesting programme as prescribed in the EC.

In reply, the Department stated (December 2017) that the audit observation was noted and necessary action was being initiated against the unit. It further stated that being a Red category, the unit will be inspected as per inspection schedule of the WBPCB. However, no inspection schedule was found on records.

[67] *Cyclone separator : A cyclonic separation is a method of removing particulates from an air, gas or liquid stream, without the use of filters, through vortex separation. When re-moving particulate matter from liquids, a hydrocyclone is used; while from gas, a gas cyclone is used.*
Bag filters : A Bag filter (BF) or Fabric filter (FF) is an air pollution control device that removes particulates out of air or gas released from commercial processes.

3.1.5 Steel Manufacturing Industry : M/s. Shakambhari Ispat and Power Limited (SIPL)

SIPL, a steel manufacturing industrial unit, got EC clearance from SEIAA in January 2013. Joint inspection of the unit revealed the following:

- WBPCB stipulated certificate from the competent authority regarding distance from wild life sanctuary/ reserve forest as one of the document required for CTO. SIPL located at the foothills of Panchet Forest Reserve, no permission/ NOC was, however, taken from the Forest Department for setting up of the plant.

- SIPL did not obtain authorization for management and handling of hazardous waste materials from WBPCB, despite the fact that the plant was handling hazardous waste material like Oil and Grease (O&G). The plant also had not maintained any records regarding generation/ disposal of O&G. Audit noticed from a report of Fire Brigade that a fire broke out in the power plant on 11 January 2016 due to short circuit and accidental oil leakage.

Fig. No.3.5: Emissions from Stacks of SIPL

- As per the CTO of August 2013, frequency of emission sampling was to be thrice a year from all the 12 stacks. Inspection register maintained by the SIPL, however, revealed that during the period 2013-14 to 2016-17 inspection was done only eight times against the required 48 times. Emission sampling of July 2014 and January 2017 showed that PM level 205 and 281 mg/Nm^3 respectively against the permissible limit 100 mg/ Nm^3.

- Heaps of dust & raw materials found in open space where fugitive emissions were noticed. Audit also found that the pollution control devices like electro-static precipitator and bag filters were found to be non-functional. As a result, emission from rotary kiln was discharging from the cap with dense smoke.

- Two reports were published in the newspaper in July 2015 and February 2017 regarding pollution caused by the SIPL in the nearby area.

The Department did not furnish any reply to this audit observation.

3.1.6 Paper Mills - M/s. Supreme Paper Mills Limited and M/s. Ballavpur Paper Mfg. Limited

During joint physical inspection, Audit observed that M/s. Supreme Paper Mills Limited was dumping the fly ash from the boiler into the water bodies and

Fig. No. 3.6 : Unauthorised filling up of waterbody by dumping of Fly ash in M/s. Supreme Paper Mills Limited

Fig. No. 3.7 : Discharge of untreated waste water of Ballavpur Paper Mills Limited

filling them up. Further, it was observed that in Ballavpur Paper Manufacturing Limited, one pipeline was discharging untreated waste water through the ash and pulp dumping site to the nearby low land causing surface water pollution.

The Department did not furnish any reply to this audit observation.

3.1.7 Coal Mines

Joint physical inspection was conducted in three coal mines[68], Audit observations are detailed below:

- **M/s. Bengal Emta open cast mine Limited**

Fig. No. 3.8: Backfilling of Bengal Emta coal mines not done

The project received EC from MoEF&CC, GoI, in January 1997. EC conditions stipulated for creation of 105 ha of green belt, dumps, *etc*. Further, according to the Environment Management Plan of the project, 152 ha of land was to be transformed into forest while 57 ha was to be developed as agricultural land. For this purpose, backfilling[69] was to be done in the opencast mine[70]. Scrutiny of records revealed that WBPCB had not inspected the mine after August 2010. **Neither the backfilling nor plantation and development of agricultural land was noticed during the joint inspection.**

The Department did not furnish any reply to this audit observation.

[68] *Bengal Emta open cast mine, Khandra and Nava Khajora underground mines.*
[69] *Filling the opencast coal mine with soil.*
[70] *A mine where coal is extracted from the surface by digging.*

3.1.8 Underground coal mines – M/s. Eastern Coalfields Limited at Khandra and Nava Khajora

The Khandra and Naba Khajora mines received EC from MoEF&CC in July and January 2015 respectively. WBPCB had not made available the records regarding grant of CTE to the mines. Further, CTO of Khandra expired in October 2005 and was renewed only in December 2016. CTO of Naba Khajora mines had expired in December 2006 and was renewed only in April 2017.

As per the conditions of CTOs, both the mines should have obtained hazardous waste authorisation from WBPCB. **However, none of the mines had obtained hazardous waste authorisation despite the fact that the mines were generating, storing and disposing hazardous wastes like used oil, Lead-Acid Batteries and lubricants.** Further, the mines were operating coal fired boilers. But there was no pollution control device attached to the boiler to control pollution. WBPCB had not inspected Khandra or Naba Khajora or had sampled the quality of water and emission during 2012-17.

The Department did not furnish any reply to this audit observation.

3.2 Control of Pollution in Critically Polluted Areas (CPAs) and Severely Polluted Areas (SPAs)[71]

On the basis of comprehensive environmental assessment using Comprehensive Environmental Pollution Index (CEPI) criteria, CPCB had identified Haldia, Howrah and Asansol in West Bengal as Critically Polluted Area (CPA) in August 2010 and Durgapur as Severely Polluted Area (SPA) in September 2013.

3.2.1 Preparation and implementation of remedial action plan for the CPAs

As per the directives (January 2010 and September 2013) of CPCB, WBPCB had to prepare Remedial Action Plan (Plan) to tackle pollution in the CPAs and SPA. The Plan *inter alia* had to include various short term and long-term mitigation measures to be taken up by the concerned industrial units. These were to be incorporated in the State Environmental Policy. Audit, observed that as of July 2017, WBPCB prepared (June 2011) Plans for three CPAs. However, **Plan for Durgapur SPA was not prepared as of July 2017.** In reply, the Department stated (December 2017) that preparation of the Plan for Durgapur SPA would be taken up by the WBPCB.

Audit observed that **Plans in respect of Asansol and Haldia CPAs were not implemented** in the following instances:

- According to the Plan for Asansol, 23 industries were identified as polluting industries and were taken up for monitoring by WBPCB. However, Audit observed that only six of these industries were in the regular inspection schedule of the concerned Asansol Regional Office (RO). No monitoring was being done in the remaining 17 industries. The Action Plan also proposed the construction of four Sewage Treatment Plants (STPs), Municipal Solid Waste Management facilities and also roads and bridges[72] for the Asansol area. Audit, however, observed that none of the works were taken up as of December 2017. In reply, the Department stated (December 2017) that implementation of Plan

[71] *An Industrial Area having Comprehensive Environmental Pollution Index cut-off score between 50 and 59 is termed as Severely Polluted Area.*

[72] *South City Road, expansion of GT Road (Ashram more to Chelidanga), Road bridge over Damodar from Burnpur to Madhukunda.*

was being monitored on regular basis and industries were inspected as and when required. However, the Department could not provide any specific information or documents regarding regular inspections.

- The Plan of Haldia proposed to monitor 19 industries. However, according to the inspection schedule of Haldia RO, the relevant inspecting authority, WBPCB had monitored (2012-17) only 11 out of the 19 units.

3.2.2 Violation of CPCB guidelines on CPAs and SPA

In order to have continuous monitoring data of ambient air quality and surface water, CPCB recommended (February 2014) that WBPCB should install two real time air[73]/water quality monitoring stations each in CPAs.

WBPCB had already installed real time Air Quality Monitoring Stations, one in each of the three areas (Howrah, Haldia and Durgapur). However, it was observed that only two real time Air Quality Monitoring Stations (Haldia and Durgapur) were found to be operational as of December 2017.

CPCB also directed WBPCB to undertake (i) Source Apportionment Study[74], (ii) Health Impact Assessment[75] (HIA) and (iii) Sector Specific Audit of 17 categories of Grossly Polluting Industries (GPIs)[76] in the CPAs and SPA for the purpose to mitigate the environmental pollution problem. It also directed WBPCB to prepare digitised maps of CPAs and SPA. Audit observed that none of these actions were taken up by WBPCB as of December 2017. As such, these clusters continued to pollute the environment.

The Department did not offer any comment on this Audit observation.

3.2.3 Impact on the Environment Quality in the CPAs and SPA

Audit observed that due to failure of WBPCB to take control measures effectively as per the Remedial Action Plan as well as the CPCB directives, the Environment Quality of CPAs and SPA remained unabated as evident from the air/ water quality analysis reports discussed below:

- WBPCB had conducted third party air and water quality monitoring three times between February 2015 and March 2017 against stipulated six times[77] in these CPAs and SPA. Analysis of air quality monitoring reports prepared by the third party as depicted in **Chart No 3.2** showed that Particulate Matter[78] (both PM_{10} and $PM_{2.5}$) exceeded permissible limits in all stations in Haldia, Howrah, Asansol and Durgapur.

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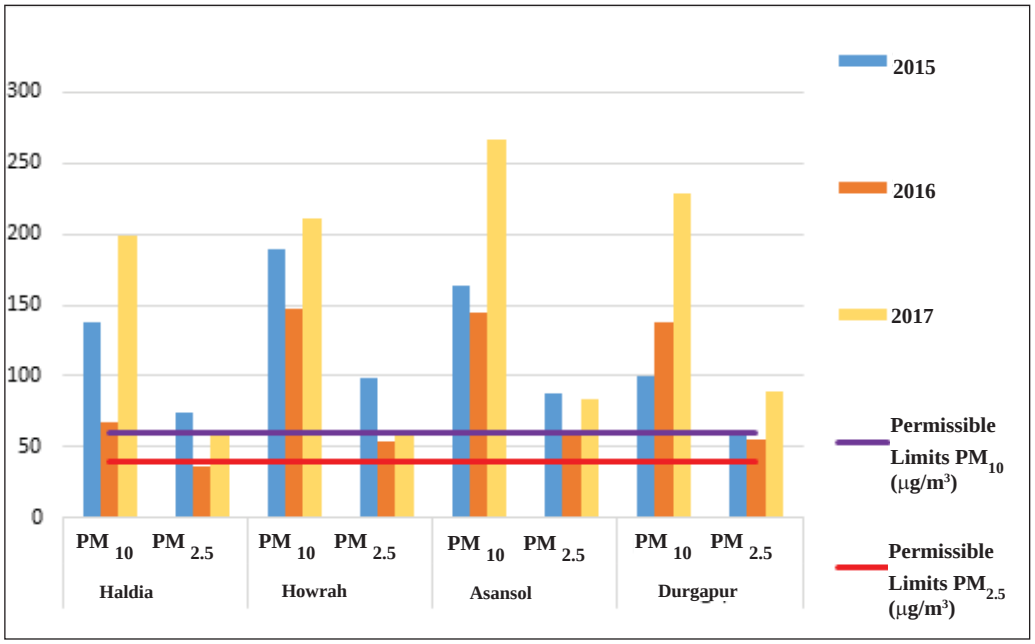
[73] *One in the windward side and leeward direction in each CPAs.*
[74] *Identifying and quantifying of major pollution sources.*
[75] *For collection of basic data related to impact of pollutants on public health in the vicinity of the CPAs.*
[76] *GPIs were identified as industries discharging effluents into water course and (a) handling hazardous substances, or (b) effluents having BOD load of 100kg/day or (c) a combination of (a) and (b). BOD : Bilogical Oxygen demand is the amount of dissolved oxygen needed by the organism to break down organic materials.*
[77] *Between February 2014 and March 2017.*
[78] *Particulate Matter is particles of any substances that are less than 10 or 2.5 micrometres diameter. PM_{10} is particulate matter 10 micrometers or less in diameter, $PM_{2.5}$ is particulate matter 2.5 micrometers or less in diameter.*

Chart 3.2: Air quality status in critically/ Severely Polluted Areas



- From the Chart 3.2, it is evident that level of PM_{10} had been higher than the permissible limit during all three years. In 2017, the PM_{10} levels were highest in all four cities as compared to previous two years. This indicated that air quality had been deteriorating year after year.

- From the air/ water quality reports of the 12 test checked industries in Haldia, it was observed that eight units[79] were repeatedly violating emissions and effluents norms during the period from June 2016 to July 2017. Despite non-compliance to standards, WBPCB issued only Show Cause Notices to these industries and failed to take further action like imposing penalty, issue closure order *etc*. These industrial units remained in operation resulting in air/ water pollution.

Thus, the industries in these four polluted areas were causing degradation of the environment quality. WBPCB was unable to prevent it.

In reply, the Department stated (December 2017) that WBPCB regularly monitors air and water quality in CPA and regulatory actions were taken against industries which were found to be violating environmental norms. The reply was not tenable as no punitive actions was initiated in any of the test checked units.

[79] *Adani Wilmar (AW), Haldia Petrochemicals (HP), Hoogly Met Coke (HMC), Indian Oil Corporation Limited (IOCL), MCC PTA India Corporation Private Limited (MCCPTA), Dhunseri Petrochem and Tea Limited (DPTL), Modern India (MI) and Rohit Ferro Tech Limited (RFT)72 South City Road, expansion of GT Road (Ashram more to Chelidanga), Road bridge over Damodar from Burnpur to Madhukunda.*

3.3 Control of pollution of Seriously Polluting Industries (SPIs)[80] situated along the River Ganga

With a view to prevent and control pollution of River Ganga from indiscriminate discharge of industrial effluents into the river, the National Green Tribunal (NGT) constituted (November 2014) a Principal Committee (PC)[81], Implementation Committee (IC)[82] and the State Level Committee (SLC)[83]. The IC and the SLC were made jointly responsible for implementation of the NGT order relating to control of pollution of River Ganga and would report to the PC. The status of implementation of the NGT order revealed the following:

3.3.1 Identification and monitoring of Seriously Polluting Industries

The PC identified (February 2015) 33 categories of industries on the banks of River Ganga and its tributaries as Seriously Polluting Industries. The exercise of identification of industries within the SPI categories in a particular State was to be completed within June 2015.

WBPCB communicated (May 2016) to PC about the existence of 514 SPIs. Out of these 514 SPIs, only 43 units under the category of Grossly Polluting Industries were regularly monitored by WBPCB. Seventy nine Dyeing and Bleaching units and 16 Slaughter houses had been closed (December 2014) by WBPCB. **Audit observed that the remaining 376 units were not being regularly monitored by WBPCB.**

3.3.2 Preparation of drainage maps of discharge channels and installation of effluent treatment plants

The Principal Committee (PC) directed (March 2015) SLC to prepare geo-referenced digital drainage maps of SPIs by July 2015. It was also directed to prepare a plan identifying the points where the drains carry effluents discharge into River Ganga or its tributaries. CETP at the confluence points were to be constructed for treating the effluents. It was observed that WBPCB prepared (July 2015) physical maps of 54 drainage channels. It was further observed that WBPCB decided (April 2016) to prepare a digitised map with data relating to discharge route of 43 SPIs along with the 54 drainage channels. However, the work was not initiated till December 2017 on the pretext that confluence point of the canals carrying industrial wastewater and River Ganga were densely populated places and land for construction of CETP was not available.

Out of these 54 drainage channels, records showed that 12 on the East bank contributed 95 *per cent* of BOD[84] while eight on the West side contributed 88 *per cent* of the BOD load of the river. However, **WBPCB had not taken up construction of any Common Effluent Treatment Plant (CETP) on any of these 54 drainage channels.**

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[80] *Industries falling in 33 categories having water pollution potential as identified by Principal Committee of National Green Tribunal.*
[81] *Headed by the Secretary, MoEF&CC to monitor the implementation of the directives of NGT*
[82] *Consisted of the Chief Secretaries of the concerned State, Member Secretaries of CPCB and the concerned SPCBs.*
[83] *Headed by the Secretary of the Department of Environment.*
[84] *Bilogical Oxygen Demand is the amount of dissolved oxygen needed by the organism to break down organic materials.*

In reply, the Department stated (December 2017) that digital geo referenced drainage maps of 43 SPIs were prepared. However, facts remained that WBPCB was required to prepare the drainage map for all the 514 SPIs. It further stated that construction of STP and CETP did not come under the mandate of WBPCB. The reply was, however, not tenable in view of the fact that as per the minutes (December 2014) of the meeting of the State Level Committee constituted by the NGT, WBPCB was the nodal agency to identify the points for CETP/ STPs with estimation of cost.

Thus, due to failure of WBPCB in implementing control and monitoring mechanism on the seriously polluting industries along the bank of River Ganga resulted in continued pollution load of the river.

3.4 Control of Pollution by Pulp and Paper Industries in Ganga basin

With the objective to control the pollution caused by the Pulp and Paper Industries into the River Ganga, CPCB directed (February 2015) WBPCB to implement Continuous Online Effluent Monitoring System (CEMS) by March 2015 along with other preventive measures[85] within a stipulated timeline.

WBPCB issued (March 2015) direction to 26 mills for implementation of the system as per the directions of CPCB. The status of implementation as per the compliance report of September 2016 is detailed in the **Table 3.1.**

Table: 3.1: Statement showing non-compliance of pollution in pulp and paper Industries in Ganga basin

Action Points	Time schedule	Number of Mills not complied
Continuous online effluent monitoring system	March 2015	10
Selection of third party Audit	April 2015	17
Preparation of work plan to achieve fresh water requirement targets	April 2015	6
Upgradation/ modification of Effluent Treatment Plant	March 2016	15

CPCB again directed (October 2016) WBPCB to implement the directives. Audit, however, observed that WBPCB had not monitored the implementation of the directives after September 2016. As such, these industries continued to pollute the River Ganga as before.

In reply, the Department stated (December 2017) that the WBPCB had issued directions to the industries to comply with the direction of CPCB regarding implementation of the charter for water recycling and pollution prevention and the Board was monitoring the progress of implementation by the industries. However, the fact remains that there was no record available in support of the fact that all the action points as per the direction of CPCB were complied.

[85] *Third party audit of existing water consumption and its reduction, assessment of adequacy of ETP by April 2015 and subsequently augmentation / up-gradation by March 2016, installation of sealed flow meter on bore wells and inlet pipe line of different process section by April 2015, compliance with the treated effluent discharge norms (March 2016) and short term targets of fresh water consumption (March2016) and achieving zero effluent discharge (March 2017).*

3.5 Control of pollution in five legacy polluted sites[86]

With the objective to reduce environmental and human health risks associated with legacy pollution[87], WBPCB had taken up (July 2010) a work for detail assessment of two mercury contaminated sites[88] and three Naphthalene contaminated sites[89] through a consultant. The consultant was to submit a remediation plan after site specific risk assessment.

The report including remediation plan submitted (October 2015) by the consultant confirmed contamination in one Mercury and three Napthalene sites. The consultant in its report recommended certain remedial measures to be taken up immediately as many of the metals dumped at the site like chromium *etc*., are carcinogenic in nature. The observation and the remedial measures were detailed in the **Table 3.2**.

Table 3.2: Remedial measures for the legacy polluted sites

Name of the contaminated sites	Observation	Remedial measures suggested
Durgapur Chemical Limited (DCL)	Contamination was found in sludge pits and in the effluent drain.	To adopt excavation and disposal of sludge from the sludge pits alongwith localised abstraction of perched groundwater and ex-situ treatment.
Calcutta Chemical Limited (CCL)	Contamination in site was found in subsurface, underlying soil and groundwater.	Passive collection and treatment of the contaminated perched groundwater in the contaminated site.
Belda Chemical Industries Limited (BCIL)	Contaminated site was raw material storage area and the sludge drying bed.	Excavation and ex-situ thermal treatment of soil followed by backfilling with treated soil.
Durgapur Napthalene Private Limited (DNPL)	Contamination was found in distillation house and raw material unloading area.	Backfilling with fresh soil and passive collection and treatment of the contaminated perched groundwater in the contaminated site.

Audit, however, observed that none of the remediation/ intervention measures as per the recommendation of the consultant were taken up as of December 2017. This was a serious lapse as the report indicated that pollution was not restricted to the industry site anymore and was spreading and polluting the environment outside too.

The Department stated (December 2017) that all the units had been directed to take up remediation/ intervention as per the recommendation of the consultant.

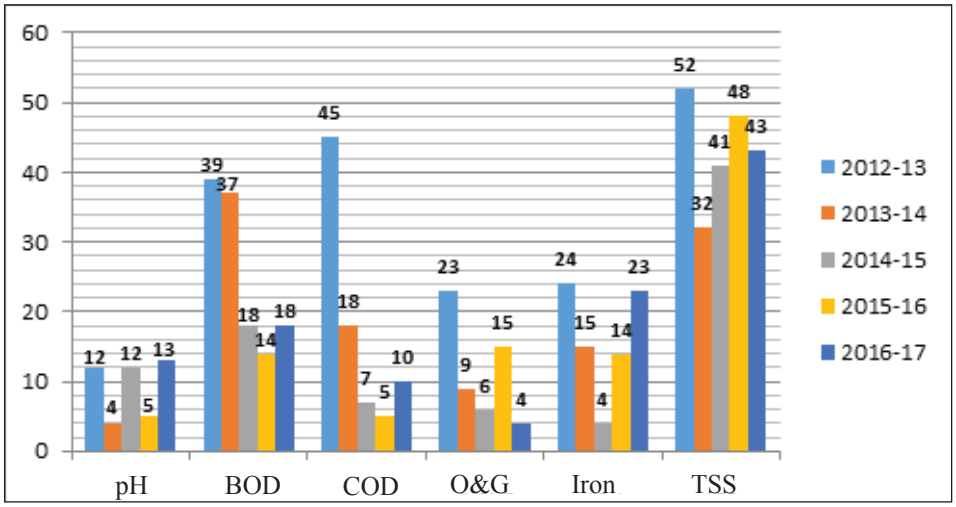
3.6 Water quality of Green Belt Canal in Haldia

The industries of the major industrial town Haldia of the State discharge their treated effluent in the Green Belt Canal (GBC) which drains into the Haldi river. Analysis of the monitoring data of the eleven sampling points of the

[86] *Sites impacted by the pollutants released by the industries during earlier period.*
[87] *Pollution caused by any chemical produced by industry that remains in the environment for a lengthy period of time following the date it entered in the said environment (soil, water or air).*
[88] *Durgapur Chemical Limited (DCL) and Hindustan Heavy Chemicals Limited (HHCL).*
[89] *Belda Chemical Industries Limited (BCIL), Calcutta Chemical Products Limited (CCL) and Durgapur Napthalene Private Limited (DNPL).*

canal revealed that the parameters like Potential of Hydrogen (pH)[90], Biological Oxygen Demand (BOD)[91], Chemical Oxygen Demand (COD)[92], Oil & Grease (O&G), Iron, Total Suspended Solids (TSS), *etc*. regularly exceeded the norms as detailed in **Chart 3.3**.

Chart 3.3: Number of times the pollutants exceeded the permissible limits



WBPCB had neither investigated the reasons nor had it initiated any action to control the indiscriminate discharge by industries that polluted the river Haldi. As such, pollution of river Haldi continued unabated.

In reply, the Department stated that (December 2017) that WBPCB closely monitors the industries discharging effluents into GBC and in case of any violation observed, necessary regulatory actions are initiated. However, the fact ramains that inspite of monitoring and actions stated to have been taken by WBPCB, pollution parameters were above the permissible limits regularly.

3.7 Effluents from the tanneries in Calcutta Leather Complex

Calcutta Leather Complex (CLC) was set up in 2005 to accommodate about 500 tanneries to operate in a modern and environment-friendly manner. As of 2017, about 376 tanneries had relocated to the CLC.

Fig. 3.9: Untreated effluents discharged in the drain towards river Kulti

As per the directives (February 2014) of CPCB the CETP at CLC was to be installed with online effluent quality monitoring system by June 2015. However, Audit observed that digital meters at inlet and outlet points of CETP installed for online monitoring were not in operation. Further, it was observed that as of April 2017, 49 tanneries out of 376 in the

[90] *A numeric scale used to specify the acidity or basicity of an aqueous solution.*
[91] *Amount of dissolved oxygen needed by aerobic biological organisms to break down organic material present in a given water.*
[92] *An indicative measure of the amount of oxygen that can be consumed by reactions in a measured solution.*

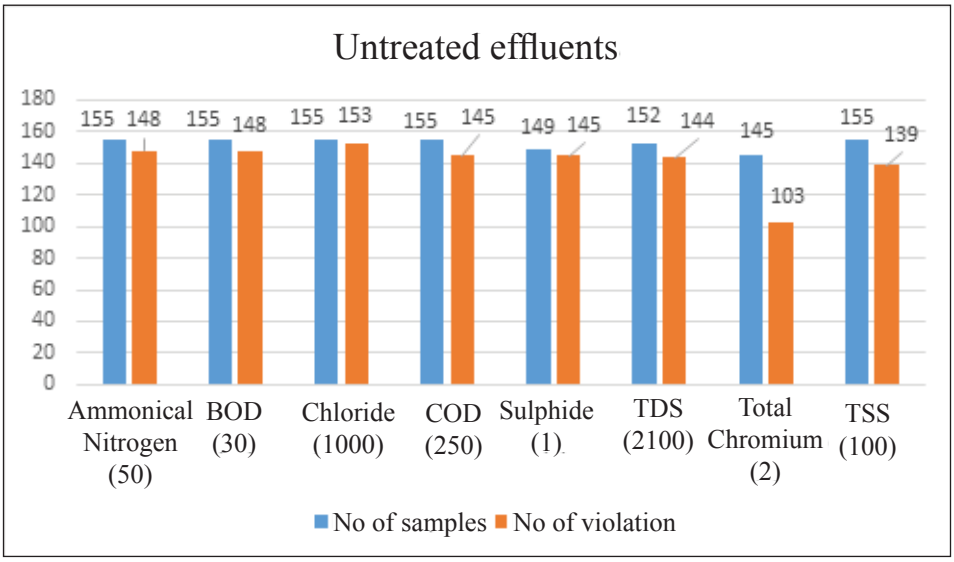
CLC were not connected to the CETP. As a result, untreated effluents were discharged into river Kulti without treatment, leading to pollution.

Fig. 3.10: Untreated effluents flowing on the road

During joint physical inspection (May 2017), Audit also observed that effluent sludge was overflowing from catch pits of the sewer line as well from the premises of tanneries into the adjacent road of CLC. About 250 tanneries were not given connection to CETP because the installed capacity of CETP was saturated.

Results of analysis (155 times conducted during 2012-17) of the quality of water of three storm water canals in CLC revealed that pollutants had regularly exceeded the permissible limits thereby causing water and air pollution as shown in the **Chart 3.4**.

Chart 3.4: Number of cases of deviation from norms of Quality of water in the Storm Water Canals



Test results of effluents discharged from outlet point of CETP during 2012-17 revealed that pollutants like Chloride and TDS exceeded the standards in all 59 tests conducted. While Ammoniac Nitrogen, BOD, COD and Sulphide exceeded the permissible limits on 39, 26, 13 and 34 occasions respectively.

It was also seen that IT industries within the CLC had complained (November 2014) that the storm water canals emitted corrosive and foul smelling gases which made the ambient air unfit for breathing.

In the absence of any action by WBPCB, the pollutants in the canal were not controlled till date (December 2017). WBPCB issued only show cause notices for the violations but it had not taken any effective steps to control the water pollution. It may be mentioned that the leather industry discharges effluents laced with chromium compounds and sulphides that are carcinogenic. Since the storm water canal opens into the Kulti River, the effluents were being widely dispersed, causing immense risk to human and aquatic health.

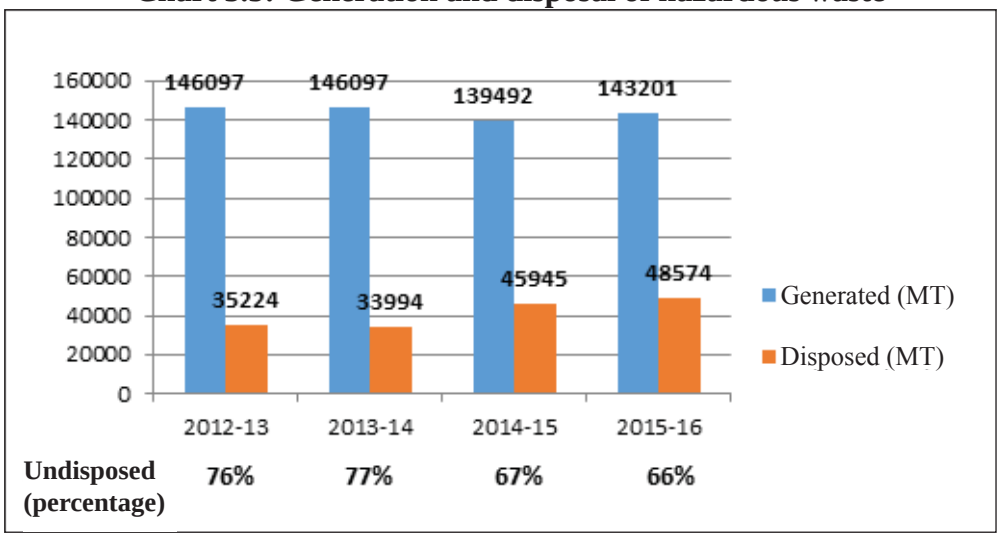
In reply, the Department stated (December 2017) that considering existing capacity of the CETPs, CTOs were granted to only 326 tanneries and initiative had been taken for installation of 5th and 6th modules of CETP. It further stated that regular monitoring of the individual tannery and CETP were conducted by WBPCB and various regulatory actions were taken by WBPCB. However, the fact remains that 49 tanneries were operating without CTEs and CTOs. Inspite of the actions stated to have been taken by the WBPCB, pollutants in the canal could not be controlled.

3.8 Control of pollution in Hazardous Waste contaminated sites

3.8.1 Gap between generation and disposal of Hazardous Waste (HW)

As per Rule 8, WBPCB was to ensure that HW was to be disposed within 90 days of its generation. One Common Hazardous Waste Treatment, Storage and Disposal Facility (CHWTSDF)[93] existed at Haldia. Audit observed that there was a wide gap ranging from 93547 MT to 112103 MT during 2012-13 to 2015-16 between generation and disposal of HW. During this period 77 *per cent* to 66 *per cent* of hazardous waste was not disposed through CHWTSDF. The disposal of HW through CHWTSDF *vis-á-vis* generation during the period 2012-13 to 2015-16 is depicted in **Chart 3.5**.

Chart 3.5: Generation and disposal of hazardous waste



As against the 474 units registered members of CHWTSDF, HW of only 244 to 276 units were disposed during 2013-14 to 2016-17 to CHWTSDF. Joint physical verification report revealed that **15 units stored the hazardous waste for more than 90 days against the HWMHT Rules.** In reply the Department stated (December 2017) that 63 *per cent* of the wastes were recyclable and incinerable. The reply was, however, not tenable as the Department could not furnish any records regarding actual amount of wastes recycled or incinerated.

[93] *A joint venture company formed by Haldia Development Authority and a private company.*

3.8.2 Escrow account not opened for maintenance of landfill sites

As per CPCB circular of 2009, every authorised Hazardous Waste Treatment, Storage and Disposal Facility (TSDF) is required to maintain landfill site for at least 30 years after the sites are completely capped. Every operator of such facility shall open and maintain an escrow account in a nationalised bank by contributing five *per cent* of its turnover in a tripartite account in joint name of the TSDF operator, WBPCB and a public sector bank acting as escrow agent. The proceeds of such account shall be utilised for maintenance of the land fill sites. Audit observed that though the CHWTSDF was operating since 2006 an escrow account was yet to be opened (September 2017).