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# Report of the Comptroller and Auditor General of India on Performance Audit of Pollution by Industries in West Bengal (Economic Sector)

## Government of West Bengal

*Report No. 5 of the year 2018*

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# PREFACE

This Report for the year ended March 2017 has been prepared for submission to the Governor of West Bengal under Article 151 of the Constitution of India.

The Report contains significant results of the Performance Audit of Pollution by Industries in West Bengal. The cases mentioned in the Report are those which came to notice in the course of test audit of the records for the year 2012-13 to 2016-17 encompassing initiatives taken for prevention, control and monitoring.

The Audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.

# Executive Summary

# Executive summary

## Chapter 1: Introduction

The World Health Organisation estimated in 2012 that 23 *per cent* of all deaths worldwide *i.e.* 12.6 million people was due to environmental causes, which included pollution in all forms. The United Nations Environment Program (UNEP)[1] defines pollution as introduction of substances into the environment that endanger human health, natural resources and ecosystems. The rapid industrial expansion in West Bengal has given rise to significant pressure on the environment. Industrial units have now become a major point source of pollution. The State contains diverse industries[2] which contribute significant amounts of pollution. Based on comprehensive environmental assessment, the Central Pollution Control Board (CPCB) had identified the cities of Haldia, Howrah and Asansol in West Bengal as critically polluted areas and Durgapur as a severely polluted area. As per the Report of the Ministry of Environment, Forest and Climatic Change (MoEF&CC), submitted to parliament in 2012, West Bengal had the highest number of red category industries[3] (12,810). West Bengal Pollution Control Board (WBPCB) under the Department of Environment is entrusted with the responsibility of regulating, controlling and implementing various environmental laws and rules including those, which relate to industrial pollution.

Taking these factors into consideration a Performance Audit on 'Pollution by Industries' was undertaken which seeks to examine the initiatives taken by WBPCB for prevention, control and monitoring of industrial pollution in the State. Audit examined Environment Clearance process of all 64 red category industries which received clearance from the State Environment Impact Assessment Authority (SEIAA) during the audit period (2012-13 to 2016-17). Further, 51 red category industrial units were also examined in detail including joint inspections, to assess the effectiveness of control and monitoring process.

Major audit findings relating to prevention, control and monitoring of industrial pollution in West Bengal are discussed below:

## Chapter 2: Prevention of Industrial Pollution

WBPCB had not prepared an inventory of industries giving cognizance to the Pollution Index. There was a mismatch in the basic data regarding sources of pollution between the databases of WBPCB and CPCB.

In October 2012, the WBPCB initiated 'Inventorisation of Hazardous Waste' through a consultant. In January 2013, 6,135 units were identified as potential hazardous waste generating units. Field visits of only 3,500 units were conducted. The inventory finalised in June 2017, included only 952 units as the

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1 *"Towards a Pollution Free Planet" Report of the Executive Director, United Nations Environment Assembly dated 15 October 2017.*

2 *Like mining, iron and steel, metallurgy, engineering, petroleum, chemicals and petro-chemicals, thermal power plants, tanneries, cement, paper etc.*

3 *Most polluting industrial units.*

hazardous waste generating units. Excluding 2548 units (72.8 *per cent*) from the field visits led to the inference that the final list could include more units.

***(Para 2.1)***

No activity envisaged in the Vision Documents for the period 2013-14 to 2015-16 were achieved till July 2017. Further, the Department did not have any vision/ plan/ policy for the year 2016-17 and onwards as such, there was no strategic vision to co-ordinate the activities of the various agencies of the Government to conserve and protect the environment.

***(Para 2.2)***

WBPCB had not prepared Zoning Atlas[4] for the State, which is the first step to prevent pollution. Industrial siting policy[5] was violated with heavily polluting industries being set up in municipal areas of Kolkata and critically polluted areas of Durgapur/Asansol/ Haldia where the Pollution Control Board restricted setting up of new industries. Further,

- None of the ecologically sensitive areas, that were to be avoided while setting up of industries, were considered in the siting policy.
- In May 2015, WBPCB had identified 170 red category units for relocation to Maheshtala. After more than two years, these units were not relocated as the Government failed to find suitable land and prepare a detailed project report.

In 2009, due to violation of environmental laws, CPCB asked WBPCB for a time bound action plan. In 2016, CPCB again directed WBPCB and fixed a certain timeline for preparation of the action plan. However, WBPCB did not comply. Far from reducing pollution, this was an indication of disinclination by the State Government to consider controlling the pollution levels.

***(Para 2.3)***

Study reports for promoting cleaner technology options were prepared by consultants in 2012-13 and 2013-14 by incurring an expenditure of ₹ 0.96 crore. However, these were yet to be implemented.

***(Para 2.5)***

The Environment Clearance (EC) procedure of category 'B'[6] projects was hampered due to deficiencies in the functioning of State Environment Impact Assessment Authority (SEIAA). Deviations from the laid down process of granting EC were observed in respect of 38 *per cent* of the cases to which EC was granted by SEIAA during the period under Audit. In six mining projects, SEIAA had granted (March 2015 to July 2016) ECs, where the respective lease tenures had already expired.

***(Para 2.6)***

WBPCB was unaware of the industries operating without Consent to Establish (CTE), which had received EC due to non-maintenance of centralised database of industries. Test check of 51 CTE files revealed that none of these industries

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[4] *Classifies the environment in a District and presents the pollution receiving potential of various sites /zones in the District and the possible alternate sites for industries through easy-to-read maps.*

[5] *Policy to set up industries in specific areas considering environmental aspects.*

[6] *Red category industries are further divided into 'A' and 'B' categories. Environment Clearance to 'B' category Red Industries are issued by SEIAA.*

had furnished prescribed documents; however, the CTEs were issued to them. The Department noted the audit observation for compliance.

***(Para 2.8)***

## Chapter 3: Control and Abatement of industrial pollution

As of July 2017, out of 5,452 Red category industries in the State, only 1908 units were running with valid Consent to Operate (CTO). Whereas 2,797 units i.e. 65 *per cent*, were running on CTOs which had already expired. Instances of non-compliance with the conditions of CTOs were observed during joint physical verifications of the units.

***(Para 3.1)***

Remedial Action Plans of three Critically Polluted Areas (Haldia, Howrah and Asansol) were not implemented. Action plan for the Severely Polluted Area (Durgapur) was yet to be prepared. WBPCB had not set up any new real time air/ water quality monitoring stations in any of these four areas as per the CPCB guidelines. Analysis of air quality monitoring reports prepared by the third party showed that particulate matter (both $PM_{10}$ and $PM_{2.5}$) exceeded permissible limits in all stations in Howrah, Asansol and Durgapur.

***(Para 3.2)***

No inspection and regular monitoring of 376 seriously polluting units situated on the banks of the River Ganga was carried out.

***(Para 3.3.1)***

Industrial effluents from 54 drainage channels were released into Ganga. However, WBPCB had not taken up construction of a Common Effluent Treatment Plant on any of these drainage channels.

***(Para 3.3.2)***

## Chapter 4: Monitoring of industrial pollution

Out of 64 industries which were granted EC by SEIAA during 2012-17, no industry had ever submitted compliance reports. Monitoring Committee had not met even once during 2012-17 to monitor these industries. Hence, non-compliant industries could not be identified.

***(Para 4.1)***

CPCB approved installation of six Continuous Ambient Air Quality Monitoring Systems (CAAQMS) in April 2016. Subsequently, it reduced (February 2017) it to two, as WBPCB failed to provide suitable sites. CPCB had to reduce/dilute its standards due to unpreparedness of WBPCB regarding site selection.

***(Para 4.2)***

Control of pollution of Grossly Polluting Industries (GPIs) lying beside the Ganga River was not taken up, in violation of CPCB Guidelines. Audit observed that during March 2015-December 2016, the WBPCB had monitored only 33 *per cent* of the 131 GPIs. From the available monitoring reports during January to March 2017 of these GPIs, it was observed that 80 units had not complied with the discharge standards, thus causing water pollution.

***(Para 4.3)***

Out of 958 hazardous waste generating units, authorisation of 136 units had expired. Audit observed that there was a wide gap, between generation and safe disposal of Hazardous waste. Fourteen *per cent* of these units that were generating hazardous waste, resorted to illegal disposal, thus causing severe pollution. Joint physical verification revealed that 15 units stored the hazardous waste for more than 90 days against the Hazardous Waste Authorisation (HWA) norms of 90 days of storage.

- No records in respect of filing of annual return of hazardous waste management by the hazardous waste generating units were made available, however, the Department admitted that only 40 *per cent* of the units filed returns during 2016-17.

- During 2012-13 to 2015-16, 77 *per cent* to 66 *per cent* of the hazardous waste was not treated and disposed at the Common Hazardous Waste Treatment, Storage and Disposal Facility at Haldia.

***(Para 4.4)***

Inspection of the red category industries were inadequate due to lack of infrastructure and manpower. WBPCB operated from 11 Regional Offices (ROs) covering 23 districts in West Bengal with an average one RO covering two districts. The infrastructure of monitoring and surveillance of 47,894 industries including 5,452 red categories was vested on 39 technical officers deployed in the Regional offices. Only the Central Laboratory was upgraded and had received (November 2013) National Accreditation Board for Testing and Calibartion Laboratories (NABL) accreditation. Upgradation and NABL accreditation process was not initiated for the other laboratories

***(Para 4.5)***

# Chapter 1

## Introduction

# Chapter 1: Introduction

## 1.1 Pollution by Industries in West Bengal

The United Nations Environment Program (UNEP)[7] defines pollution as introduction of substances into the environment that endanger human health, natural resources and ecosystems. It also impairs the use of the environment for work and recreation. It further threatens the cultural, spiritual and aesthetic values that many people attach to the richness and diversity of both natural and human-made environments. Industrial pollution is a specific kind of pollution, which is the release of wastes and pollutants generated by industrial activities into the natural environment. Emissions from industrial waste impair the quality of air, water and soil. The World Health Organisation estimated in 2012 that 23 *per cent* of all deaths worldwide *i.e.* 12.6 million people was due to environmental causes, which included pollution in all forms. Improper storage, handling, transportation, treatment and disposal of waste results in adverse impact on ecosystems including the human environment. Heavy metals and certain organic compounds are phytotoxic[8] and can adversely affect soil productivity when discharged on land.

Rapid industrial expansion in West Bengal has given rise to significant pressure on the environment. Industrial units have now become a major point source of pollution. The industrial population in the State has diverse industries[9], which contribute significantly to pollution. Central Pollution Control Board (CPCB) conducted a comprehensive environmental assessment in August 2010. CPCB identified Haldia, Howrah and Asansol in West Bengal as critically polluted areas. In September 2013, it also identified Durgapur as a severely polluted area. As per the Report of the Ministry of Environment, Forest and Climatic Change (MoEF&CC), submitted to parliament in 2012, West Bengal had the highest number of red category industries[10] (12,810), followed by Maharashtra and Tamil Nadu.

West Bengal Pollution Control Board (WBPCB) under the Department of Environment was entrusted with regulating, controlling and implementing environmental laws and rules including those relating to industrial pollution. Based on the size of the industry and consumption of resources, WBPCB had classified industrial units into Red, Orange, Green and White categories[11]. Further, the Environment Impact Assessment Act, 2006 identified 37 types[12] of Red Category industries that mandatorily had to obtain Environment Clearance

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[7] *"Towards a Pollution Free Planet" Report of the Executive Director, United Nations Environment Assembly dated 15 October 2017.*

[8] *Poisonous to plants.*

[9] *Mining, iron and steel, metallurgy and engineering, petroleum, chemicals and petro-chemicals, thermal power plants, tanneries, cement, paper etc.*

[10] *Red category industries have the maximum pollution potential.*

[11] *Red categories have the maximum pollution potential, the Orange have the moderate potential, Green have the least potential while White are non-polluting industries.*

[12] *Thermal Power Plants, Cement, Leather/skin/hide processing industry, Chemical fertilizers, Pulp & Paper industry, Common hazardous waste treatment, storage and disposal facilities (TSDFs), Common Effluent Treatment Plants (CETPs) etc.*

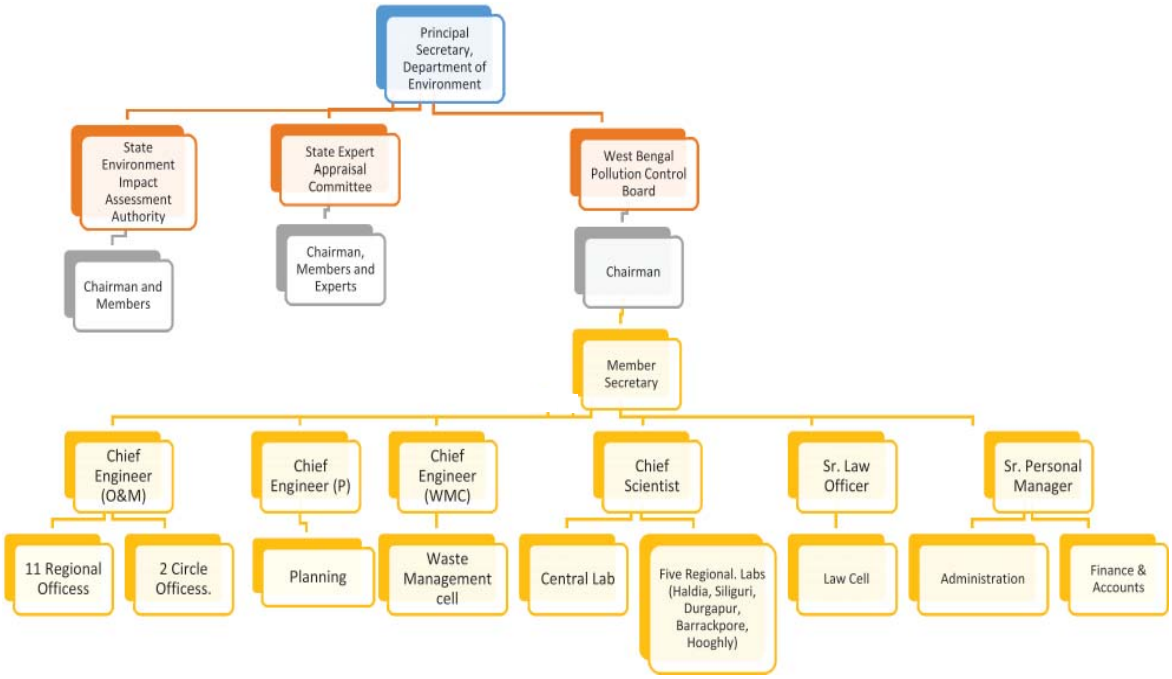
(EC) before setting up. Depending on the quantum of environmental impact, these Red Category industries are further classified as Category 'A' and Category 'B'. Category 'A' industries are mandatorily required to obtain EC from MoEF&CC. Category 'B' industries had to seek EC at the State level, from the State Environment Impact Assessment Authority (SEIAA). All polluting industries, which receive the EC, had to obtain 'Consent to Establish' (CTE) from WBPCB. WBPCB monitors the fulfilment of the conditions stipulated in the CTE before commencement of operations and issues 'Consent to Operate' (CTO). On fulfilment of these conditions the industry can commence its operations.

Considering these factors, a Performance Audit of 'Pollution by Industries in West Bengal' was undertaken. The findings have been presented in a standalone report so as to highlight the critical nature of the topic and gravity of the findings. The audit findings have been compiled in three Chapters covering the three aspects *viz*. Prevention, Control and Monitoring of industrial pollution. Issues related to the system deficiencies have been emphasized.

## 1.2 Organisational Set Up

West Bengal Pollution Control Board (WBPCB) under the Department of Environment, is headed by a Chairman nominated by the State Government. The Chairman is assisted by a Member Secretary. WBPCB functions through its Head Office located at Kolkata, two Circle Offices and 11 Regional Offices. The scientific wing assists in monitoring and analysing the quality of air, water and soil. The organisational setup of Environment Department is given in **Chart 1.1**.

**Chart 1.1: Organisational Structure**



## 1.3 Audit Objectives

Performance audit on 'Pollution by Industries in West Bengal' seeks to examine whether:

- Steps were taken to prevent industrial pollution, in compliance with applicable laws and rules;
- Measures undertaken to control industrial pollution achieved the desired objective; and
- Monitoring of industrial pollution was effective to prevent and control industrial pollution.

## 1.4 Audit Criteria

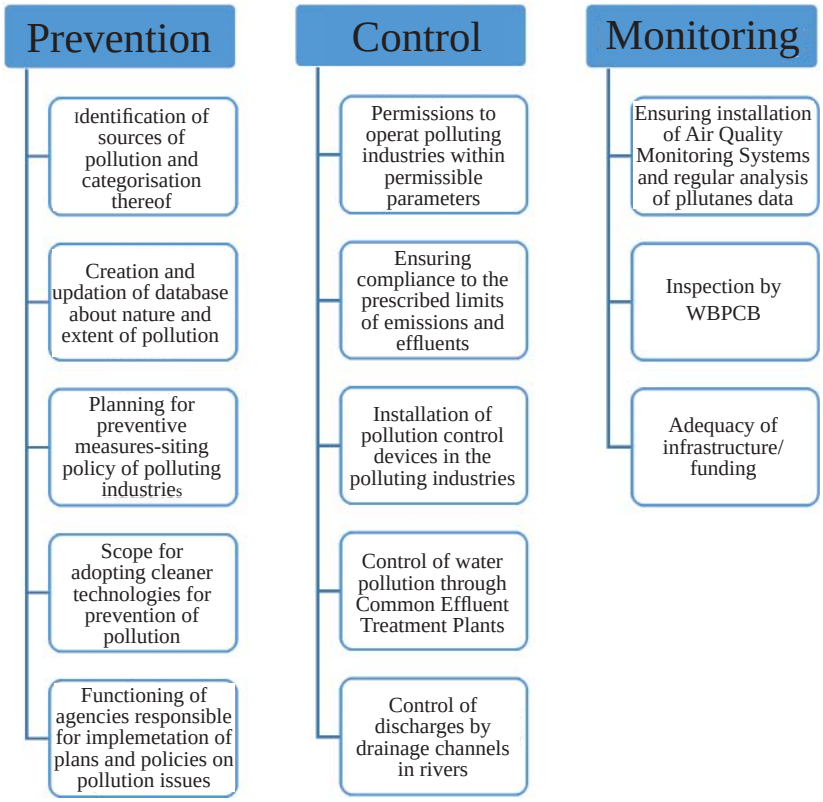
The performance audit was benchmarked against the criteria derived from the following sources:

- The Water (Prevention and Control of Pollution) Act-1974;
- The Air (Prevention and Control of Pollution) Act-1981;
- The Environment (Protection) Act-1986 and various Rules made there under;
- National Environment Policy, 2006;
- Environment Impact Assessment (EIA) Act, 2006;
- Directions issued by CPCB on air and water pollution;
- Action plan of WBPCB regarding Critically Polluted Areas; and
- Specific conditions of the EIA studies.

## 1.5 Scope, methodology and sample

Performance Audit of **'Pollution by Industries in West Bengal'** was conducted between February and July 2017 covering the period from 2012-13 to 2016-17. The Audit coverage encompassing initiatives taken for prevention, control and monitoring is mapped in **Chart 1.2.**

**Chart 1.2: Audit Coverage**




Audit methodology comprised of examination of records /documents, analysis of data of the offices of the Environment Department, WBPCB and its seven Regional Offices. Audit examined EC process of all the 64 red category industries ***(Appendix 1.1)*** which received EC from SEIAA during the five years' period under Audit. Further, out of total 5,452 red category units as identified by WBPCB regional offices, a sample of 51 industrial units[13] ***(Appendix 1.2)*** was examined in detail. Hence, it covered 1.92 *per cent* of the audit universe. **Joint inspections of all 51 industrial units were also conducted to assess the effectiveness of control and monitoring process.** Audit objectives, criteria and methodology were discussed in an Entry Conference with the Principal Secretary in March 2017. Exit Conference was held in January 2018 wherein Audit findings were discussed. Departmental replies have been incorporated suitably in the report.

Audit observations relating to prevention, control and monitoring of industrial pollution in West Bengal are discussed in the succeeding chapters.

[13] *Including 10 industrial units for which EC process was examined.*

# Chapter 2

# Prevention of Industrial Pollution

# Chapter 2: Prevention of Industrial Pollution

The enhanced pace of developmental activities and rapid urbanization have resulted in stress on natural resources and quality of life. The trend of increasing pollution in various environmental media is evident from the deteriorating air and water quality; higher noise levels; increasing vehicular emission *etc*. Realising the urgent need for arresting the trend, MoEF&CC adopted a policy for abatement of pollution. It provides for several mechanisms in the form of regulations, legislation, agreements, fiscal incentives and other measures. Further, it realized[14] that conventional pollution control approach by treatment was not delivering the desired benefits in terms of resource conservation. As a result, the thrust had been shifted to pollution prevention and control through promotion of clean and low waste technologies, re-use and recycling, *etc.*

In this Chapter the results of audit pertaining to the prevention of industrial pollution have been compiled. The first and foremost requirement for prevention of pollution is the identification of the sources of pollution, nature of pollution and extent of pollution. Hence the chapter begins with an analysis of the efforts made in this regard. Planning and policies for prevention like annual action plans, siting policy of the polluting industries, exploring the cleaner technological options have been commented upon. Results of the Joint Physical Inspection of units of some polluting sectors, supported by photographs, have also be encluded.

According to Water Act 1974 and Air Act 1981, WBPCB was required to plan comprehensive programmes for prevention and control of water and air pollution. For this purpose, identification of the polluting sources and the type and quantity of pollutants discharged were to be assessed. Action taken by the Environment Department/ WBPCB in this respect are discussed in the succeeding paragraphs.

## 2.1 Adequacy of data for planning pollution prevention

Data relating to environment parameters is important for planning, implementing and monitoring of environment programs/ outcomes. Environmental data had been defined by the Working Group on Environment Auditing (WGEA). Environmental data consists of systematically collected qualitative or quantitative information about different components[15] of the environment or human activities and sectors[16] that affect the environment.

With regard to data adequacy, audit observed the following:

### *2.1.1 Absence of reliable and updated data regarding pollution load[17]*

A reliable database regarding sources of industrial pollution is essential for effective decision-making. CPCB, in the context of classification of industries[18]

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14 *Annual Report of Ministry of Environment, Forest and Climate Change for the year 2002-03.*

15 *Quality and quantity of air, water, natural resources, ecosystems and other environmental health impacts.*

16 *Agriculture, waste, and land development.*

17 *Quantity of pollutants present in an environment.*

18 *Under Red/ Orange/ Green/ White categories.*

had identified (April 2015)[19] gaps in the process of categorisation. It was observed that the pollution due to discharge of emission and effluents and its impact on health was not considered as primary criteria for categorisation of industries. Accordingly, a working group was constituted which was to revisit the process of categorisation on the basis of Comprehensive Environmental Pollution Index[20] (CEPI). Subsequently, CPCB directed[21] (March and April 2016) State Pollution Control Boards (SPCBs) to categorise all industries on the basis of their pollution load in terms of CEPI. CPCB prescribed the formula for calculation of CEPI on the basis of (i) Scale of industrial activity (ii) scale of exceedance of Environmental Quality (level of exposure) (iii) Health related statistics and (iv) Compliance status of industries. The basic framework of the CEPI based on algorithm of Source, Pathway and Receptor was prescribed as shown in ***Appendix-1.3***.

Audit observed that WBPCB had not prepared an inventory of polluting industries giving cognizance to the CEPI. Audit test checked the minutes of the meetings of Categorisation Committee of WBPCB. **Audit noticed that the categorization was done by considering the raw material used and process of manufacturing only. The parameters prescribed by CPCB for CEPI were not considered.** Further, the database of WBPCB showed that the number of red category industries was 8419. This number was 5452 as per the data collected by Audit from all the Regional Offices of the WBPCB. Thus, there was a mismatch in the basic data regarding amount of pollution caused by different industries.

Audit also observed that some industries that had already been closed down[22] or their category has been revised as Orange[23] were still shown as Red category in the database of WBPCB. This indicated that the database of WBPCB was not updated as per the revised norms of CPCB.

Between July 2016 and March 2017, WBPCB had issued 1260 CTEs and 2717 CTOs out of which 506 CTEs and 1117 CTOs were for Red category industries. Audit observed that there was nothing on record to show whether WBPCB had calculated and considered CEPI of the industries at the time of issue of CTEs or CTOs. The evaluated CEPI reflects the environmental quality of the industrial areas which needs to be taken into account before setting up of any industry and thus is an integral component of the CTE/CTO process.

In absence of reliable and updated data regarding pollution load of the industries, the existing mechanism to prevent, control and monitor industrial pollution may not be effective.

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[19] *59th Conference of Chairmen and Member Secretaries of pollution control boards held on 8 April 2015.*

[20] *Comprehensive Environmental Pollution Index is a function of emission, effluents, hazarous wastes generated and consumption of resources.*

[21] *Vide No. B-29012/ ES(CPA)/ 2015-16 dated 7 March 2016 and No. B-29012/ESS(CPA)/ 2015-16 dated 26 April 2016.*

[22] *Eastern Distilleries, Adi Shakti Alloys and East India Pharmaceuticals in Kolkata.*

[23] *Garden Reach Ship Builders, Ankar Industries and West Bengal Pharmaceuticals and Phytochemicals Limited and Pincon Spirits.*

In reply, the Department stated (December 2017) that the WBPCB is in the process of reviewing and updating the database of enlisted industries based on the revised norms of categorisation. However, the fact remains that no action has been taken even after lapse of more than one and half year from the date of issue of instructions.

### *2.1.2 Inventorisation of Hazardous Waste*

According to Hazardous Waste (Management, Handling and Trans-Boundary) Rules, 2016 (HWMHT Rules)[24], WBPCB, *inter alia* was to prepare an inventory of hazardous wastes[25]. The Rules also stipulated for taking action against the violations and also implement programmes to prevent/ reduce/ minimise the generation of hazardous wastes.

WBPCB had taken up (October 2012) the project 'Inventorisation of Hazardous Waste' through a consultant[26]. The project, *inter alia,* included identification of all hazardous waste generating sources in the State and to recommend suitable treatment and disposal practices.

The consultant submitted the report in June 2017, which identified 952 hazardous waste-generating units operating in the State. The report recommended (i) development of careful surveillance and monitoring mechanism, (ii) regular updating of inventories depending upon modifications of manufacturing process, (iii) exploring options for reusing, recovering and recycling of hazardous waste, (iv) augmentation of the capacity of the existing hazardous waste disposal site *etc*. Information regarding implementation of these recommendations was not on record.

Audit observed that the consultant initially identified (January 2013) 6,135 units having potential of generating hazardous wastes. Identification of these units was based on raw materials used, manufacturing process adopted and products manufactured. Subsequently, the consultant conducted field visit of 3,500 units and finalised the inventory of only 952 hazardous wastes generating units. Audit, however, observed that there was nothing on record to show the basis of finalisation of only 16 *per cent* of the total number of units identified as hazardous wastes generating units.

In reply, the Department stated (December 2017) that the main reason for trimming of the list was the removal of common names and based on the site visits and study of files maintained in the WBPCB's regional offices. The reply was, however, not tenable as no records of common names appeared in the lists. Further, the consultant conducted site visits of only 57 *per cent* of the units to finalise the inventory list. The basis of pruning the list from 6,135 to 952 was not on records. In view of the fact that there are 8,419 red category industries in

[24] *Schedule VII under Rule 13 (6) and 21.*

[25] *Hazardous waste means any waste which by reasons of any of its physical chemical, reactive, toxic, flammable, explosive or corrosive characteristics causes danger or is likely to cause danger to health or environment.*

[26] *M/s. EPTISA Servicios de Ingenieria, SL (an international agency selected through global tender)..*

the State, the department's claim of only 952 units generating hazardous waste does not seem tenable.

Thus, the inventory relating to hazardous waste remained incomplete and recommendations made by the consultant were yet to be taken care of by WBPCB.

### *2.1.3 Updated database based on Source Apportionment Study*

National Green Tribunal (NGT) observed (January 2015) that there was no scientific data available with WBPCB regarding major air pollution sources in Kolkata and Howrah[27]. NGT further observed that the air in both the cities was highly polluted. In order to formulate a strategy to combat air pollution, NGT directed WBPCB to collect and generate data on the contribution of various sources of pollution. The compliance report on engagement of agency to undertake the work was to be submitted by WBPCB to NGT within four weeks. The report was to be prepared within three months from the date of directions of NGT.

Audit observed that WBPCB awarded (July 2016) the work of Source Apportionment Study[28] of Kolkata and Howrah after a delay of 17 months from the NGT deadline (February 2015). The work was to be completed within 24 months from the date of receiving first installment of project cost by the agency. As per the records, this was due to delay in finalisation of the scope of work. Audit also observed that the work actually commenced in February 2017 i.e after a delay of seven months from the date of placement of work order, due to delay in release of funds by WBPCB. As of July 2017, the work was in progress.

**Thus, due to delay in commencement of the work of Source Apportionment Study in Kolkata and Howrah, WBPCB could not update the data relating to quantum and the sources of air pollution in these two major cities.** As a result, it could not formulate necessary steps for its prevention.

In reply, the Department stated (December 2017) that WBPCB was well aware of the sources of air pollution and regularly monitors ambient air quality at various locations in the State. It also stated that the study was likely to be completed by the end of 2018. However, the fact remains that the study was undertaken to provide scientific estimates of air pollution and help in formulation of a more focused air pollution control strategy, which remained unfulfilled for more than two years.

## 2.2 Environmental Policy and Sustainable Development Goals

The Vision Document of WBPCB (November 2013) for the period 2013-14 to 2015-16, broadly envisaged

- the future challenges;
- identifying long term goals;
- setting achievable targets;

[27] *It is a major industrial cluster and also categorized as critically polluted area as per CPCB.*

[28] *Sampling of Particulate Matter (PM) through sampling at selected sites including establishment of 12 sampling and monitoring stations.*

- deciding appropriate strategies and programs; and
- prioritizing them for implementation.

Further, a Vision Plan of 2016-30 was prepared (June 2016) by the WBPCB and sent to the Environment Department. The Department, after incorporating three Sustainable Development Goals (SDGs)[29] in respect of prevention, control and monitoring of industrial pollution sent (August 2017) the Plan to the Department of Planning, GoWB for approval, which was yet (December 2017) to be approved. As such, the Department presently did not have any vision/ plan/ policy from 2016-17 onwards.

Vision Documents for the period 2013-14 to 2015-16 envisaged various specific steps in relation to the control of industrial pollution. These were (i) environment auditing of Thermal, Oil refinery and Petrochemical plants, (ii) installation of pollution control facilities in small and medium industry clusters, (iii) remediation[30] of illegal hazardous waste dump sites, (iv) setting up new regional offices, (v) up-gradation and accreditation of laboratories, (vi) waste water treatment facility in clusters *etc*. Audit observed that none of these activities were achieved till December 2017 as discussed in the subsequent paragraphs. **As such, there was no strategic vision to coordinate the activities of the various agencies of the Government to conserve and protect the environment.**

In reply, the Department stated (December 2017) that an administrative calendar outlining the activities and targets of each year was prepared incorporating most of the activities of the vision document. It further stated that most of the targets indicated in the administrative calendar were achieved. The reply was, however, not tenable as no substantiative records indicating achievement of any of the activities, as pointed out by audit, were made available.

## 2.3 Environmental Planning and action plans for prevention of pollution

CPCB guidelines regarding Environment Planning stipulate that Carrying capacity[31] of the environment is limited and some areas or ecosystems are more susceptible to adverse environmental impacts. Unplanned and hapazard location of industries might substantially increase the risks to the environment. Thus, proper Environmental planning including preparation of Zoning Atlas[32] and Siting Policy[33] of Industries is an important planning tool for controlling pollution. As of December 2017, Zoning Atlas for only Bankura district was

[29] *Substantial reduction of the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination by 2030, upgradation of infrastructure of industries to adopt clean and environmentally sound technologies and industrial processes ensuring sustainable consumption and production patterns by 2020, achievement of environmentally sound management of chemicals and wastes reducing their release to air, water and soil minimising their adverse impacts on human health and the environment.*

[30] *Treatment of waste to remove its hazardous properties.*

[31] *The maximum, equilibrium number of organisms of a particular species that can be supported indefinitely in a given environment.*

[32] *Classifies the environment in a District and presents the pollution receiving potential of various sites /zones in the District and the possible alternate sites for industries through easy-to-read maps.*

[33] *Policy to set up industries in specific areas considering environmental aspects.*

prepared by the Council of Science and Technology, GoWB as a pilot project. **However, WBPCB had not prepared Zoning Atlas for the State as a whole or the remaining Districts or even for critically polluted areas like Haldia, Howrah and Asansol,** even though this would have acted as first step to prevent and control pollution.

In reply, the Department accepted (December 2017) that the Zoning Atlas of other districts had not been prepared.

### *(a) Siting Policy for industries*

Ministry of Environment, Forest and Climate Change had issued[34] guidelines for formulating Environmental and Siting policy for industries to minimise the possible adverse effects on environmental resources and quality of life. The guidelines *inter-alia* required identification of ecologically[35] or otherwise sensitive areas on priority basis. These were to be avoided for setting up of certain industries. Besides, it recommended environmental criteria like (i) non-conversion of forest land and prime agricultural land, (ii) physiographic barrier between the industry and the township to be considered for approval of project sites.

The Siting Policy (Policy) for municipal areas of Kolkata, Howrah and Burdwan (Durgapur) was approved (June 2014) by DoE, GoWB and adopted by WBPCB in July 2014. The policy prohibited setting up of any Red category industry within municipal areas of Kolkata Metropolitan Area (KMA) and municipal areas of Burdwan district[36]. Diversification, modernization or expansion of existing Red Category industries situated within the municipal boundaries of KMA were to be dealt with on case to case basis. For that matter assessment of their environmental impact and pollution management proposals were to be taken into account. It was observed that Haldia industrial zone was not included in the policy even though CPCB had identified the zone as critically polluted area. **Audit further observed that the Policy did not identify any ecologically sensitive areas to be avoided while setting up the industries.**

In reply, the Department stated (December 2017) that the WBPCB strictly follows GoI's siting guidelines for industries and the siting policy of the State. However, the fact remains that Haldia, the critically polluted area as identified by the CPCB, was not considered in the siting policy of the State. Moreover, neither any ecologically sensitive area was identified nor it was considered in the siting policy.

In addition, Audit observed following irregularities in implementing the siting policy of the State:

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[34] *Available on the website of Ministry of Environment, Forest and Climate Change.*

[35] *Ecological and/or otherwise sensitive areas include religious and historic places, archaeological monuments, hill and beach resorts, coastal areas rich in mangroves, breeding grounds of specific species, estuaries, biosphere reserves, national parks, sanctuaries, natural lakes and swamps, tribal settlements, areas of scientific and geological interest, border area, airports, etc.*

[36] *Except Jamuria Industrial Estate.*

- Eveready Industries India Limited, a Red category industry, located within Municipal area of Kolkata, proposed (February 2013) for modification of its existing furnaces. WBPCB approved (April 2013) the modification proposal and granted (September 2014) Consent to Establish on the ground that the technology transfer will not increase the pollution load. Audit observed that the approval of WBPCB was not based on i) assessment of the carrying capacity of the location, ii) environmental impact and iii) environmental pollution management proposal for such activity. In reply, the Department stated (December 2017) that the proposal was approved considering 'no additional pollution load contribution'. However, the fact remains that the approval was granted by WBPCB only on the claim of the industry without verifying any document in support of its claim.

- According to Siting Policy of the State, Dyeing and Bleaching industries being Red category industries were prohibited from setting up units within the municipal areas of Kolkata (KMA). Pursuant to directions of National Green Tribunal (NGT), WBPCB had closed down (December 2014) 79 such units which did not have CTOs. It also identified (May 2015) 91 similar units (which had CTOs) which were found operating within the KMA. Audit observed that WBPCB had proposed to relocate all these 170 units to another place (Maheshtala) within KMA. This proposal was against the Siting Policy, as setting-up of these industries was prohibited in KMA. Furthermore, WBPCB proposed (May 2015) to the State Government for the area (Maheshtala) to be designated as an industrial estate with special consideration. **Audit further observed that the relocation had not taken place and those 91 units were continuing their operations in the prohibited area.** WBPCB did not follow proper environment management practices. As such, the whole purpose of the Siting Policy was defeated and these units continued to cause pollution, without consideration of the carrying capacity. Accepting the audit observation the Department, stated (December 2017) that the Government was in process of finding a suitable plot of land and preparing a detailed project report for the purpose of relocation of these industries. However, the Government could not succeed in finding a suitable plot of land even after lapse of more than two years.

### *(b) Action Plan for control of air pollution*

In consequence to the violation of National Ambient Air Quality Standards (NAAQS 2009) by five cities[37] of the State, CPCB requested (August 2012) WBPCB to formulate a time bound action plan to control the air pollution in those cities. The Plan *inter alia* was to incorporate (i) inventorisation of the polluting industries (ii) control of industrial emissions ensuring compliance to standards and (iii) Round the clock vigilance to control clandestine emissions[38] *etc*. It was observed that WBPCB did not prepare any Action Plan for these cities till date (December 2017). As such, subsequent actions to control air pollution in these cities as per the National Ambient Air Quality Standards was not initiated.

CPCB again directed (July 2016) WBPCB to finalise the Action Plan within 45 days and to report the progress of implementation every six months. WBPCB

[37] *Asansol, Haldia, Durgapur, Howrah and Kolkata.*
[38] *Irregular releases of gases, mostly from industrial activities.*

(October 2016) prepared a draft Action plan only for Kolkata as against preparation of action plan for five cities, which was yet to be finalised. WBPCB also formed (October 2016) an Air Quality Management Team (AQMT) to finalise the Action Plan, review the implementation, *etc*. Audit, however, observed that the AQMT had not met since November 2016. As such, air pollution continued unabated and unchecked in these five cities.

In reply, the Department stated (December 2017) that Action Plans for the cities of Kolkata and Howrah were prepared based on the instructions of National Green Tribunal and are in the process of implementation. The reply was, however, not acceptable as WBPCB could not furnish the copy of the Action Plans though called for in January 2018. Further, the fact remains that Action Plans for the other three[39] cities were yet to be prepared.

***Despite request by CPCB in August 2012 for preparation of an action plan for achieving NAAQS, WBPCB did not take action. CPCB again directed in July 2016 and fixed timelines for preparation of the Action Plan. Even then no action was taken. This repeated defiance of CPCB instructions indicated lack of seriousness in the efforts of the Government for controlling air pollution in the State.***

## 2.4 Establishment of Environmental Compliance Assistance Centre (ECAC)

WBPCB engaged (August 2012) an agency for consulting services for development of Business Strategy and Plan for Environmental Compliance Assistance Centre (ECAC) in West Bengal. Objectives of ECAC were to assist the industries of the State by providing them information on environment compliance and related issues, legal requirements, technology options, financing opportunities and economic instruments. The centre would act as a bridge between the industries and the environmental regulators through capacity building for all stakeholders, awareness generation among general public on pollution prevention and publishing various technical and statistical reports.

The agency submitted its report in February 2014 to WBPCB which was forwarded (December 2014) to DoE, GoWB. As of December 2017, ECAC had not been established although WBPCP had accepted the report. No reason for non-establishment was found on records.

Even after lapse of more than three years, the report has not been acted upon. Considering the ever-changing nature and levels of environmental pollution as well as the technological advancements in the measures to be followed for prevention, control and monitor the pollution, this report runs the risk of becoming obsolete.

Hence, the objective of establishing a knowledge centre in order to provide assistance to the industrial units to comply with the environment issues could also not be achieved.

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

[39] *Durgapur, Haldia and Asansol.*

## 2.5 Prevention of pollution through cleaner technology options

Clean Technologies are distinct and different from "end -of-pipe"[40] abatement technologies. It minimises the generation of waste in the production processes, rather than treating the wastes after generation. Furthermore, clean technologies are less intensive in using the raw materials and energy than conventional technologies, which rely on pollution abatement after generation.

During 2012-17, WBPCB had undertaken studies on two industrial sectors i.e. (i) Sponge Iron (ii) Tannery and Chrome Chemical. Further, it had taken up one professional exchange programme for the Dyeing and Bleaching industry for promoting cleaner technology options. These sectors had severely polluting industries causing air and water pollution. As per the records of WBPCB, about 1733 industries fall under these three sectors, which is approximately 32 *per cent* of total Red category units of the State. Audit observations relating to studies on clean technology undertaken by WBPCB are discussed below:

### *(a) Sponge Iron sector*

WBPCB had undertaken (September 2012) a study of the Sponge Iron (SI) Industry sector in West Bengal through a consultant at a cost of ₹ 0.54[41] crore. The objective of the study was to explore the feasibility of clean technology options by replacing coal with clean fuel and considering the availability of clean fuel *i.e.* Coal Based Methane (CBM) in the State. The study was also to find out ways for environmental improvement in respect of emission control, water conservation, solid waste management, *etc.* for sponge iron industries.

According to the Study Report (February 2014), the primary cause for unmanageable pollution was (i) ineffectiveness of the air pollution control systems, (ii) short life of the kiln, (iii) inadequate kiln waste gas cleaning, (iv) inadequate water conservation efforts, *etc*. The study report recommended opting for CBM, phasing out of low capacity rotary kilns, industry initiative and institutional capacity building. WBPCB accepted (March 2014) the recommendations.

Further, WBPCB undertook (September 2012) a professional exchange programme in Sponge Iron sector to obtain information regarding implementation of clean technology measures in Gujarat and Maharashtra. The study report of this exchange programme *inter-alia* recommended that Coal based sponge iron units should be discouraged to control higher particulate emission. **Audit, however, observed that WBPCB had not taken adequate action for implementing the recommendations of these study reports.**

In reply, the Department stated (December 2017) that the Board was yet to receive any proposal for new gas based sponge iron units and CBM was not available in sufficient quantity in the State. Regarding implementation of the recommendations of the Study Report the Department stated that total 22 units in the State had installed Waste Heat Recovery facility so far. The reply was not tenable as during 2011-12 to 2015-16, the production of CBM in West Bengal rose from 79.106 to 389.423 MMSCM[42] *i.e.*, the State's share

[40] *Treating the wastes after generation at the point of discharge.*
[41] *Excluding Sales Tax.*
[42] *Million metric standard cubic metres.*

of India's total production expanded from 94 *per cent* to 99 *per cent*. Further, 369.857 MMSCM of CBM (39.12 *per cent* of production in 2015-16 and 2016-17) had to be flared up. Further, only 22 out of 591 industries has adopted the heat recovery process, showing inadequacy of the initiative.

### *(b) Tannery and Chrome Chemical sectors*

WBPCB had undertaken (June 2012) a study of the Tannery and Chrome Chemical sector in the State through a consultant[43] at a cost of ₹ 0.42 crore. The consultant submitted the report in October 2014, which recommended some cleaner processing options[44] for preservation and processing of the raw materials. The study suggested cleaner technologies in i) post-tanning[45] and finishing[46], ii) energy conservation measures and iii) solid waste management. The study also surveyed existing production process and environment of five chrome chemical industries in the State. The study recommended industry specific actions for reducing pollution and achieving zero discharge. The study also laid out roadmaps for implementation of the recommendations.

Scrutiny of the records of WBPCB revealed that even after three years of submission of the study report, no action had been initiated. **As of July 2017, pollution in 628 tanneries' units operating in the State remained unabated.**

The Department stated (December 2017) that tanneries in the State were located in a cluster at Calcutta Leather Complex where Common Effluent Treatment Plant (CETP) and Common Chrome Recovery Units have been set up for treatment of industrial effluent. WBPCB had also directed Department of Micro Small and Medium Enterprises (MSME), West Bengal to put up a common hazardous waste treatment facility at the leather complex. The reply was not tenable as the study report after considering the existing CETP recommended to follow cleaner processing options for preservation and processing of raw materials and suggested industry specific actions for reducing pollution and achieving zero discharge.

### *(c) Textile Dyeing and Bleaching industrial sector*

WBPCB had organised (March 2013) a professional exchange programme of Textile Dyeing and Bleaching industrial sector in Tirupur, Tamil Nadu to develop knowledge and overall capacity building of the regulatory bodies and industries. The study report of the programme suggested that (i) the system of water reuse, (ii) CETP in clusters run by cooperatives and (iii) management of waste water from these sectors in Tirupur had been quite effective. This should be emulated by the clusters of dyeing and bleaching sector in the State. **Audit observed that WBPCB had not taken any initiative for upgradation of effluent treatment system for overall environmental management following Tirupur model.** As a result, the preventive measures to combat pollution impact in 514 dyeing and bleaching industries could not be taken up.

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[43] *Central Leather Research Institute (CLRI), Chennai.*

[44] *Desalting, soaking using enzymes, soaking in drums, green fleshing, cleaner liming, Ammonium free liming, pickling and chrome tanning, etc.*

[45] *In post tanning, operations are performed to add certain properties to the leather products like water repellence.*

[46] *Finishing process enhances the appearance of the leather product like adding gloss and shine etc.*

In reply, the Department stated (December 2017) that initiative had been taken to identify a suitable plot of land through MSME for setting up a CETP for the dyeing and bleaching units in a cluster. However, the facts remain that even after four years of the study, the Department was yet to identify a land for setting up of a CETP.

***Thus, two studies conducted through consultants by incurring an expenditure of ₹ 0.96 crore and two professional exchange programmes did not yield any benefit as the recommendations made in the study reports were not implemented. This made the expenditure wasteful.***

## 2.6 Functioning of SEIAA and SEAC in prevention of pollution

As per the Environment Impact Assessment (EIA) Notification, 2006[47], all new projects under category 'B' including expansion, modernisation and change in product mix of existing projects require prior environmental clearance from SEIAA. The State Expert Appraisal Committee (SEAC) screens, scopes and appraises these projects before environment clearance. Both SEIAA and SEAC are constituted by MoEF & CC on the recommendation of GoWB.

During 2012-17, SEIAAs and SEACs were reconstituted three[48] times. Audit observed the following infirmities in the functioning of SEIAA/ SEAC:

DoE, GoWB notified (August 2010, December 2013 and March 2017) that the office of the Chief Environmnt Officer, DoE, GoWB, would act as the Secretariat of SEIAA. Office of Member Secretary of WBPCB would function as Secretariat of SEAC. Audit observed that neither DoE nor WBPCB had designated manpower or resources for the secretariat of SEIAA or SEAC.

The SEIAA and SEAC were to be reconstituted after every three years. Audit, however, observed that during the Audit period, SEIAAs and SEACs were constituted after a delay of 55 days, 185 days and 81 days. This was due to non-submission of credentials, certificate of non-conflict of interest, non-adherence to prescribed age criteria of the members *etc*. **Due to delay in constitution, the first meetings of SEIAA and SEAC were held up for three to nine months, and during these periods, SEIAA did not entertain any application for EC clearance.**

Records further revealed that SEIAA had convened 66 meetings to consider EC applications of 165 industrial projects, of which EC was granted to only 64 industrial units. Audit observed that, SEIAA had taken one to six years in granting ECs to 36 industrial units against the stipulated eight months.

## 2.7 Prevention of pollution through Environment Clearance process

As per section 4 of The EIA Notification 2006[49], an industry (project proponent) seeking EC had to apply in the prescribed form with a copy of pre-feasibility project report. After screening of the pre-feasibility project report, SEIAA determines whether the project requires an Environment Impact Assessment (EIA) Study. The projects which require EIA study are termed as Category B1

[47] *Notification No.J-11013/56/2004-IA-II (I) dated 14th September, 2006.*
[48] *June 2010, December 2013 and February 2017.*
[49] *S.O. No. 1533 dated 14 September 2006.*

projects and remaining projects are termed Category B2[50]. The objective of EIA is to foresee the potential environmental problems that would arise out of a proposed development and address them in the planning and design stage. In doing so it can enable the integration of environmental concerns and mitigation measures in project development.

SEAC determines the Terms of Reference on which a Category B1 project has to get the EIA study done by any accredited agency. Public Consultation[51] is the next step, which is conducted by WBPCB. Based on EIA study report and the Public Consultation, SEAC appraises the project and gives suitable recommendation to SEIAA for approval or rejection.

During 2012-13 to 2016-17, SEIAA had granted EC to 64 category 'B' industries Audit observed deviations from the laid down process of grant of EC clearance in respect of 24 cases to which EC was granted, as discussed below:

**(a)** As per EIA Notification 2006, the project proponent should provide to SEIAA, (i) the EIA study report by accredited[52] consultants, (ii) an Environmental Management Plan (EMP) and (iii) a pollution mitigation programme to meet environment standards. It was observed that in two Cement projects[53] under B1 category, SEIAA had accorded EC based on EIA report prepared by the project proponents itself. Besides, no EMP or pollution mitigation measures were furnished by the project proponents. However, clearance was granted. SEIAA also exempted the proponents from conducting public hearing of the projects although they were required to conduct public hearing as per section 7(III) of EIA Notification 2006.

**(b)** As per EIA Notification 2006, all projects located within 10 km of the Inter-State boundaries, critically polluted areas, *etc*., would be treated as Category 'A' and to be approved by MoEF & CC only. Audit, however, observed that SEIAA, in disregard to the EIA Notification 2006, granted EC to eight projects[54] which were located within 10 km of the Inter-State boundaries.

**(c)** Mining of minor minerals causes major environmental problems including (i) ground and surface water pollution, (ii) loss of productivity of land, (iii) air and noise pollution, (iv) disturbance of soil strength and (v) deforestation. As per EIA Notification 2006, EC for mining of minor minerals would be accorded based on pre-feasibility report of the project, validity of lease tenure and approved plan. However, Audit observed that SEIAA, in six mining[55] projects, granted (March 2015 to July 2016) ECs where the respective lease tenures had already expired.

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[50] *Do not require environment clearance; hence do not go through the EIA process but are approved/rejected based on the pre-feasibility report submitted by the project proponent.*

[51] *Public Consultation is the process by which the concerns of local persons and others to be affected by the project are ascertained and taken into account in the project design.*

[52] *Accredited by Quality Council of India or National Accreditation Board for Education and Training.*

[53] *M/s Kanjakura Gram Panchayat and Khaitan Cement Pvt. Limited.*

[54] *Shakambhari Ispat & Power Ltd, Md Bazar Stone Crusher, Kamal Stone Quarry, Khan Stone Quarry, Tapas Kumar Dutta & Guljar Mallick, Aryans Stone Quarry, Jayanti Stone Quarry and Saran Alloys Pvt. Ltd.*

[55] *Senera Granite Mine, Kadampur Stone Mine, Paschim Bero Granite Mine, Balliapur Stone Quarry, Fire Clay Mine by WBMDTC and Baradihi Quartz Mine.*

**(d)** As per EIA Notification 2006, category 'B' industries engaged in production of chemicals, bulk drugs, metallurgical[56] products located within a notified industrial area would be treated as Category 'B-2', which were exempted from conducting public hearing. Audit observed that SEIAA exempted six category 'B' projects[57] from conducting public hearing even though these projects were not located in any notified industrial area.

**(e)** Cement and sponge iron industries are among the major polluting industries, which also affect human health adversely. As per EIA Notification 2006, cement-grinding units would fall under Category 'B-2' industries and exempted from public hearing subject to the condition that transportation of raw material and finished products are primarily (90 *per cent)* transported through railways. Audit observed that SEIAA had granted EC to two[58] cement industry although the concerned industry were not connected through railway.

Out of total 64 projects, in 24 projects (38 *per cent*) ECs were granted by SEIAA in violation of the conditions of the EIA Notification 2006. SEIAA failed to ensure compliance of the conditions of the EIA effectively as a tool for prevention of industrial pollution in the State. As such, considering environment consequences of these industrial activities, SEIAA should have been more vigilant while granting EC for compliance of EIA.

The Department accepted audit's observation.

***Thus, issuance of ECs by the SEIAA to the private sector industries, without ensuring the fulfilment of stipulated conditions indicate disregard of the environmental concerns by the authority. A vigilance angle in such favours cannot be ruled out.***

## 2.8 Prevention of pollution through the mechanism of 'Consent to Establish'

As per Air and Water Act[59], Industries discharging trade effluent into water, stream, well, sewer or on land are required to obtain Consent to Establish (CTE) from WBPCB for establishment of any new unit or before carrying out expansion/ modernisation of any existing unit.

Audit observed that WBPCB did not have any centralised database of industries, which had already obtained CTEs. As such, WBPCB was unaware of whether any industry which had received EC was operating without a CTE. CTE was an important tool to enforce the stipulations contained in the ECs for abatement of water and air pollution. Absence of any centralised database of CTE would affect the pollution prevention and monitoring mechanism.

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[56] *Ferrous and non-ferrous.*

[57] *SSB Chemicals Industries, West Bengal Chemical Industries Ltd, Subham Oils & Resins Ltd, Fresenius Kabi Oncology, Reform Metalics and Gajanan Iron Pvt Ltd.*

[58] *M/s. Icore Super Cement Pvt. Ltd. and Sri Shankar Suwan Estate Pvt. Ltd.*

[59] *Under Section 21 of The Air (Prevention and Control of Pollution) Act 1981 and Section 25/26 of Water (Prevention and Control of Pollution) Act, 1974 as amended.*

Test check of 51 CTE files in four[60] regional offices revealed that **none of the 51 industries had furnished all the prescribed documents; however, the CTEs were issued to them.** These are detailed in **Table No.2.1.**

**Table 2.1 : List of documents not furnished by industries**

| Sl.No. | Number of industries | Documents not furnished |
|---|---|---|
| 1. | 20 | Project reports |
| 2. | 15 | (a) List of machineries<br>(b) Details of emission, effluent and solid waste management plan |
| 3. | 11 | Details of capital investment |
| 4. | 6 | Land documents |
| 5. | 5 | Copy of trade licenses |
| 6. | 44 | Road map/Route plan |
| 7. | 22 | Site Plan |

However, all these industries were accorded CTEs. WBPCB, however, failed to use the CTE as a tool for the prevention and monitoring of industrial pollution. As a result, mechanism of CTE for prevention of pollution was defeated.

In reply, the Department stated (December 2017) that the audit observation regarding CTE applications was noted and would act accordingly.

[60] *Salt Lake, Asansol, Durgapur and Haldia.*

# Chapter 3

# Control of Industrial Pollution

# Chapter 3: Control of Industrial Pollution

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.

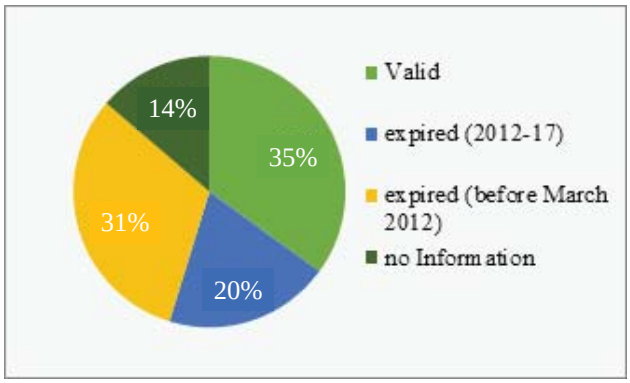


**Chart 3.1: Status of validity of CTO**

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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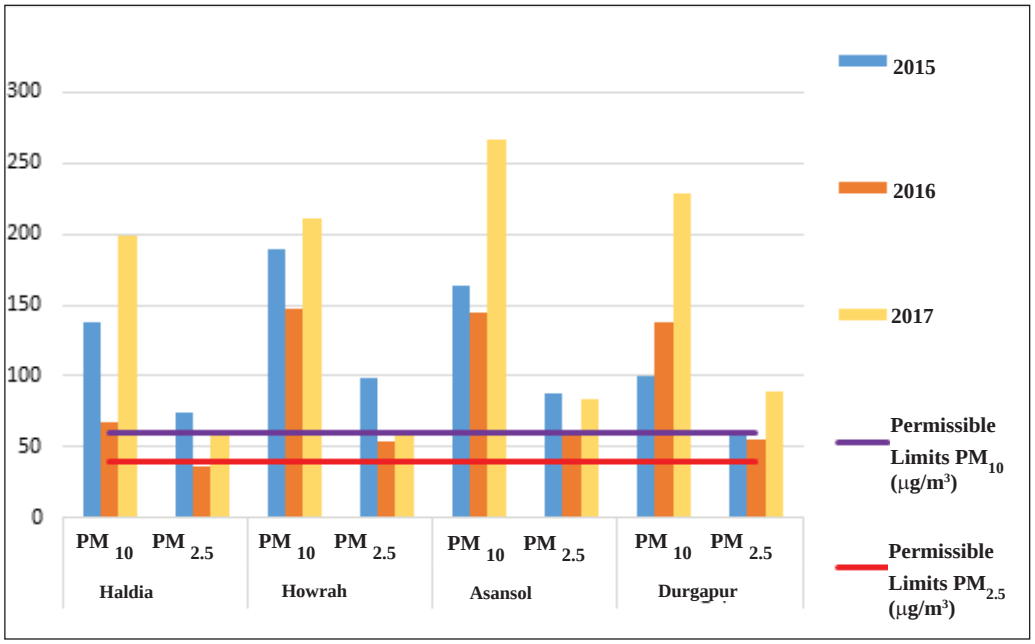
[73] *One in the windward side and leeward direction in each CPAs.*
[74] *Identifying and quantifying of major pollution sources.*
[75] *For collection of basic data related to impact of pollutants on public health in the vicinity of the CPAs.*
[76] *GPIs were identified as industries discharging effluents 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.

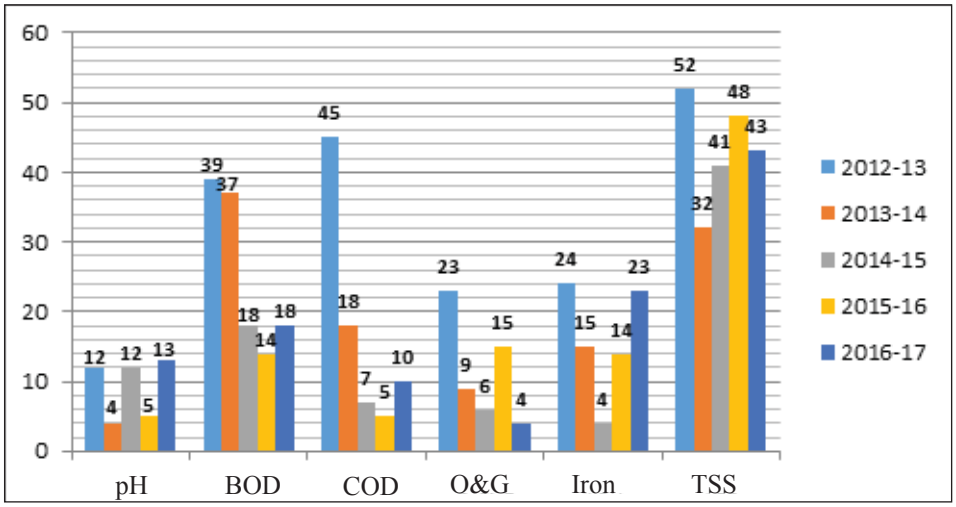
## 3.6 Water quality of Green Belt Canal in Haldia

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.*

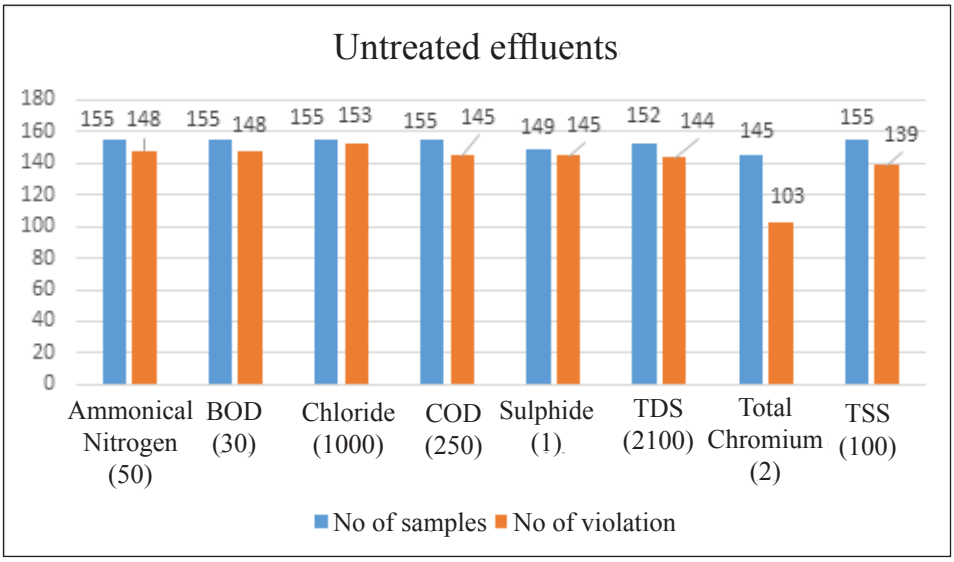
CLC were not connected to the CETP. As a result, untreated effluents were discharged into river Kulti without treatment, leading to pollution.

**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.

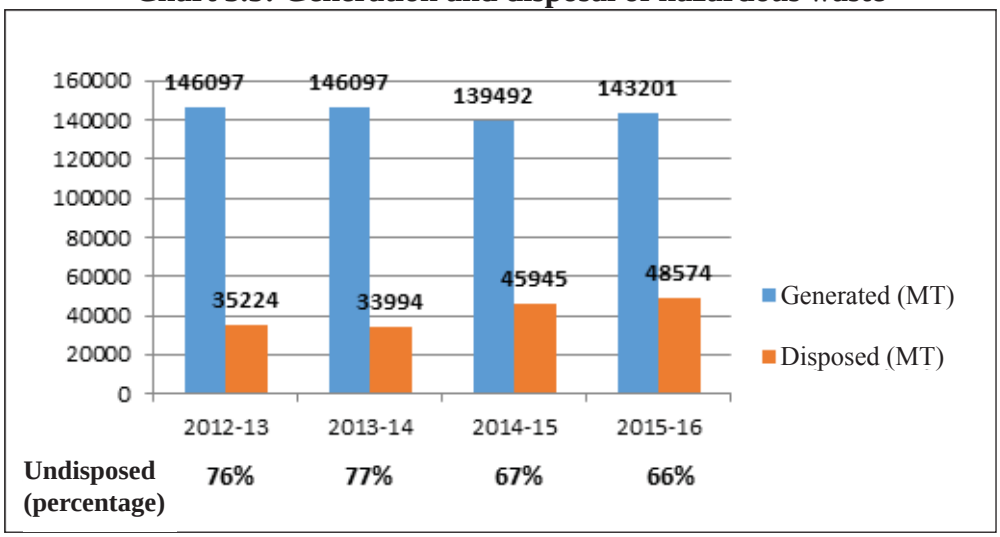
In reply, the Department stated (December 2017) that considering existing capacity of the CETPs, CTOs were granted to only 326 tanneries and initiative had been taken for installation of 5th and 6th modules of CETP. It further stated that regular monitoring of the individual tannery and CETP were conducted 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).

# Chapter 4

# Monitoring of Industrial Pollution

# Chapter 4: Monitoring of Industrial Pollution

Monitoring of industrial pollution encompasses monitoring by WBPCB of the industrial emission/ effluents and disposal of hazardous wastes as per the applicable norms. WBPCB was also to conduct periodical inspection through the regional offices to assess compliance of the conditions stipulated in EC/ CTOs. This monitoring extends to assessing environment quality parameters for air, water, soil *etc*.

This chapter points out the deficiencies in the monitoring measures followed by appropriate authorities. During course of audit, cases of non-installation of Air Quality Monitoring Systems, Non-monitoring of effluents being discharged by Grossly Polluting Industries in Ganga Basin, insufficient infrastructural arrangements for monitoring were noticed. In the absence of regular monitoring by WBPCB, Joint Physical Inspections of the Hazardous Waste generating industries was taken up. Outcome of these Inspections has also been incorporated in this chapter.

## 4.1 Post-Environment Clearance monitoring by SEIAA

ECs are contingent on environment protection measures to be implemented by the project proponent like installation of sewage treatment plants, air pollution control measures like sprinklers, plantation *etc*. WBPCB monitors whether the conditions on which the EC was given is being met by the project proponent. According to EIA Notification 2006 the project proponents would submit half-yearly (June and December) compliance reports of the EC to the SEIAA. All such compliance reports submitted by the project authority would be public documents and were also to be displayed on the website of the SEIAA. DOE, GoWB constituted a Committee for monitoring the compliance of EC's conditions imposed by SEIAA.

**Audit observed that out of 64 category 'B' industries which were granted EC by SEIAA during 2012-17, no industry had ever submitted their compliance reports to it.** Audit further observed that the Monitoring Committee had not met even once during 2012-17 to monitor these industries. As such, there was no effective mechanism to check whether pollution control measures stipulated in the ECs were implemented. Further, absence of monitoring also inhibited any deterrence for non-compliance as the violators were not identified for further action.

## 4.2 Air Quality Monitoring (AQM) in industrial areas of the State

During October 2012 to December 2015, WBPCB monitored air quality through 24 manual stations in the State. Number of stations subsequently increased to 72 in January 2016 including 31 stations in industrial areas like Asansol, Durgapur, Haldia, Howrah *etc.* Adequacy of Air quality monitoring in these areas were discussed below:

### 4.2.1 Ambient Air Quality monitoring as per the standards

CPCB notified[94] (November 2009) National Ambient Air Quality Standards for monitoring of air quality wherein 12 pollutants[95] known as hazardous to human being, vegetation and animals were to be continuously monitored through monitoring stations.

- Audit observed that during 2015-17, only in nine stations out of total 72 stations, all the 12 pollutants were being monitored. Whereas, in four tations, four pollutants[96] and in remaining 59 stations three pollutants[97] were being monitored.

- Further, as per the Guidelines for Ambient Air Quality Monitoring (AAQM) of CPCB of April 2003, selection of site for setting up of AAQM stations was to be done after studying the sources and emissions of the air pollution along with various factors[98]. WBPCB, however, had not followed the criteria in selection of the sites. Only the height, distance from road and free flow of air were considered during selection of the sites for the new stations.

- Out of the 12 pollutants to be monitored, only three pollutants ($PM_{10}$, $SO_2$ and $NO_2$) were being monitored at all 72 stations. Analysis of the available monitoring data during 2015-16 revealed that $PM_{10}$[99] exceeded the permissible limit (60 µg/$m^3$) in 31 stations. Due to non-monitoring of other pollutants the actual level of pollution could not be ascertained by the Department for taking control measures.

The Department stated (December 2017) that the Board had identified the major air polluting industries and monitors them on regular basis. However, the fact remained that WBPCB did not monitor all parameters of air quality under NAAQS. Impact of pollutants like sulphur dioxide, lead, ammonia, benzene *etc*., which cause serious damage to health, remained unassessed.

### 4.2.2 Continuous Air Quality Monitoring

During 2012-17, WBPCB had operated five Continuous Ambient Air Quality Monitoring Stations (CAAQMS)[100] and one mobile laboratory. Since 2012, the mobile laboratory was not utilised due to lack of maintenance and upkeep. The Department stated (December 2017) that the mobile Laboratory could not be made functional due to prohibition on use of old vehicles. The reply was not tenable as no effort was taken by the Department to replace the old vehicle.

- CPCB approved (January and February 2014) two CAAQMS at Howrah and Asansol industrial area. Accordingly, CPCB transferred (March 2014) ₹ 1.10 crore for the two stations to be commissioned within 10 months from the date of receiving the fund. It directed (July 2014) to complete tendering

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94 *No- B-29016/ 20/90/ PCI-I.*

95 *Sulphur Dioxide ($SO_2$), Nitrogen Dioxide ($NO_2$), Respirable Suspended Particulate Matter (RSPM / $PM_{10}$), Fine Particulate Matter ($PM_{2.5}$), Ozone ($O_3$), Lead (Pb), Carbon Mono Oxide (CO), Ammonia ($NH_3$), Benzene ($C_6H_6$), Benzo[a]Pyrene (BaP), Arsenic (As) and Nickel (Ni).*

96 *$PM_{2.5}$, $PM_{10}$, $SO_2$ and $NO_2$.*

97 *$PM_{10}$, $SO_2$ and $NO_2$.*

98 *Health and demographic information, population growth, meteorological information, Isopleths distribution, ambient concentration, emission densities and land use pattern.*

99 *Particulate Matter of size between 2.5 to 10 microns, responsible for upper respiratory tract distress.*

100 *Two in Kolkata, one each in Howrah, Haldia and Durgapur.*

by November 2014 (within four months) and commissioning by March 2015 (within four months). WBPCB selected (February 2015) two sites and awarded (July 2016) the work to a private company. **The work was not completed till July 2017. Audit observed that WBPCB had taken 20 months to award the work as against the stipulated period of four months.** This was primarily because of delay in constituting of committee, finalization of tender document, advertising, tendering, *etc.* Further, progress of the work got delayed due to failure of WBPCB to hand over clear site.

In reply, the Department stated (December 2017) that installation and commissioning of the stations at Howrah and Asansol has now been completed. The reply was not tenable as the Department failed to provide the exact date of commissioning. However, the online data from these stations were also not available in the National Air Quality Index of CPCB.

- CPCB further approved six[101] CAAQMS in April 2016. Subsequently it reduced (February 2017) it to two as WBPCB failed to provide sites as per the criteria of CPCB. Audit observed that despite number (June and July 2016) of requests from CPCB, WBPCB failed to select sites according to criteria. As a result, CPCB was compelled to dilute the standards and the number of CAAQMS was reduced due to non-preparedness of WBPCB regarding site selection. WBPCB selected (April 2017) only two sites[102], **however, none of the projects had been initiated as of January 2018.**

Thus, WBPCB did not take adequate measures for compliance of the order of the CPCB for online continuous emission for effective monitoring of the highly polluting industrial areas of the State.

## 4.3 Monitoring of Industrial Effluents

### *4.3.1 Monitoring of effluents of Grossly Polluting Industries of Ganga Basin*

CPCB directed (February 2014) that to strengthen the monitoring mechanism of Ganga Basin industries, all the 17 categories of Grossly Polluting Industries (GPIs) had to install Online Continuous Effluents Monitoring Systems (OCEMS) and upload the monitoring data to the CPCB website by March 2015. Besides, WBPCB would install the necessary software and hardware for centralised data collection, analysis and corrective actions.

WBPCB undertook (November 2016) monitoring of 43 GPIs in the Ganga Basin. Monitoring included consent management, compliance to discharge parameters and installation of the OCEMS. It reported the compliance to CPCB for five[103] quarters. CPCB directed (January 2017) WBPCB to identify all the industries, which fell in the 17 categories of GPIs, as defined by CPCB. Accordingly, WBPCB identified (January 2017) 131 industries, which fell within this classification.

**Audit observed that during March 2015 to December 2016, WBPCB had monitored only 33 *per cent* of the required industries (43 units).**

[101] *Five in Kolkata and one in Howrah.*
[102] *Coal India Limited office in Rajarhat and School of Environmental Studies, Jadavpur University, in Kolkata.*
[103] *Apr - Jun 2016, Jul - Sep 2016, Oct - Dec 2016, Jan - Mar 2017, Apr - Jun 2017.*

The limited monitoring by it also revealed that 12 units[104] had exceeded the standards of discharge by 5 to 17 times. From the available monitoring reports of the 131 GPIs for January – March 2017, it was observed that 80 units had not complied with the discharge standards while 103 units had not installed online monitoring system.

WBPCB issued show cause notices to these non-complying units but had not issued any directions nor taken any legal action. As a result, these units continued to pollute the River Ganga, with disregard to the norms.

The Department stated (December 2017) that all the 131 units under 17 categories of industries had been directed to install OCEMS as per the guidelines of CPCB. It also stated that CPCB had issued closure order against the industries which had not installed online monitoring systems. However, no information about the closure of industries under these orders was provided.

### *4.3.2 Installation of online automatic monitoring system*

WBPCB took up (January 2015) installation of Online Automatic Monitoring System (OAMS) in 43[105] GPIs in the first phase on priority basis for completion by March 2015. WBPCB also proposed (January 2015) to establish a Data Centre at its headquarters for monitoring the data generated from the OAMS. As of April 2017, the Data Centre for online monitoring of the data generated from the OAMS was yet to be established and only 38 units had installed the OAMS. **Thus, in absence of any Data Centre, online monitoring of the data generated through the installed OAMS could not be conducted.**

In reply, the Department stated (December 2017) that 42 industries have installed OAMS and WBPCB had initiated the process for receiving real time effluent monitoring data centrally at the head office of WBPCB from these GPIs. However, the fact remains that even after more than two years, the Department could not establish the Data Centre.

## 4.4 Monitoring of Hazardous waste

According to Hazardous Waste (Management, Handling and Trans-boundary) Rules, 2016 (HWMHT Rules) notified under EP Act, WBPCB is responsible to grant and renew authorisation of recyclers/ re-processors. It is also to monitor compliance of various provisions and conditions of authorisation, implement programmes to prevent/ minimise the generation of hazardous wastes and initiate actions against the violators. Further, the Rules provides that the occupier[106] generating hazardous wastes shall send annual return to WBPCB.

### *4.4.1 Non-submission of Annual returns on Hazardous Waste*

As of March 2017, records of WBPCB showed that out of 958 HW generating units[107], authorisation of 822 units was valid whereas authorisation of 136 *i.e.* 14 *per cent* units were expired. Besides, there was no record of the number of units, which filed Annual Return of HW management during 2012-17.

[104] *Durgapur Projects Ltd, , Durgapur Steel Plant, Uniglobal Paper, India Paper and Pulp, PepsiCo, Exide Industries, Gun and Shell Factory, Indian Oil Corporation, Ordinance Factories, Dhunsuri, United Breweries and A B Mayuri.*

[105] *17 categories grossly polluted industries.*

[106] *As per HWMHT Rules, "occupier" in relation to any factory or premises, means a person who has, control over the affairs of the factory or the premises and includes in relation to any hazardous waste the person in possession of the hazardous waste.*

[107] *In June 2017, a consultant identified 952 industries as HW generating units in the State.*

This posed immense risks to environment and human health.

In reply, the Department stated (December 2017) that 389 units had filed Annual Returns for the year 2016-17. The reply was not tenable as at the time of Audit, the WBPCB could not produce any records in this regard. The Department had not provided any detail about action taken against the remaining 569 (59 *per cent*) defaulting units.

### *4.4.2 Joint physical verification of industries*

During the course of audit, joint physical verifications of the industries were conducted. Violations of the stipulated norms in management of Hazardous Waste were noticed as discussed in the following observations:

#### *(i) Zinc Smelter Industry-M/s. Industrial Perforation (I) Pvt. Ltd.*

The unit is engaged in fabrication and galvanizing of earthing materials, cable trays, *etc*. The maximum Effluent Treatment Plant (ETP) sludge accumulating to 806 kg and 572 kg was undisposed in the premises of the unit for 24 months (April 2012 to March 2014) and 21 months (April 2014 to December 2015) respectively against the stipulated period of 90 days.

Between April 2012 and March 2015, some of hazardous wastes like Zinc Dross[108] and Zinc Ash were disposed at intervals of five to seven months, which accumulated to 3,990 kg and 6,625 kg. Further, during 2015-16 Zinc Dross and Zinc Ash were not disposed at all, which accumulated to 3,990 kg and 6,625 kg respectively.

In reply, the Department stated (December 2017) that necessary steps were being taken by WBPCB to increase vigilance and ensure that all the units comply with the storage provisions as laid down in the Rules.

#### *(ii) Sponge Iron Industry - M/s. K B Sponge Iron Limited*

The unit received EC in February 2016 for expansion of capacity of induction furnace and continuous casting machine from SEIAA. The unit was operating without authorisation for handling hazardous waste even though it was generating waste like used oil. The unit was not submitting return of hazardous waste (Form 4), environment statement (Form V) or EC compliance statement. The waste was found to be stored indiscriminately in the open within the premises. Used oil spillage was also noticed in the storing point during physical verification.

**Fig 4.1 : Spillage of Oil and Grease within the premises of M/s. K. B. Sponge Iron Limited**

[108] *Mineral waste that accumulates on the surface of the molten metal.*

The Department stated (December 2017) that directions were issued to the unit for obtaining Hazardous Waste Authorisation.

### *(iii) Pharmaceutical Sector – M/s. East India Pharmaceuticals Limited*

Authorisation of hazardous waste of M/s. East India Pharmaceuticals Limited had expired in March 2011. Thereafter, the unit had not renewed Hazardous Waste Authorisation. During 2012-16, the unit had not disposed HW at regular intervals and the closing balance ranged between 14.41 MT and 16.90 MT. Against prescribed disposal within three months, the unit disposed HW legally only six times during 2012-13 to 2016-17 with no disposal in 2012-13. The last disposal of HW was done in November 2016. Joint inspection revealed that hazardous waste like used charcoal, used oil were stored in open. Besides, huge accumulation of HW was also stored in the premises.

**Fig 4.2 : Storing of HW in M/s. East India Pharmaceuticals Limited**

The Department stated (December 2017) that notices were issued by the WBPCB for non-compliance in HW disposal.

### *(iv) Management of Hazardous wastes of Calcutta Leather Complex (CLC)*

EC (April 2000) of CLC *inter-alia* stipulated that HW chrome discharge generated from the tanneries were to be recovered and reused. A secured landfill was also to be set up for disposal of HW. Audit observed that 799 MT of Chrome recovered in the Common Chromium Recovery Unit during 2012-17 was taken by the operation and maintenance vendor of the Unit. Thus, the Chromium recovered was not reused in violation to the EC condition.

**Fig 4.3 :Hazardous sludge from CETP in CLC**

Hazardous sludge from CETP was to be stored in designated space and was to be disposed within 90 days. During joint physical verification audit observed that in deviation to the storage rules, the sludge was stored in open filter press area in absence of any designated Hazardous waste storage.

In reply, the Department stated (December 2017) that the matter of reusing the recovered chrome from the common chrome recovery unit by the tanneries will be taken up with CLC Tanner's Association. Regarding storage of HW, the Department stated that at present the sludge storage pits were not being used for lack of access and the matter was brought to the notice of CLC Tanner's Association.

In Joint Physical Verification of all these cases, it was noticed that the Department did not have a mechanism to keep check and act proactively. Department assured to take action against only the defaulting units pointed out by Audit.

## 4.5 Monitoring by the WBPCB

During the period from 2012-13 to 2016-17, the Board of WBPCB was constituted thrice[109] comprising of Chairman and a Member Secretary along with the departmental Secretaries of Environment, Commerce and Industries (C&I), Transport, Urban Development (UD) and Science and Technology (S&T) Departments. Besides, Mayors and Executives of five highly polluted areas[110] and five[111] other members were also nominated to the Board.

### *4.5.1 Inadequate inspection due to lack of infrastructure and manpower*

MOEF&CC directed (December 1999) that State Board may chalk out the programme of inspection or sampling by their staff in such a manner that all the units are covered for vigilance and monitoring purposes. There are total 47,894 industries in the State including 5452 Red category of industries. During 2013-17, it was observed that WBPCB had failed to cover even the red category of industries due to inadequate number of regional offices of WBPCB, environmental laboratories as well as technical manpower as discussed below:

#### *(a) Monitoring through Regional offices*

WBPCB, in 155th meeting observed (November 2012) the need for expansion of Regional Offices (ROs) network and decided to establish two ROs in North Bengal and Burdwan. Again, in Vision 2013-16, WBPCB planned to establish ROs in Raghunathpur and Khargapur industrial zone, which were being looked into by Asansol and Haldia ROs respectively. WBPCB operated from 11 ROs covering 23 districts in West Bengal with an average of one RO covering two districts. It was observed that RO (Malda) controls four districts while Durgapur RO controls three districts. Besides, Asansol and Haldia ROs cover two districts each. **However, work of establishment of none of the four ROs (North Bengal, Burdwan, Raghunathpur and Khargapur) was taken up till date (December 2017) to strengthen its surveillance infrastructure.**

In reply, the Department stated (December 2017) that proposals for setting up three more Regional/Sub-Regional offices were under consideration from May 2017. However, the Department did not respond to the audit observation about non-establishment of ROs planned earlier.

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[109] *January 2010, February 2013 and June 2016.*
[110] *Kolkata, Howrah, Burdwan, Asansol, Durgapur.*
[111] *Non-official members with interests of agriculture, fishery or industry or trade, PCCF, Forest Department and MD, WBPDCL representing companies controlled or managed by the State Government.*

### *(b) Inadequate technical manpower*

MoEF&CC observed (August 2011) that with the passage of time the responsibility of SPCB has increased manifold which was not supported by sufficient technical manpower. Hence strengthening of Board in terms of man power and expertise after conducting a study was called for.

Out of sanctioned strength of 361 persons, WBPCB had (January 2017) 180 men in position. WBPCB had sanctioned strength of 60 technical manpower (16.67 *per cent*). The infrastructure of monitoring and surveillance of 47,894 industries including 5,452 red category was vested on 39 technical officers deployed in 11 Regional Offices. As such, each technical officer in the field was responsible for an average of 1,228 industries or 139 red industries. **WBPCB had not done any assessment of adequacy of manpower during 2012-17.** Besides, it had conducted last recruitment of engineers in 2005.

In reply, the Department stated (December 2017) that proposal for filling up the vacant posts were under consideration.

### *(c) Environmental Laboratories*

### *(i) Regional laboratories*

WBPCB operated five[112] Regional laboratories in districts and a Central Laboratory in Head Office. MoEF&CC directed (August 2011) that all SPCB Laboratories and/ Central Laboratories must acquire accreditation[113] under Environment (Protection) Act, 1986 , alongwith Occupational Health Hazard and Safety Management System- 18001 (OHSAS) Certification within one year. In the Vision of 2013-16, WBPCB proposed to upgrade the analytical facility of Central, Haldia and Malda laboratories for analysis of critical environmental parameters and to receive National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation of Central, Barrackpore and Durgapur laboratories. Audit observed the following:

- Only the Central laboratory was upgraded and had received (November 2013) NABL accreditation. It procured (2010-13) sophisticated instruments amounting to ₹ 9.95 crore with funds from GoI to upgrade the analytical facility. However, **WBPCB did not maintain any log books of the instruments purchased.** As a result, utilisation of the instruments could not be ascertained. In reply, the Department stated (December 2017) that log books were maintained for all main instruments. The reply was not tenable as records regarding maintenance of log books could not be produced to audit.

- Upgradation and NABL accreditation process was not initiated for the other five laboratories. None of the five laboratories were recognised as Environment Laboratories by MoEF&CC or ISO 9001 alongwith OHSAS accreditation.

- During reassessment of Central laboratory, NABL observed (July 2017) deficiency in quality control and expertise in Ion Chromatography parameters. **WBPCB failed to take corrective action and was compelled to withdraw the parameter from the scope of accreditation.**

[112] *Barrackpore, Hooghly, Durgapur, Haldia and Siliguri.*
[113] *ISO 17025 (NABL Accreditation) or ISO 9001.*

In reply, the Department stated (December 2017) that the process of obtaining NABL accreditation for Durgapur and Barrackpore Laboratories and recognition of its laboratories from MoEF&CC would be initiated shortly.

### *(ii) Private loboratories for monitoring of industrial pollution*

WBPCB also recognised private laboratories engaged in environmental monitoring. During 2012-17, two Technical Advisory Committees (TACs) conducted (January 2012 and March 2015) the recognition procedure. The TAC prepared an outline of procedure for scrutiny[114], evaluation and inspection[115] of laboratory before recommending for recognition. WBPCB recognised 15 private laboratories between April 2012 and June 2015 and 22 between July 2015 and July 2017.

Audit observed that the outline of procedure of TAC did not contain provision of extension. However, the recognition tenure of the laboratories was extended several times without the approval of the Board. Audit observed that during 2012-14, WBPCB granted extension to 15 laboratories without conducting any inspection. WBPCB had inspected (June 2015) only seven out of the 19 laboratories before recognising (July 2015) the laboratories. The subsequent extensions (June 2015 and 2017) were also not based on inspection.

Audit further observed that WBPCB itself found (2012-13) six laboratories were deficient in instrumentation, seven laboratories were lacking expertise and all of them were lacking quality control criteria.

**WBPCB observed (June 2015) deficiency in sample storing facility, reference materials, documentation, and quality control in respect of the 23 applicant laboratories. However, WBPCB recognised all the laboratories. Documents regarding corrective action were not available on records.**

In reply, the Department stated (December 2017) that action would be taken by the WBPCB to address the deficiencies pointed by Audit.

[114] *Laboratory area, availability of qualified manpower, availability of expertise, adequacy of instruments and equipment, past performance, etc.*

[115] *Infrastructure, firefighting arrangement, first aid arrangement, status of instruments and equipment, expertise claimed, etc.*

# Chapter 5

# Conclusion

# Chapter 5: Conclusion

Industrialization has made immense positive contributions to human life by improving the quality and quantity of the resources and services. Unquestionably, on the global scale, people are living longer and are healthier than earlier times. However, industrialization also had adverse health consequences not only for workforces, but for the general population as well. These effects have been caused either directly by exposure or indirectly through environmental degradation. Environmental health hazards, may be biological, chemical, physical, biomechanical or psychosocial in nature. Industrial processes result in waste that are hazardous in nature, as such, it is imperative that these be reduced or controlled, if not prevented. Audit findings and conclusions against each audit objective is outlined below:

## 5.1: Audit Objective 1: Steps were taken to prevent industrial pollution, in compliance with applicable laws and rules

Data with regard to extent of pollution being caused by industries in West Bengal was inadequate. There was a mismatch in the basic data regarding sources of pollution. The data was also not updated as per directives of CPCB. Inventory relating to hazardous waste remained incomplete and pollution caused by these industries, as envisaged by CPCB, remained unaddressed. There was no defined policy to prevent and control industrial pollution and the relevant SDGs were also not operationalized. Even though the Vision document of the Department for the period 2013-14 to 2015-16 envisaged various steps in relation to the control of industrial pollution, none of these activities were undertaken till date.

Further, WBPCB had not prepared a Zoning Atlas for the State and the Siting Policy (Policy) did not include all the critically polluted areas. It also did not identify ecologically sensitive areas as prohibited zones for setting up of industries, thus disregarding the concept of carrying capacity of the district. Study reports for promoting cleaner technology options were prepared by consultants in 2012-13 and 2013-14 by incurring expenditure of ₹ 0.96 crore. However, recommendations made in the study reports were yet to be implemented.

The Environment Clearance process, which is the main preventive tool to prevent pollution, was also in deviation from the laid down process. Thus, the EIA failed to be used effectively by the State Government as a tool for prevention of industrial pollution in the State. Units were found operating without any valid Consent to Establish (CTE). Many units were seen where CTEs were renewed despite non-compliance of the conditions of EC and CTE. These findings led to the audit conclusion that steps taken to prevent industrial pollution were not adequate.

## 5.2: Audit Objective 2: Measures undertaken to control industrial pollution achieved the desired objective

After obtaining CTE, every industrial unit had to obtain the 'Consent to Operate' (CTO) from WBPCB. In the CTOs, the operational parameters and conditions for operation of industry were specified. Industries were running without valid CTOs, indicating lax monitoring by WBPCB. Joint Physical verifications showed gross violations of compliance conditions, thus indicating the extent of harm caused to the environment.

Howrah and Asansol were identified as Critically Polluted Area (CPA) in August 2010 and Durgapur as Severely Polluted Area (SPA) in September 2013. Despite preparation of Action Plans, these were not implemented, leading to continued industrial pollution. Source Apportionment Study, Health Impact Assessment (HIA) and Sector Specific Audit of 17 categories of grossly polluted industries in the CPAs and SPA for the purpose to mitigate the environmental pollution problem was not taken up. Due to failure of WBPCB to take control measures effectively, the Environment Quality of CPAs and SPA remained poor with regard to air quality and water quality. Levels of $PM_{2.5}$ and $PM_{10}$ exceeded permissible limits in all instances of testing of air in the three CPAs.

Further, Monitoring of Seriously Polluting Industries (SPIs) situated along the River Ganga was not taken up, allowing pollution to continue unabated. Drainage maps of industries dumping their effluents in to the river was to be prepared and this data was to be used to construct an ETP at a suitable point. However, this was not yet taken up. There was no control of pollution by Pulp and Paper Industries in Ganga basin despite CPCB directives, control of pollution in five legacy polluted sites was not taken up which resulted in dispersal of pollutants to adjoining areas. Hazardous waste contaminated sites were not rehabilitated and the sites remained susceptible to health risks associated with legacy pollution. Thus, measures taken by the Government and WBPCB with regard to control and abatement of pollution were very inadequate and industries continued to pollute the environment. Environment parameters showed decline in the quality of water and air, which would be deleterious to the ecology and environment.

## 5.3 Audit objective 3: Monitoring of industrial pollution was effective to prevent and control industrial pollution.

ECs are contingent on environment protection measures to be implemented by the project proponent like installation of sewage treatment plants, air pollution control measures like sprinklers, undertaking plantation *etc*. WBPCB was to monitor the compliance of the conditions on which the EC was given. None of the industries which were granted EC by SEIAA during 2012-17 had ever submitted their compliance reports to it. Audit further observed that the Monitoring Committee had not met even once during 2012-17 to monitor these industries. As such, there was no effective mechanism to check whether pollution control measures were implemented and working as envisaged while giving EC approval. Further, in the absence of monitoring, no penalty for non-compliance could be imposed and the 'law of polluter pays principle' was violated.

The inadequate efforts to prevent and control pollution by industries was compounded by lax monitoring mechanism of WBPCB. Air quality monitoring was found to be deficient as the monitoring stations checked only the levels of three pollutants against the 12 as prescribed by CPCB. Ambient Continuous Ambient Air Quality Monitoring Stations were not established due to failure of WBPCB in selection of suitable sites.

WBPCB did not take any effective steps even though the Grossly Polluting Industries continued to pollute the river Ganga. Effluents of only 33 *per cent* of the Grossly Polluting Industries were monitored. Physical verification of the selected Hazardous Waste Generating Industries revealed effluents being discharged in the drains and rivers indiscriminately.

**The fallout of the deficiencies in the preventive, control and monitoring efforts was that West Bengal remained one of the largest contributors of industrial pollution in India.**

## 5.4 Recommendations

- WBPCB should prepare a comprehensive inventory of industries and pollution caused by them, based on CEPI and ensure its periodical updating.
- WBPCB should prepare a comprehensive siting policy for the State which would ensure that industries established in these areas do not adversely impact the ecology of the area.
- WBPCB should have a centralised system which flags the industries whose CTOs are due or expiring. It should also take stipulated action against the industries operating without consent to encourage deterrence.
- To prevent further pollution by industry, SEIAA should strictly comply with the requirements under EIA Notification 2006, before according environment clearance.
- WBPCB should include all the industries granted EC/Red category industries into the Inspection Schedule of its regional office to ensure that all polluting industries are monitored on a regular basis. It should also ensure that these industries set up online monitoring system that is integrated with the appropriate software at WBPCB HQs.
- WBPCB should set up the required number of monitoring stations, according to defined locations, which would measure all the parameters defined under the National Ambient Air Quality Standards.
- WBPCB needs to ensure that all industrial effluents are treated with ETPs with special emphasis on installation of CETPs with the unorganised small industries within the clusters situated besides the River.
- WBPCB should upgrade its laboratories with latest testing equipment and facilities for proper monitoring.

**(NAMEETA PRASAD)**
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**(Economic & Revenue Sector Audit),**
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**KOLKATA**
**The 13 JUNE 2018**

**Countersigned**

**(RAJIV MEHRISHI)**
**Comptroller and Auditor General of India**

**NEW DELHI**
**The 15 JUNE 2018**

# Appendices

## Appendix-1.1

*(Refer paragraph-1.5, page-4)*

**Statement of list of units taken up for checking the EC process**

| Sl. No. | Project Proponent | Type of project |
|---|---|---|
| 1. | Reliance Cement Company Pvt. Ltd. | Cement Grinding Unit |
| 2. | Emami Cement Limited | Cement Grinding Unit |
| 3. | Bharat Petroleum Corporation Limited | Storage of petroleum |
| 4. | JSW Cement Limited | Cement Grinding Unit |
| 5. | SSB Chemicals Industries | Chemicals |
| 6. | Pradhan, Kanjakura Gram Panchayat | Mini Cement Plant |
| 7. | West Bengal Mineral Dev.& Trading Corporation Ltd. | Blackstone Mine |
| 8. | West Bengal Chemical Industries Ltd | Bulk Drug maufacturing |
| 9. | Emami Cement Pvt. Ltd | Cement Grinding Unit |
| 10. | WB Mineral Development and Trading Corp Ltd. | Granite Mine |
| 11. | WB Mineral Development and Trading Corp Ltd. | Granite Mine |
| 12. | Kadampur Stone Mine | Stone Mine |
| 13. | West Bengal Mineral Dev. & Trading Corporation Ltd. | Granite Mine |
| 14. | Balliapur Stone Quarry | Stone Quarry |
| 15. | Sri Bhajan Dutta | Silica Sand Mine |
| 16. | WB Mineral Development and Trading Corp Ltd. | Fire Clay Mine |
| 17. | R.S Mineral (P) Ltd. | Stone Quarry and Quartz Mine |
| 18. | Cement Company Limited (Star Cement) | Cement Grinding Unit |
| 19. | GSA Commercials Pvt. Ltd. | Non-recovery Coke Oven Plant |
| 20. | Hindustan Petroleum Corporation Ltd. | LPG Bottling Plant |
| 21. | J.K. Lakshmi Cement Ltd. | Cement Grinding Unit |
| 22. | I Core Super Cement | Cement Project |
| 23. | Jayshree Steel Limited | Ingot and Billets |
| 24. | K.B. Sponge Iron Ltd. | Sponge iron |
| 25. | Shree Parasnath Re-Rolling Mills Limited. | Induction Furnace of Sponge iron |
| 26. | SRMB SRIJAN Ltd. | Induction Furnace - Steel Billets |
| 27. | Associated Cement Company Ltd. | Expansion of Cement Grinding and Packaging Unit |
| 28. | Bharat Hi-tech (Cement) Pvt Ltd. | Cement Grinding Unit |
| 29. | Indian Oil Corporation Limited | LPG bottling plant |
| 30. | Purulia Metal Casting Ltd | Induction Furnace |
| 31. | Alaknanda Sponge Iron Limited | Sponge iron |
| 32. | H.R Ispat Private Ltd. | Induction Furnace, Rolling Mill & Continuous Casting mill |
| 33. | Amit Metalics Ltd. | Rolling Mills / Sponge Iron |
| 34. | Jayanti Stone Quarry | Mining of Black Stone |
| 35. | Shakambhari Ispat & Power Ltd. | Sponge Iron |
| 36. | Lafarge India Pvt. Ltd. | Cement Grinding unit |

| Sl. No. | Project Proponent | Type of project |
|---|---|---|
| 37. | Md Bazar Stone Crusher | Expansion of Black Stone Mine |
| 38. | Kamal Stone Quarry | Mining of Black Stone |
| 39. | Khan Stone Quarry | Mining of Black Stone |
| 40. | Todi Minerals Pvt. Ltd. | Granite Mine |
| 41. | Kadampur Stone Mine | Stone Quarry |
| 42. | Tapas Kuamr Dutta & Guljar Mallick | Silica Sand and Fireclay Quarry |
| 43. | Steel Crackers Pvt. Ltd. | Steel Plant |
| 44. | Sova Electrocasting Pvt Ltd. | Sponge iron |
| 45. | Aryans Stone Quarry | Mining Project of Black Stone |
| 46. | Rashmi Cement Limited | Cement Grinding unit |
| 47. | Bharat Petroleum Corporation Limited | Storage facilities of petroleum |
| 48. | Lokesh Kakkar | Stone Quarry and Open Cast Mine of Black Stone |
| 49. | Subham Oils & Resins Pvt Ltd. | Resin and Allied Chemicals Manufacturing Uint |
| 50. | Strongbonds Polyseal Pvt. Ltd. | Unsaturated Polyester Resin |
| 51. | Shivam Meltech Pvt. Ltd. | Sponge iron |
| 52. | Sri Shankar Suwan Estate Pvt. Ltd. | Cement Grinding Unit |
| 53. | Khaitan Cement Pvt. Ltd. | Cement Grinding Unit |
| 54. | Ultra Tech Cement Ltd. | Cement Grinding Unit |
| 55. | Fresenius Kabi Oncology | Bulk Drug Manufacturing |
| 56. | Balaji Paper Pvt. Ltd. | Paper Industry |
| 57. | ITC Ltd. | Paperboard and captive power plant |
| 58. | Saran Alloys Pvt. Ltd. | Sponge Iron |
| 59. | Kalimati Steels | Coke Oven and power plant |
| 60. | West Bengal Power Development Company Limited | Thermal Power Plant |
| 61. | Pacific Cement | Cement Grinding Unit |
| 62. | Berger Paints | Paper Industry |
| 63. | Reform Metalics | Sponge Iron |
| 64. | Gajanan Iron Pvt Ltd | Sponge Iron |

## Appendix-1.2

*(Refer paragraph-1.5, page-4)*

**Statement of list of Units taken up for physical verification**

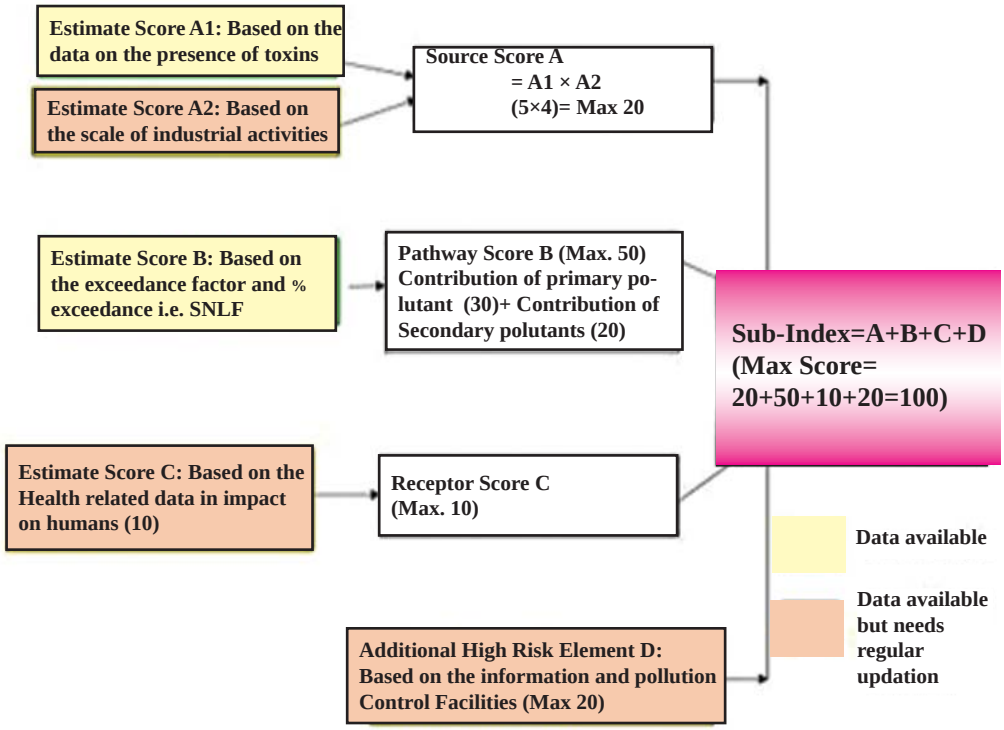
| Sector | Name of the unit | Number |
|---|---|---|
| Cement | ACC Limited, Damodar Cement Works | 4 |
| | Ultratech Cement | |
| | M/s Emami Cement Ltd. | |
| | Birla Cement | |
| Birla Cement | Shakambhari Ispat & Power Ltd. | 5 |
| | K.B. Sponge Iron Ltd | |
| | H.R. Ispat Pvt Ltd. | |
| | M/s Amit Metaliks Ltd | |
| | Alakanda Sponge Iron Ltd | |
| Paper & Pulp | Ballavpur Paper Mfg. Ltd. | 4 |
| | Emami Paper Mills Ltd. (Unit-Gulmohar) | |
| | Supreme Paper Mills Limited | |
| | Indian Pulp and Paper Private Limited | |
| Coal | Naba Kajora Colliery | 3 |
| | Khandra Colliery | |
| | Bengal Emta Coal Mines | |
| Thermal | DPL, Durgapur | 1 |
| Distillery | Pincon Spirits Ltd. | 6 |
| | Globus Spirit Ltd. | |
| | IFB Agro Industries Ltd | |
| | Eastern Distillery and Chemicals | |
| | M/s. United Breweries Limited | |
| | M/S Keventer Agro Ltd. | |
| Pesticides | Ankar Industries Private Limited | 1 |
| Fertilizer | Matix Fertilisers and Chemicals Limited | 2 |
| | Tata Chemicals Limited | |
| Pharma | ASG BIOCHEM PVT. LTD. | 5 |
| | East India Pharmaceuticals Works Ltd. | |
| | Dey's Medical Stores (Mfg) Ltd. | |
| | Fresenius Kabi Oncology Limited, Kalyani | |
| | West Bengal Pharmaceutical & Phytochemical Development Ltd | |
| Alluminium Alloy | M/S Simtech Engineering Industries | 2 |
| | Adi Shakti Alloys | |
| Chloro-Alkali | Durgapur Chemicals Limited | 2 |
| | Subham Oil and alkalyde Resins | |
| Dyeing and Bleaching | A S Washers | 4 |
| | M/S Denimagic Garments Processors Pvt. Ltd. | |
| | Techno Dyeing & Bleaching Works | |
| | Golden Bleachers & Dyers | |
| Zinc Smelter | Patton International | 3 |
| | Eveready Industries India Ltd. | |
| | Industrial Perforation (India) Pvt. Ltd. | |

| Sector | Name of the unit | Number |
|---|---|---|
| Tannery | Raj Tannery | 7 |
| | Wanson Leather Industries Pvt.Ltd. | |
| | International Tanning Syndicate | |
| | Shalimar Tanneries Pvt. Ltd. | |
| | Fook Hing Leather Works | |
| | Ajmeri Leather Works | |
| | Canton Tannery Private Limited | |
| CETP | Calcutta Leather Complex | 1 |
| TSDF | West Bengal Waste Management Limited at Haldia | 1 |

## Appendix 1.3

*(Refer paragraph-2.1.1, page-6)*

## System for calculation of Comprehensive Environmental Pollution Index



# Glossary

## Glossary

| Abbreviation | Full Form |
|---|---|
| AAQM | Ambient Air Quality Monitoring |
| AAQMS | Ambient Air Quality Monitoring Stations |
| AQMT | Air Quality Management Team |
| BCIL | Belda Chemical Industries Limited |
| BOD | Biological Oxygen Demand |
| CAAQMS | Continuous Ambient Air Quality Monitoring Stations |
| CBM | Coal Based Methane |
| CCL | Calcutta Chemical Limited |
| CEMS | Continuous Online Effluent Monitoring System |
| CEPI | Comprehensive Environmental Pollution Index |
| CETP | Common Effluent Treatment Plant |
| CHWTSDF | Common Hazardous Waste Treatment, Storage and Disposal Facility |
| C&I | Commerce and Industries |
| CLC | Calcutta Leather Complex |
| CLRI | Central Leather Research Institute |
| COD | Chemical Oxygen Demand |
| CPA | Critically Polluted Area |
| CPCB | Central Pollution Control Board |
| CSEMS | Online Continuous Stack Emission Monitoring System |
| CTE | Consent to Establish |
| CTO | Consent to Operate |
| DCL | Durgapur Chemical Limited |
| DCW | Durgapur Cement Works |
| DNPL | Durgapur Napthalene Private Limited |
| DoE | Department of Environment |
| DPL | Durgapur Projects Limited |
| EC | Environment Clearance |
| ECAC | Environmental Compliance Assistance Centre |
| EIA | Environment Impact Assessment |
| EMI | Environment Management Impact |
| ETP | Effluent Treatment Plant |
| GBC | Green Belt Canal |
| GPI | Grossly Polluting Industries |
| IC | Implementation Committee |

| Abbreviation | Full Form |
|---|---|
| HIA | Health Impact Assessment |
| HWA | Hazardous Waste authorisation |
| HWMHT 2016 (Rules) | Hazardous Waste (Management, Handling and Trans-Boundary) Rules |
| KMA | Kolkata Metropolitan Area |
| MoEF&CC | Ministry of Environment, Forest and Climate Change |
| MMSCM | Million Metric Standard Cubic Metres |
| MSME | Micro Small and Medium Enterprises |
| NAAQS | National Ambient Air Quality Standards |
| NABL | National Accreditation Board for Testing and Calibration Laboratories |
| NGT | National Green Tribunal |
| OAMS | Online Automatic Monitoring System |
| OCEMS | Online Continious Effluent Monitoring System |
| O&G | Oil and Grease |
| OHSAS | Occupational Health Hazard and Safety Management System |
| PC | Principal Committee |
| PH | Potential of Hydrogen |
| PI | Pollution Index |
| PM | Particulate Matter |
| RO | Regional Office |
| SDGs | Sustainable Development Goals |
| SEAC | State Expert Appraisal Committee |
| SEIAA | State Environment Impact Assessment Authority |
| SI | Sponge Iron |
| SIPL | Shakambhari Ispat and Power Limited |
| SLC | State Level Committee |
| SPA | Severely Polluted Area |
| SPCBs | State Pollution Control Boards |
| SPI | Seriously Polluting Industries |
| S&T | Science and Technology |
| STPs | Sewage Treatment Plants |
| TACs | Technical Advisory Committees |
| TDS | Total Dissolved Solids |
| TSDF | Treatment, Storage and Disposal Facility |
| TSS | Total Suspended Solid |
| UD | Urban Development |
| UNEP | United Nations Environment Program |
| WBPCB | West Bengal Pollution Control Board |
| WGEA | Working Group on Environment Auditing |

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