CHAPTER III

Detailed Compliance Audit on Application of Environmental Laws by the State Pollution Control Board in Sundargarh District

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FOREST, ENVIRONMENT AND CLIMATE CHANGE DEPARTMENT

3. Detailed Compliance Audit on "Application of Environmental Laws by the State Pollution Control Board in Sundargarh District"

3.1 Introduction

As per the Environment (Protection) Act, 1986, environment includes water, air, land and the inter-relationship which exists among and between water, air, land, and human beings, other living creatures, plants, micro-organism and property. Environmental pollution means the presence of any solid, liquid or gaseous substance in such concentration which is injurious to environment. Indiscriminate utilisation of natural resources to meet development demands, rapid industrialisation and unplanned urbanisation adversely impact the environment. Dumping of wastes into rivers and water bodies, excessive diversion of forest land for other purposes and increased emission of harmful pollutants in the air contribute to degradation of environment.

Odisha is a mineral rich State, which has attracted many large scale industries like Steel, Cement, Ceramic Glass, Aluminium *etc.* While the presence of steel giants like Steel Authority of India Limited (SAIL), Neelachal Ispat Nigam Limited (NINL), Jindal Steel *etc*., indicates the industrial growth of the State, it also indicates the need of efforts to contain the adverse effects of industrialisation on the environment.

In view of growing importance of environmental issues and sustainable development, environmental audit has assumed greater significance. In order to check application of environmental laws, Audit decided to pick one of the districts of Odisha and to analyse their compliance.

The Detailed Compliance Audit on the application of environmental laws in a selected district was conducted during 2020-21. The Sundargarh district was selected for this audit, as the district covers 16.96 *per cent* of the total area of the State and it occupies a place of prominence in the mineral ores map of Odisha. Its provisional population is 20.93 lakh as per Census 2011[38]. The mineral ores of manganese, limestone, dolomite and iron constitute a major cover of the district, however, other minerals like bauxite, coal, soapstone/ talc, lead, zinc and copper are

[38] Source: https://sundargarh.nic.in/demography/#

also found in the district. Depending upon the quantum of reserves and the grades available in the exploitable mineral ores, mining activities are mostly under progress in small or large opencast mines, except in a few old underground mines for coal. Methods of open cast mining are manual, semi-mechanised or mechanised. Major industries like SAIL's Rourkela Steel Plant, M/s Dalmia Cement (Bharat) Limited, Mahanadi Coal Fields Limited are situated in this district. The predominant sources of pollutants in Sundargarh District are 44 mines, 376 industries, 47 Health care facilities (generating biomedical waste) and four Urban Local Bodies[39] (generating solid wastes as well as sewage).

3.1.1 Objectives and Audit criteria

The objectives of this Detailed Compliance Audit (DCA) were to assess whether (i) all Environmental Acts and Rules made thereunder were complied with adequately and effectively, (ii) available funds were utilised for the intended purposes in economic, efficient and effective manner and (iii) monitoring and supervision by enforcement authorities were adequate and effective.

The main source of Audit criteria were the (i) The Environment (Protection) Act, 1986; (ii) The Air (Prevention & Control of Pollution) Act, 1981; (iii) The Water (Prevention & Control of Pollution) Act, 1974; (iv) The Solid Waste Management Rules, 2016; (v) The Bio-Medical Waste Management Rules, 2016; (vi) The e-Waste (Management) Rules, 2016; (vii) The Construction & Demolition Waste Management Rules, 2016; (viii) The Plastic Waste Management Rules, 2016; (ix) The Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and (x) the Guidelines issued by the Central Pollution Control Board basing on which the Audit observations are made.

3.1.2 Organisational Setup

The Odisha State Pollution Control Board (OSPCB) is working under the administrative control of the Forest, Environment & Climate Change (FE&CC) Department, Government of Odisha (GoO) through its 12 regional offices each headed by a Regional Officer (RO). The OSPCB is entrusted with the responsibility of implementing the Environmental Acts and several rules addressing specific environmental problems like hazardous waste management, bio-medical waste management, solid waste management, e-waste management, plastic waste management, environmental impact assessment *etc.* which have been brought under the Environment (Protection) Act. The OSPCB also executes and ensures proper implementation of other environmental legislations of the Union and the State Government.

The Regional Office, Rourkela of OSPCB headed by Regional Officer (RO) is responsible for prevention and control of pollution, regular monitoring of the effluent emission and waste generation and disposal from the industries, mines, and other units in all Blocks of the Sundargarh District except Hemgiri Block, which is under RO, OSPCB, Jharsuguda.

[39] Rourkela Municipal Corporation, Sundargarh Municipality, Rajgangpur Municipality and Biramitrapur Municipality

3.1.3 Scope and Methodology

Audit was conducted between February to March 2020 and January to April 2021 due to pandemic in Odisha. In DCA, the records of State Pollution Control Board, Bhubaneswar, Rourkela Municipal Corporation out of four ULBs, twelve[40] out of 47 Health Care Facilities (HCFs) and five[41] monitoring units were covered for the period from 2016-20.

The HCFs and ULBs were selected on the basis of Random Sampling method taking into consideration the bed capacity and population respectively. The Audit methodology adopted for collection of data through document analysis, response to audit queries, questionnaires, photographic evidence and examination of reports and records of various implementing agencies. Joint Physical Inspection (JPI) of 12 units was also conducted to verify management of different wastes.

Vehicular emissions were monitored by the Transport Department, hence, it has not been covered in this compliance audit.

The draft report of this audit was sent to the Government of Odisha in February 2022. The Audit findings were discussed in the Exit Conference held on 09 June 2022 and replies of the Government have been suitably incorporated in the report.

3.1.4 Good practices adopted by the Department

The following good practices were adopted by the Health & Family Welfare Department for barcoding software for better management of Bio-medical waste:

- The Department was in the process of installation of unique integrated software for Barcoding of Biomedical waste from the site of generation and tracking down the process from segregration till disposal.
- A dashboard giving realtime data and monitoring provision can be visualized everyday strictly from generation to disposal including tracking of GPS enabled vehicles.

Audit Findings

3.2 Air Pollution

3.2.1 Monitoring of Ambient Air Quality

As per the Central Pollution Control Board (CPCB) Notification issued (November 2009) for National Ambient Air Quality standards, the average

[40] i) Rourkela Government Hospital (RGH), Rourkela, ii) Sub-Divisional Hospital, Bonai, iii) Community Health Centre (CHC), Subdega, iv) CHC, Hemagiri, v) CHC, Rajgangpur, vi) CHC, Badagaon, vii) M/s Vesaj Patel Hospital and Research Centre, Rourkela, viii) M/s Astha Mother and Child Care Hospital, Rourkela, ix) M/s Community Welfare Society Hospital, Rourkela, x) M/s Rajasthan Seva Sadan, Rourkela, xi) M/s Shanti Memorial Hospital, Rourkela and xii) M/s Hitech Medical College and Hospital, Rourkela

[41] i) RO, OSPCB, Rourkela, ii) RO, OSPCB, Jharsuguda, iii) Chief District Veterinary Officer (CDVO), Sundargarh, iv) Chief District Medical and Public Health Officer (CDM&PHO), Sundargarh and v) Deputy Director, Factory and Boiler, Rourkela

annual standard of Particulate Matter (PM)[42] of size less than 10 microns ($PM_{10}\mu g/m^3$) in air is 60 $\mu g/m^3$ and the average annual standard of Particulate Matter of size less than 2.5 microns ($PM_{2.5}\mu g/m^3$) in air is 40 $\mu g/m^3$.

Scrutiny of records revealed that the RO, OSPCB, Rourkela had been monitoring Ambient Air Quality (AAQ) at six stations[43] in three towns and industrial areas in Sundargarh district under National Air Quality Monitoring Programme (NAMP). The OSPCB had analysed 7,238 AAQ samples during 2016-20, wherein average PM_{10} value remained high during all the years and ranged between 65 $\mu g/m^3$ (108 *per cent*) and 207$\mu g/m^3$ (345 *per cent*) against standard parameter of 60$\mu g/m^3$. Similarly, the average $PM_{2.5}$ value ranged between 42$\mu g/m^3$ (105 *per cent*) and 63 $\mu g/m^3$ (158 *per cent*) against the standard parameter of 40$\mu g/m^3$.

Audit observed that 2,440 pulmonary cases were detected in the year 2019-20 in the district of Sundargarh as compared to the total 1,301 reported cases in all other 29 districts of the State. High concentration of pollutants in ambient air is one of the reasons for such higher pulmonary cases in the district. Further, during 2016-19, 61,698 patients had undergone treatment for Silicosis[44] in the district due to excess presence of silica dust in the air owing to higher $PM_{2.5}$ and PM_{10} levels. Audit observed that the high concentration of pollutants in the ambient air was due to pollution caused by different industries in the district.

The Government did not furnish (May 2022) any specific reply to the above audit observation.

3.2.2 Air pollution by industries

3.2.2.1 Scrutiny of records of RO, OSPCB, Rourkela revealed that M/s Dalmia Cement (Bharat) Limited is an 'A' category industry[45] having its plant located at Rajgangpur (a town situated in Sundargarh District). As per Section 21 of Air (Prevention and Control of Pollution) Act, 1981 and conditions of the Consent to Operate (CTO) issued by OSPCB stipulate that the industry had to comply with prescribed standards of 34 effluents and 12 air pollutants including four stack emission[46] pollutants so as to keep the CTO valid.

Test check of monthly AAQ monitoring reports of the industry revealed that only five air pollutants including one stack emission pollutant were monitored. Also, 34 effluents and remaining seven air pollutants including three stack

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42 The concentration of an air pollutant is given in micrograms (one-millionth of a gram) per cubic meter air or $\mu g/m^3$.

43 1) RO, OSPCB, Rourkela, 2) IDL Police Out-post, Sonaparbat, Rourkela, 3) Odisha Industrial Development Corporation (IDCO) Water Tank, Industrial Corporation, Kalunga, 4) Government Hospital, Kuanrmunda, 5) Dalmia Institute of Scintific and Industrial Research, Rajgangpur and 6) Government Hospital, Bonai

44 Silicosis is a type of pulmonary fibrosis, a lungs disease caused by breathing in tiny bits of silica, a common mineral found in sand, quartz and many other types of rock.

45 Industries having investment more than ₹50 crore and mining projects dealing with Coal, Bauxite, Iron, Manganese, Limestone, Dolomite and Chromites come under category 'A'

46 Stack emissions are those gases and solids that come out of the smokestack after the incineration process.

emission pollutants were not monitored. The average levels of PM_{10} and $PM_{2.5}$ as per Rajgangpur monitoring station under NAMP were much higher during the period 2016-20 varying between 92 to 149 µg/m^3 (153 to 248 *per cent*) of PM_{10} and 36 to 58 µg/m^3 (90 to 145 *per cent*) of $PM_{2.5}$ than the prescribed standard of 60 µg/m^3 and 40 µg/m^3 respectively.

Test check of records revealed that in respect of this industry, despite OSPCB's instructions, the RO:

(i) did not find out the cause of occurrence of high concentration of PM_{10} noticed in May 2019;

(ii) did not initiate any action against the industry for non-collection of wastes in closed chamber to prevent air pollution;

(iii) did not conduct enquiry regarding air pollution due to emissions from contaminated coal, limestone and life threatening chemicals causing respiratory diseases; and

(iv) did not investigate the non-operation of electrostatic precipitator and discharge of effluent water to natural resources and private cultivated land.

Further, the industry established and operated a conveyor system over municipal main road from mines to plant site since 2011 without obtaining Consent to Establish (CTE) from OSPCB. Operation of the conveyor belt for transportation of mineral from mines without CTE from OSPCB remained unnoticed for a long period from 2011 to 2020 which was a lapse on the part of RO for enforcement of the relevant Acts.

In reply, the Government stated (May 2022) that M/s Dalmia Cement was an industry which was granted CTO with industry specific water and pollutant parameters. It almost complied the specific condition along with compliance of pollutant parameters. However, the reply was not acceptable as the industry did not monitor all the prescribed parameters to keep the CTO valid.

3.2.2.2 As per Section 21 of Air (Prevention & Control of Pollution) Act, 1981, no person shall, without the previous consent of the State Board, establish or operate any industrial plant in an air pollution control area.

Test check of records of RO, Jharsuguda revealed that in Hemgiri Block of Sundargarh District, three coal mines[47] of M/s Mahanadi Coal Fields Limited had valid CTOs during 2016-20 for production of coal and operation of Subdega Railway Siding (M/s Basundhara (W)) with the stipulation to adhere to the CTO conditions. However, the units had violated 12 consent conditions persistently as detailed in ***Appendix - III***.

The units had not installed Continuous Ambient Air Quality Monitoring System (CAAQMS) and Internet Protocol (IP) cameras with data transfer facility to OSPCB server.

[47] M/s. Kulda, M/s Garjan Bahal and M/s Basundhara (W) Open Cast Projects

Two mines (M/s Kulda and M/s Garjan Bahal) failed to maintain AAQ standard components of Respiratory Particulate Matter (RPM) and Suspended Particulate Matter (SPM) of PM_{10} level during 2016-21 ranged from 220 to 320 µg/m^3 and 348 to 724 µg/m^3 against norm of 250 µg/m^3 and 500 µg/m^3 respectively.

Neither did the mines comply with the directions of OSPCB (February/ September 2018) regarding violation of CTO conditions nor any action was taken by the RO (May 2022).

In reply, the Government stated (May 2022) that show-cause notices were issued to the three Mines. However, after it was pointed out by Audit, three CAAQMS in Basundhara- Garjanbahal area and IP cameras at various points in Kulda and Garjanbahal OCP were installed with connection to SPCB server for transfer of data for monitoring.

3.2.3 Inspection and sampling of air pollutants from industries

As per OSPCB circular (June 2015), the RO was required to conduct inspection of the industrial units at least once in six months and sampling had to be done every month with respect to Category 'A' units (Industries and Mines).

Scrutiny of records of 21 out of 93 Category 'A' units in the jurisdiction area of RO, OSPCB, Rourkela and Jharsuguda revealed that against the requirement of 168 inspections and 1,008 samplings during 2016-20, the RO conducted only 84 inspections and 75 samplings resulting in shortfall of 84 inspections and 933 samplings respectively as detailed in the ***Appendix-IV*****.**

Though OSPCB called for explanation (October 2019) from the RO regarding the shortfall in conducting inspection and samplings, RO did not provide to Audit the reply which was sent to OSPCB. Further, the RO monitored only one air pollutant (PM_{10}) against the required 12 air pollutants, 34 effluent pollutants and four stack emission pollutants during 2016-20.

In reply, the Government admitted (May 2022) that inadequacy of monitoring was due to limited resources and manpower. PM_{10}, $PM_{2.5}$, SO_2, NO_2, Ammonia and Ozone in AAQ were being monitored in six monitoring stations of Rourkela and the monitoring report were being sent to CPCB on monthly basis. However, the Government failed to monitor all the air pollutants and effluents as required under the provisions of Notification.

3.3 Water Pollution

As per Section 2 (e) of Water (PCP) Act, 1974, water pollution means contamination or alteration of the physical, chemical or biological properties of water by such discharge of any sewage or trade effluent or any other liquid, gaseous, or solid substance into water which render such water harmful or injurious to public health or environment. Under the Act, OSPCB is responsible to plan a comprehensive programme for prevention, control and abatement of water pollution and advising the State Government on matters

relating to pollution of water. Furthermore, according to Section 24 (iii) of Odisha Municipal Corporation Act, 2003, the Rourkela Municipal Corporation (RMC) with an area of 53.29 sq km is responsible for treatment and disposalof sewage under its jurisdiction. Similarly, the ULBs are primarily responsible for setting up of Sewage Treatment Plant (STP) and discharging of treated sewage effluents either into surface water bodies or on land with prior CTO from OSPCB. The OSPCB pursued (February 2018/ December 2019) the ULBs for 100 *per cent* treatment of sewage by establishing STP as of March 2020 in pursuance to Hon'ble NGT orders.

As per information furnished by the Superintendent, Sub-Divisional Hospital (SDH), Bonai to Audit, it was seen that there were 1,100 renal cases handled during 2016-20 at SDH, Bonai due to use of contaminated water of River Brahmani, as Bonai is situated at downstream of Rourkela Municipal Corporation (RMC) and Rourkela Steel Plant (RSP). The reasons for such water pollution have been analysed in the subsequent paragraphs.

3.3.1 Water pollution by industry and Municipal Corporation

3.3.1.1 Scrutiny of records revealed that the Rourkela Steel Plant was granted (October 2017) CTO by OSPCB under Water (PCP) Act, 1974, which was valid up to March 2018. As per the conditions of CTO, the industry was to comply with the conditions to keep the CTO valid. One of the CTO conditions was to provide timeline and cost estimate for complete recirculation of lagoon[48] overflow effluent, to ensure Zero Liquid Discharge[49] (ZLD) within one month from the date of issue of CTO. However, without complying with the condition, the industry discharged untreated surface runoff from different units of the plant to lagoon through Guradihi Nullha main outfall of RSP and lagoon outflow was discharged to river Brahmani degrading the water quality at its downstream since July 2016.

Despite violation of the consent conditions, CTO was renewed during March 2018 till March 2019 with the stipulation that the industry had to furnish time bound action plan towards implementation of ZLD. It also stipulated for submission of estimated cost by April 2018 for timely completion so as to prevent degradation of water quality of river Brahmani. The OSPCB issued (July 2019) show cause notice to the industry for high concentration of fluoride in the river Brahmani and directed (August 2019) for implementation of ZLD by December 2020. However, the CTO was renewed regularly although the industry failed to implement ZLD system (January 2022). Due to non-implementation of ZLD by RSP, there was high concentration of fluoride at five outlets/ outfalls[50] ranging from 2.6 mg/l (130 *per cent*) to 17 mg/l (850 *per cent*) against prescribed standard of 2.0 mg/l. Similarly, in Biological Oxygen Demand (BOD) outlet, concentration of cyanide was 3.6 mg/l (1,800

[48] Water body earmarked to contain liquid effluent.

[49] Zero Liquid Discharge is a recirculation system of the treated effluent which shall be constructed by RSP to avoid discharge of effluent to Brahmani river and maintain Zero discharge of liquid effluent.

[50] Out fall No. 3 (Blast Furnace (BF), Coke oven and by-product effluent); Out fall No.-1 (Outlet of Calcining Plant - 2, Steel Malting Shop-2, & Sinter Plant - 2); Biological Oxygen Demand outlet; Clarifier outlet of BF -5 and Clarifier outlet of BF - 4)

per cent) against prescribed standard 0.2 mg/l which contributed high concentration fluoride in Guradihi Nullha ultimately polluting river Brahmani. Hence, levels of fluoride concentration in river Brahmani at Panposh downstream (Deogaon), Rourkela downstream and Guradihi Nullha was increased against the tolerance limit for surface water of 1.5 mg/l during 2018-20. Despite OSPCB persuasion since March 2018 the RSP did not implement the ZLD by May 2022. No penal action was taken for non-compliance.

In reply, the Government stated (May 2022) that RSP had completed installation of Sewage Treatment Plant at out fall No. 7 and cold trial and testing were in progress. The BOD plant would be completed by 31 August 2022. The delay in implementation of ZLD was not acceptable as concentration of fluoride (130- 850 *per cent*) and cyanide (1,800 *per cent*) was much higher in five outlets of RSP. The levels of fluoride concentration in river Brahmani at Panposh downstream (Deogaon), Rourkela downstream and Guradihi Nullha was higher against the tolerance limit for surface water of 1.5 mg/l which supply water to various towns of Sundargarh District. OSPCB failed to enforce conditions of CTO and penal provision as per Section 41 of Water (PCP) Act, 1974.

3.3.1.2 Scrutiny of records of RMC and RO, OSPCB, Rourkela revealed that all the four ULBs[51] of the district failed to implement the directions of OSPCB (February 2018 and December 2019) and discharged untreated sewage into rivers causing pollution as discussed below:

(i) The RMC area was having population of 3,09,689 with 69,609 Households (HHs) as per Census 2011 and generated sewage of 40 million litres per day (MLD). Construction of STP of 40 MLD was under progress (January 2021). Commissioning of STP was under trial run and out of 12,000 HHs planned to be covered in the initial phase, only 48 *i.e.* 0.4 *per cent* were connected with sewerage network (January 2021).

Due to non-establishment of STP, RMC had been discharging untreated sewage into the rivers Brahmani and Koel at various discharge points[52] causing water pollution. It was observed from the analysis report on waste water of RO that during August 2016 to October 2017, the levels of Total Suspended Solid (TSS), Oil & Grease (O&G) and Biological Oxygen Demand (BOD) were 220 mg/l (220 *per cent*), 21.5 mg/l (215 *per cent*) and 305 mg/l (1,017 *per cent*) against the prescribed parameters of 100 mg/l, 10 mg/l and 30 mg/l respectively and the samplings for the remaining period from November 2017 onwards were not carried out by the RO. The annual water sampling at upstream (U/s) and downstream (D/s)[53] of rivers Brahmani, Sankh and Koel (2016-19) was significantly deviated in the Total Coliform (TC)[54] values

[51] Rourkela Municipal Corporation (RMC), Sundargarh Municipality, Biramitrapur Municipality and Rajgangpur Municipality

[52] Discharge points of river Brahmani (Tarkera, Balughat and Panposh), Koel (Chhend colony near Kalinga Vihar)

[53] Boneigarh, Panposh U/s and D/s, Rourkela D/s, Rourkela D/s at Attaghat at Biritola, Sankh U/s (Sankh) and Koel U/s (Koel)

[54] Total coliforms include bacteria that are found in water and is influenced by human and animal waste.

ranging from 6,782 to 47,558 MPN/100 ml[55] against the parameter of 5000 MPN/100 ml at all discharge points. The high TC values at upstream and downstream of the rivers were attributed to discharge of untreated domestic waste water/sewage.

The fact of discharge of untreated sewage at Tarkera Ghat, Balughat and Panposh Ghat into river Brahmani and at Pradhan Palli area into river Koel was corroborated by Audit during JPI (06 January 2021).

Photo No.1: River Brahmani at Tarkera Ghat

Photo No.2: River Koel at Pradhan Palli area

In reply the Government stated (May 2022) that RMC was being directed to install STP and stop discharge of untreated sewage at Tarkera Ghat, Balughat and Panposh under violation of Water (PCP) Act, 1974. The reply was not acceptable as despite issuing directions to RMC since last four years, no STP was constructed by RMC which indicates failure of monitoring and lack of commitment on the part of OSPCB.

(ii) Other three ULBs[56] had population of 1,29,815 with 24,369 HHs as per Census 2011. These ULBs did not quantify the generation of waste water and its volumetric discharge, except Biramitrapur Municipality which discharged 3,199 kiloliter per day (KLD) untreated waste water into Brahmanamara Nallah. No STP was constructed by these ULBs resulting in discharge of untreated waste water directly into water bodies and open land. Although one of these ULBs *i.e.* Sundargarh Municipality submitted (June 2020) an application for grant of Consent to Establish (CTE) for establishment of an STP.

There was significant variation in the values of TSS, BOD and O&G as it ranged from 110 to 178 mg/l (110 to 178 *per cent*), 32 to 320 mg/l (107 to 1,067 *per cent*) and 11 to 18 mg/l (110 to 180 *per cent*) during the period from October 2014 to February 2020 against prescribed standards of 100 mg/l, 30 mg/l and 10 mg/l respectively. It was also observed that inspection and sampling of Rajgangpur Municipality was not conducted after December 2018. Thus, achievement of 100 *per cent* treatment of sewage by March 2020 remained unfulfilled as ULBs continued to discharge untreated sewage into water bodies causing water pollution.

[55] MPN/100 ml = Most probable number per hundred milliliters

[56] Sundargarh Municipality, Biramitrapur Municipality and Rajgangpur Municipality

In reply, the Government stated (May 2022) that direction was being issued to the ULBs regarding non-achievement of the target for 100 *per cent* treatment of sewage by March 2020. However, the fact remained that ULBs continued to discharge untreated sewage into water bodies causing water pollution. Despite issuing directions to ULBs since the last four years, no STP was constructed by three ULBs which indicates failure of monitoring and lack of commitment to reduce pollution of river water.

3.4 Management of Solid Waste

Solid Waste Management Rules, 2016 issued (April 2016) by the MoEF&CC provide the framework for management of solid waste by the enforcing authority *i.e.*, OSPCB. The Urban Development Department in the State was to prepare a State policy and Solid Waste Management (SWM) strategy as required under the Rules. The local bodies were to prepare a solid waste management plan as per the State policy and Strategy on SWM and have the responsibility of SWM within their jurisdiction. Audit test checked the records of RMC regarding management of solid waste and found the following deficiencies.

3.4.1 Non-preparation of Solid Waste Management Plan and irregular implementation of Strategy

Solid Waste Management Rules require the ULBs to prepare Solid Waste Management Plan (SWMP) within six months from the date of notification of State Policy and Strategy by adopting seven-step process as per Municipal Solid Waste Management (MSWM) Manual framed by GoI.

Scrutiny of records revealed that though GoO notified the Urban Sanitation Policy and Strategy (USP&S) during December 2016, the RMC had not prepared (January 2021) the MSWM plan. The City Sanitation Task Force (CSTF) constituted (June 2017) by RMC approved the City Sanitation Plan (CSP) which was prepared by Sanitation Implementing Agency (SIA) *i.e.* RMC. The deficiencies noticed are discussed below:

- As per the Terms of Reference for the CSTF issued (April 2017) by H&UD Department, the CSTF meeting was to be held once a month. However, only two meetings were held against the requirement of 34 during 2017-20.

- The door to door (D2D) collection of Municipal Solid Waste (MSW) was provisioned in the CSP for 18 out of 40 wards in 2017-18 and no provision was made for 2018-20. Also, in 2017-18 CSP, only 102 Tonne per Day (TPD) was planned to be collected against projected waste generation of 123.7 TPD.

Accepting the Audit observation, the Government stated (May 2022) that report for the years 2016-17 and 2018-19 to 2020-21 were not received by RO, OSPCB, Rourkela. It clearly indicates the failure on the part of department to ensure proper management of Municipal solid waste. However, the department failed to take action on RMC.

3.4.2 Inadequate segregation, collection, storage and transportation of waste

As per para 1.4.5.10 of MSWM Manual and instructions issued (April 2019) by GoO, it was mandatory for ULBs to achieve 100 *per cent* Door to Door (D2D) collection of segregated waste by 30 May 2019. Further, as per Standard Operating Procedure (SOP) (July 2019) on decentralised SWM issued by GoO, RMC finalised (August 2019) requirement of vehicles and staff for 100 *per cent* D2D collection in only seven wards out of the 40 wards. However, all nine Battery Operated Vehicles procured (September 2020) for ₹11.25 lakh, for D2D collection of wastes, were kept idle due to want of manpower. Thus, only 17 *per cent* D2D collection of segregated waste was achieved through means other than the battery operated vehicles, as of January 2021.

In pursuance to the order of Hon'ble NGT issued during January 2019, GoO instructed (April 2019) all districts to ensure 100 *per cent* source segregation in the form of dry and wet waste by 15 June 2019. It was observed during JPI (07 January 2021), that unsegregated waste was delivered by HHs to waste collectors and unloading of the same was done at MSW dumping yard near Biju Patnaik University of Technology (BPUT) due to lack of awareness among both waste generators and collectors.

Photo No.3: Collection of unsegregated domestic waste in Ward No. 34, Diesel Colony

Photo No.4: uploading of unsegregated waste at MSW Dumping Yard near BPUT

Further, during JPI (06 January 2021) at Traffic Chhak, Daily Market area, it was observed that the dumped unsegregated waste at secondary storage was not covered, resulting in littering of waste, foraging by stray animals and spread of foul odour in the surroundings.

In reply, the Government stated (May 2022) that direction was being issued to RMC, Rourkela for not dumping unsegregated waste at secondary storage in public places and violation of Solid Waste Management Rules. Despite issuing of directions, no action was taken by the department to ensure proper implementation of provisions of Rules.

3.4.3 Non-achievement of decentralised system of processing

As per Rules 15 (v) and 22 (7) of SWM Rules and SOP issued by GoO, ULBs are required to set up decentralised waste processing facilities and waste to energy plants by April 2018 to minimize adverse environmental impacts. The

H&UD Department approved (November 2016) setting up of waste to energy plant at Deogaon near Tarkera in Joint Venture mode between RSP and RMC. However, no further action was taken by RMC.

The GoO issued (July 2019) an SOP for establishment of Micro Composting Centres (MCCs) under decentralized SWM with an objective of zero discharge to landfill site. This was communicated (August 2019) to all ULBs to ensure operationalisation of MCCs by December 2019. RMC received (August 2019/ January 2020) ₹11.85 crore from GoO towards construction of ten MCCs and other project components. Even after incurring an expenditure of ₹3.40 crore, although eight MCCs out of ten were constructed by January 2021, none was operationalised (January 2021) for want of electricity, water connection, non-installation of machineries *etc*. One MCC could not be taken up due to non-issue of No Objection Certificate (NOC) by Railway Authority. RMC intimated (July 2020) State Mission Director, Swachh Bharat Mission (Urban) that one MCC at Tarkera was operational, however audit observed during JPI (07 January 2021) that it was not operational.

On being pointed out (January 2021) by Audit, the eight MCCs became operational and generated 53.395 MT of compost till January 2022, out of which 21.395 MT was disposed.

In reply, the Government stated (May 2022) that direction was being issued to RMC, Rourkela and concerned ULBs for adopting decentralised system of processing waste.

3.4.4 Submission of fabricated information of SWM to OSPCB by RMC

Rule 15(zb) of SWM Rules, 2016 prescribe that the ULBs are to prepare and submit Annual Report (AR) to OSPCB by 31 May every year.

RMC did not submit ARs to OSPCB for the years 2016 and 2018 and also did not furnish any reply against show-cause notice issued by OSPCB for non-submission. OSPCB did not take any action as the SWM rules did not provide for any action against the defaulting agencies. In the absence of ARs of RMC, the consolidated report sent by OSPCB to CPCB did not reflect fair view on management of solid waste. Further, it was observed from the AR for the year 2019 that incorrect information such as 'dumping of waste in authorised site, 100 *per cent* D2D collection, segregation and processing of waste' was furnished to OSPCB by RMC as discussed in paragraph **3.4.2**. The processing of 2.4 TPD waste as mentioned in the AR 2019 was also not based on facts as no MCC was in operation as of January 2021.

Accepting the Audit observation, the Government stated (May 2022) that steps were being taken for collection of annual report from RMC, Rourkela for 2016-18. It indicates failure of monitoring by the department.

3.4.5 Solid Waste Management by Rourkela Smart City

Government of India had introduced Smart City Mission (June 2015) covering 100 cities in the country, of which, Rourkela (in Sundargarh district) and Bhubaneswar had been identified as smart cities.

The objective of Smart City Mission was to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable development and the idea was to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart City Mission guidelines provided 10[57] core infrastructure elements which would be completed within the mission period of five years (2015-20). The SWM was one of the core elements out of ten infrastructure elements of a Smart City.

As per the guidelines, implementation of the mission at the city level was to be done by a special purpose vehicle (SPV) created for the purpose. The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart city development projects. Accordingly, the Rourkela Smart City Limited (RSCL) was established on 03 October 2016.

As per the guidelines, the smart city proposal (SCP) will consist of strategic action plans for area developments based on the three typologies (a) area improvement (b) city renewal and (c) city extension and at least one city wide (pan-city) initiative that applies smart solutions to the physical, economic, social and institutional infrastructure.

It was observed that though 1,065 tons of solid waste was generated in Rourkela City during the years 2011 to 2020 as reported by OSPCB, no project for SWM was implemented as of March 2021. As a result, the entire solid waste generated was dumped to landfill.

Further, "Swachch Sarvekshan 2021" is a yearly assessment of smart cities under different categories such as cleanliness, hygiene, sanitation, garbage free city *etc.*, by MoHUD. It ranked the Rourkela at 57th with population of 1-10 lakh in garbage free city category.

GoI in January 2018 had lunched a 'Star Rating' system for ULBs, the first-of-its kind initiative in the Country. The programme would rate ULBs from 1 to 5 based upon their efforts to meet the standards set by MoHUD and is expected to make the Cities garbage free. This system was expected to encourage ULBs to adopt clean technologies. Also 'Star Rating' programme would help public to know if the Cities in their vicinity were complying with environmental requirements. Rourkela was the only city to get "One Star" ranking in the State.

[57] 10 core elements of Smart City Mission: i) adequate water supply, ii) assured electricity supply, iii) sanitation, including solid waste management, iv) efficient urban mobility and public transport, v) affordable housing, especially for the poor, vi) robust IT connectivity and digitalisation, vii) good governance, especially e-governance and citizen participation, viii) sustainable environment, ix) safety and security of citizens, particularly women, children and the elderly, and x) health and education

Accordingly, Audit found that initiatives for SWM had not been taken up in Rourkela smart city.

3.5 Management of Bio-Medical Waste

The Bio Medical Waste Management (BMWM) Rules, 2016 were enacted (March 2016) with an objective to improve collection, segregation, processing, treatment and disposal of Bio Medical Waste (BMW). These rules would apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle BMW in any form including hospitals, nursing homes, dispensaries, *etc.* The OSPCB is the designated authority for enforcement of the provisions of these Rules.

As per BMWM Rules, 2016, management of BMW includes segregation of waste at source of generation in colour coded and bar-coded labelled bags/ containers, intramural transportation of segregated waste to central storage area for temporary storage and its treatment and disposal through Common Biomedical Waste Treatment Facility (CBWTF) or captive facility. Audit observed the following deficiencies during test check of records of occupiers[58] and operators[59] in the district.

3.5.1 Inadequate segregation of BMW

As per Rule 8 (2) of BMWM Rules, 2016, each Health Care Facility[60] (HCF) is required to ensure segregation of wastes into Yellow (Human Anatomical waste, soiled waste, and Chemical waste), Red (Contaminated waste[61]), White (Waste sharps including metals) and Blue (Glassware and metallic body implants) containers at the point of generation prior to its storage, transportation, treatment and disposal.

Photo No.5: Taken on 23.02.2021 at SDH Bonai

Scrutiny of records revealed that in District Headquarter Hospital (DHH), segregation of BMW was recorded incompletely in daily reporting register at 19[62] out of 22 wards during October 2017 to April 2019. In Sub-Divisional

[58] Occupier means a person having administrative control over the institution and the premises generating bio-medical waste, which includes a hospital, nursing home, clinic, dispensary, *etc.*

[59] Operator of a CBWTF means a person who owns or controls a CBWTF for the collection, reception, storage, transport, treatment, disposal of bio-medical waste.

[60] Health care facility means a place where diagnosis, treatment or immunisation of human beings or animals is provided.

[61] Waste generated from disposable items such as tubing, bottles, intravenous tubes and sets, catheters, urine bags syringes without needle *etc.*

[62] Male ward, Female Ward, MD, Labour Room, SNCU, Paediatric ward, Injection room, dressing room, TB Ward, Orthopaedic OT, Dental OT, Eye OT, Infection ward, Blood Bank, Pathological Lab, PPC, ICTC, NRC and General OT

Hospital (SDH), Bonai, waste generated from Post-Partum Care (PPC) unit were kept in 'Red' bin instead of 'White' bin. In case of one sampled private HCF[63], waste was not segregated into category wise colour-coded bins.

Accepting the audit observations, the Government stated (May 2022) that show cause notices for revocation of authorisation under Rule 10 of BMWM Rules, 2016 were issued to the HCFs by OSPCB. However, the fact remains that segregation of waste was not being done properly.

3.5.2 Inadequate interim storage and intramural transportation

Para 2.3.4 and 2.4.2 of Guideline for Management of Health Care Wastes as per BMWM Rules, 2016 stipulate that interim storage of BMW is discouraged in wards/ different departments of HCF, no waste should be stored in patient care area and BMW must be transported through a route which has low traffic flow of patients and visitors.

It was noticed that the wastes were stored inside patient care area and transported through routes with high traffic flow of patients and visitors as observed in case of eight HCFs[64] during JPI on different dates[65].

In reply, the Government stated (May 2022) that show cause notice for revocation of authorisation under Rule 10 of BMW Rules, 2016 was issued to DHH, Sundargarh. However, the reply was silent on the remaining HCFs.

3.5.3 Central Storage of BMW

As per Rule 4 (b) of BMWM Rules, it is the duty of each HCF to make a provision within its premises for a safe, ventilated and secured location for storage of segregated BMW. During JPI in two Government and six private HCFs, it was observed that

(i) In DHH, the Central Waste Collection Room (CWCR) was located adjacent to infection disease ward.

(ii) In SDH, Bonai, drainage from storage and washing area was not routed to Effluent Treatment Plant (ETP) and released to open land.

(iii) Similarly, in two private HCFs[66] and three[67] CHCs, there were no dedicated CWCR and

(iv) In one HCF, the CWCR was located within the patient care area.

In reply, the Government stated (May 2022) that show-cause notice for revocation of authorization under Rule 10 of BMW Rules, 2016 and amendment thereof was issued to the DHH, CHC Rajgangpur, Bargaon and

63 Shanti Memorial Hospital, Rourkela
64 Two Government and six Private
65 On 13-14 February 2020, 03 March 2020 (4), 04 February 2021(2) and 23 February 2021
66 M/s Shanti Memorial Hospital, Rourkela and M/s Vesaj Patel Hospital and Research Center, Rourkela
67 CHC, Rajagangpur, Bargaon, and Hemgiri

Hemgiri. The reply was silent on two private HCFs. However, the department failed to ensure the compliance of provisions of BMWM Rules.

3.5.4 Non-disposal of BMW within prescribed period

As per Para 2.3.1 and 5.2.4 of Guideline for Management of Health Care Wastes issued by CPCB, HCFs need to have valid agreement with Common Bio Medical Waste Treatment Facility (CBMWTF) and to ensure that the operator of CBMWTF collects wastes within specified time and disposes within 48 hours.

Scrutiny of records of four HCFs[68] revealed that the operator of CBMWTF had not collected, transported and disposed BMW within 48 hours and the delay ranged up to 30 days. Audit observed that the reason for such delay was non-inclusion of the conditions in the agreement towards disposal of waste within 48 hours and non-implementation of bar-coding system in violation of guidelines issued by CPCB. Besides, none of the HCFs informed OSPCB regarding non-collection and disposal of BMW within 48 hours, hence, OSPCB did not take any action neither against HCFs nor against operator of CBMWTF.

Due to non-maintenance of proper BMW registers, there was mismatch in quantity reported on generation of waste of 56,841.89 kg by the HCFs and collection of 46,274.56 kg by the CBMWTF during 2019.

In reply, Government stated (May 2022) that show cause notice for revocation of authorisation under Rule 10 of BMW Rules, 2016 was issued to SDH, Bonai, CHC Bargaon, Hemgiri and M/s Rajasthan Seva Sadan, Rourkela. However, the department failed to ensure the compliance of provisions of BMWM Rules.

3.5.5 Non-establishment of bar-coding with GPS system

As per BMWM Rules, 2018, both HCFs and CBMWTF had to establish bar-coding with Global Positioning System (GPS) by 27 March 2019 to monitor proper disposal of BMW.

Scrutiny of records revealed that none of the test checked HCFs (Government and private) established (February 2021) the bar-coding system with GPS. The operator of CBMWTF had established bar-coding system with GPS for only two HCFs (RGH, Rourkela and DHH, Sundargarh) as of January 2021. Subsequently, the Government decided (November 2020) to implement bar-coding system by engaging Odisha Computer Application Centre (OCAC). However, no funds were provided as of April 2021.

Due to non-establishment of bar-coding with GPS system, HCFs and CBMWTF failed to ensure tracking of transportation of BMW and its timely disposal.

[68] SDH, Bonai, CHC Bargaon, CHC Hemgir and M/s Rajasthan Seva Sadan, Rourkela

In reply, the Government stated (May 2022) that show cause notice for revocation of authorisation under Rule 10 of BMW Rules, 2016 was issued to the operator of CBMWTF *i.e.* M/s Mediaid Marketing Services. However, the department failed to ensure the compliance of provisions of BMWM Rules. Further, the Health and Family Welfare Department, Odisha is in the process of implementation of integrated software for barcoding of biomedical waste from the site of generation and tracking down the process from segregation till disposal.

3.5.6 Non-setting up of Effluent Treatment Plant and inadequate testing of effluents from HCFs

Rule 4 (k) of BMWM Rules, 2016 stipulates that the HCFs were to ensure treatment and disposal of liquid waste in accordance with Water (PCP) Act, 1974. However, it was observed during JPI of eight HCFs that one HCF[69] was disposing untreated water into the drainage system due to non-installation of Effluent Treatment Plant (ETP). Other seven HCFs, although installed ETP, were not testing all six parameters of the effluents in the disposed liquid waste.

In reply, the Government stated (May 2022) that RO, Rourkela was instructed to verify the installation and operational status of ETP. Action would be initiated after receipt of compliance report from the RO. Reply of the Government was not acceptable as its responsibility to monitor the compliance of various provisions and non-installation of ETP and partial testing of effluents in remaining seven ETPs clearly indicates lack of monitoring mechanism.

3.5.7 Unfruitful expenditure due to non-operation of incinerators in Veterinary Health Facilities

As per Rule 7(4) of BMWM Rules, the occupiers were required to set up requisite treatment equipment like incinerator for safe disposal of BMW where service of the CBMWTF is not available and obtain authorisation from OSPCB for its operation.

Scrutiny of records of Chief District Veterinary Officer (CDVO) revealed that Directorate of Animal Husbandry & Veterinary Services (AH&VS**)** delivered (August 2016) 27 incinerators valued at ₹91 lakh to 27 Veterinary Hospitals (VH)/ Veterinary Dispensaries (VD) of the district. Further, ₹6.34 lakh was released (December 2015) towards execution of civil and electrification work for installation. However, no incinerator was operational as of March 2021 for want of three phase power connection rendering the expenditure of ₹97.34 lakh unfruitful. This resulted in burning of bio-wastes in open spaces causing environmental hazard as observed in JPI of VH at Sundargarh (20 February 2020).

After it was pointed out by Audit, the Government stated (February 2022) that out of 27 incinerators, 23 incinerators were made functional. However, four incinerators were not functional as of May 2022. Despite lapse of six years,

[69] Rajasthan Seva Sadan, Rourkela

non-functioning of incinerators indicates lack of monitoring mechanism at department level.

3.5.8 Deficiencies in operation of Common Bio-Medical Waste Treatment Facility

3.5.8.1 As per the agreement (December 2014) between SDH and CBMWTF, cost of collection and disposal included cost of consumable *i.e.* colour coded poly bags. However, scrutiny of records of SDH, Bonai revealed that during the period 2016-21, ₹10.85 lakh was spent by SDH towards purchase of colour coded poly bags for collection of BMW. The cost of procurement was also not deducted from the payment bills of CBMWTF unduly benefitting the operator.

In reply, CDM & PHO, Sundargarh, stated (March 2022) that though the total number of beds in SDH is 50, the actual functional beds ranged from 90 to 112 as per the midnight head count in IPD. Therefore, the supplied polybags were not enough for which extra polybags were purchased as per requirement. The reply is not acceptable since the terms of agreement stipulated that the cost of polybags was to be borne by CBMWTF irrespective of requirement.

3.5.8.2 As per para 5.2 and 5.3 of CPCB guidelines (December 2016), the project proponent of the CBMWTF was required to obtain CTE, CTO and EC.

Scrutiny of records at RO, OSPCB revealed (February 2021) that:

(i) The CBMWTF had not obtained Environmental Clearance, CTE and CTO till October 2020 while operating at RGH Campus.

(ii) It also did not have a standby treatment equipment at its new plant at Amsrang.

(iii) The facility never conducted testing of stack emission and effluent parameters and validation test of autoclave through any NABL[70] approved laboratory.

(iv) The facility at RGH was not inspected by RO, OSPCB during night when the incinerator was operated, owing to which, stack emission measurement was not done and three[71] prescribed parameters were not tested.

After it was pointed out by Audit, the CBMWTF applied for CTO which was granted (March 2021) and testing of stack emission and effluent parameters were being conducted from March 2021.

3.5.9 Inadequate monitoring of disposal of BMW

BMWM Rules, 2016 provide for formation and functioning of District Level Monitoring Committee (DLMC) and Bio-Medical Waste Management

[70] National Accreditation Board for Testing and Calibration Laboratories

[71] Incinerator combustion efficiency, Total Dioxins & Furans and Mercury (Hg) and its compounds

Committee (BMWMC) (at HCF level) to monitor the compliance of the provisions of the Rules and submit its reports once in six months to the OSPCB. Following deficiencies in the functioning of DLMC and BMWMC were noticed:

- There was shortfall (62 *per cent*) in conducting DLMC meetings. As against the requirement of eight meetings, only three were conducted during 2016-20. The DLMC also never submitted its six-monthly report to OSPCB.
- The BMWMC was not formed in three[72] out of 13 test-checked HCFs till date (February 2021). Only 33 meetings were conducted out of 72 required (shortfall of 54 *per cent)* in nine HCFs during 2016-20. None of the HCFs submitted minutes of the meeting to OSPCB along with AR.

After being pointed out by Audit, the Government stated (April 2022) that DLMC meeting had been conducted in the district. However, the Government did not provide (May 2022) any reply on formation of BMWMC. It indicates failure of monitoring mechanism on the part of OSPCB.

3.6 Deficiencies in management of different kinds of wastes

3.6.1 e-Waste Management

As per Rule 9 (2) of e-Waste (Management) Rules, 2016, bulk consumers of electrical and electronic equipment listed in Schedule-I shall maintain records of e-waste generated by them in Form-2 and make such records available for scrutiny by the concerned State Pollution Control Board. Rule 15 of e-Waste (Management) Rules, 2016 stipulates that e-waste should not be stored for a period exceeding 180 days.

The RMC being a 'bulk consumer' maintained e-waste stock register which was not as per prescribed format. Out of 31,151 discarded electrical items, 30,889 were sold (April 2017) to a vendor, which was not an authorised dismantler or recycler under OSPCB.

Further, during JPI (January 2021), it was noticed that 9,158 e-waste items were kept at RMC godown without being channelised to authorised dismantler/ recycler within 180 days in contravention to Rule. In reply, the Government stated (May 2022) that direction had been issued to M/s Kalinga Engineering Services to obtain authorisation and to stop activity for unauthorised collection of e-waste from RMC.

3.6.2 Management of Construction and Demolition Waste

As per Rule 6 (7) of Construction and Demolition Waste Management Rules, 2016, the local authority shall examine and sanction the waste management

[72] CHC, Rajgangpur, M/s Hi-tech MCH, Rourkela and M/s Astha Mother and Child Care Hospital, Rourkela

plan of the generators within a period of one month or from the date of approval of building plan, whichever is earlier from the date of its submission.

Scrutiny of records revealed that RMC did not ensure submission of Construction and Demolition (C&D) waste management plan by the waste generators while approving building plans nor any conditions were imposed in approved plans for management of waste.

Photo No.6 : Ward – 33, Kalinga Vihar,

The RMC did not make arrangements for placing C&D waste collection containers and removal of waste on a regular basis resulting in dumping of waste alongside public road as observed in JPI on 06 January 2021.

Further, database was not prepared till January 2022 for keeping track of the generation of C&D waste and AR was not submitted during 2016-18 to OSPCB.

In reply, the Government stated (May 2022) that direction was being issued to RMC, Rourkela for deficiencies in management of C&D waste. Despite lapse of six years, non-compliance to C&D Waste Management Rules indicates monitoring failure at department level.

3.6.3 Management of Plastic Waste

The Plastic Waste (Management) (PWM) Rules, 2016 were framed (March 2016) with an objective to provide a regulatory framework for management of plastic waste and its application to every waste generator, local bodies, manufacturers, importers and producers. Scrutiny of records revealed (February 2021) the deficiencies in management of plastic waste in the district as discussed below:

- The use of polythene carry bags had been completely banned in the State from 2 October 2018. After gap of 10 months, RMC decided (August 2019) for its enforcement in its jurisdiction by collection of fine from violators. However, it was not enforced effectively by the RMC as it was observed during JPI (13 January 2021) that polythene carry bags were being used for selling/ buying commodities at daily market area.

Photo No. 7: Daily Market Area of Rourkela

In reply, the Government stated (May 2022) that direction had already been issued to all Collectors to implement the ban order. A public notice in this regard had also been published.

- Under Rule 6 of Plastic Wastes Management Rules, 2016, it is the responsibility of local body for development and setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either on its own or by engaging agencies. However, RMC had neither set up such infrastructure on its own nor engaged any agencies. As a result, unsegregated plastic wastes mixed with MSW were dumped and disposed in an unscientific manner. Further, as per the consolidated annual report on plastic waste management for the period 2016 - 20 submitted by OSPCB to CPCB, four ULBs[73] of the district did not channelise 7,694.15 ton *i.e.* 100 *per cent* of plastic waste generated during 2016-20, even though there was an authorised recycler in the district.

  In reply, Government stated (May 2022) that RMC, Rourkela had been instructed for setting up of infrastructure for segregation, collection, storage, transportation, processing and disposal of the plastic waste either of its own or by engaging agencies. Despite lapse of six years, the department failed to ensure proper disposal of plastic waste.

3.6.4 Management of Hazardous Waste

Rule 3(3) of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 stipulate for effective handling, collection, treatment, storage, utilisation and disposal of hazardous[74] and other wastes. Audit observed the irregularities as discussed in subsequent paras.

3.6.4.1 Absence of integrated plan and non-publishing of inventory of disposal sites

Rule 5 (3) of the above Rules provides that every State Government should prepare an integrated plan for effective implementation of management of hazardous waste. It was, however, noticed that no such plan was framed by the Government till date (March 2021). In absence of integrated plan, there was no coordination between OSPCB and the Department of Industries to monitor functioning of seven authorised recyclers/ co-processors[75] dealing with hazardous waste in the district as of March 2021. The Industries Department did not allocate/ identify any site in respect of these recyclers/ co-processors. Further, contrary to the provisions of Rule 21 and Schedule VII, inventory of all potential or existing disposal sites was not published periodically.

In reply, the Government stated (May 2022) that IDCO had been requested to submit the status of earmarking of industrial space, shed in the existing and

[73] RMC, Rourkela, Sundargarh, Rajgangpur and Biramitrapur Municiality

[74] Hazardous waste means any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances

[75] 1) Jai Maa Durga Industries, 2) N.S Chemicals, 3) Ratna Industries, 4) Shriya Metals and Chemicals, 5) OMM CEE Business, 6) Suraj products limited, and 7) OCL India Ltd. (Dalmia Cement Bharat Ltd.)

up-coming industrial park, estate and industrial clusters for recycling/ processing/ utilisation of hazardous waste and other waste. Despite lapse of six years, the department failed to manage the hazardous waste properly.

3.6.4.2 Submission of Annual Inventory

Rule 20 (3) prescribes that OSPCB would submit an annual inventory to CPCB regarding the quantum of the waste generated, recycled, recovered, utilised, re-exported and disposed of in the State based on Annual Returns submitted by the occupier[76] and operators[77] of the facilities for disposal of hazardous and other wastes.

Scrutiny of records revealed (March 2021) that there are 103 industries in the district generating hazardous waste. It was noticed that there was no uniformity in submission of ARs to OSPCB as it varied from submission by 28 to 84 (27 to 82 *per cent*) industries during 2016-20. Due to non-submission or belated submission of AR by all occupiers and operators, the consolidated annual inventory submitted by OSPCB to CPCB did not present a fair view of quantity of actual hazardous waste generated and disposed in the State.

Further, during 2016-17, 2017-18 and 2019-20, the consolidated generation of hazardous wastes by the industries as submitted in the ARs were 72,616.20, MT, 82,422.45 MT and 87,322.65 MT against the authorised generation of 25551.67 MT, 81553.47 MT and 84384.03 MT respectively. Though hazardous waste generation was on an increasing trend during the period 2016-20, yet no programme was devised and implemented to reduce or prevent the generation of hazardous waste.

In reply, the Government stated (May 2022) that defaulting units were small scale units and the Board had delegated power to the RO, Rourkela for better management of small scale sectors where the deficiency was noticed. Despite lapse of six years, 73 *per cent* of industries had not submitted the ARs and the Government failed to collect AR from industries as provisioned in Rule.

3.7 Conclusion

Audit examined applicable environmental laws in one of the most industrialised districts in Odisha, *i.e.* Sundargarh. Audit observed the following major irregularities, which need immediate action by the Department.

Audit noticed that for the 7,238 AAQ samples analysed in six stations of the district, average PM_{10} and $PM_{2.5}$ values remained high during 2016-20. Due to high concentration of pollutants and silica dust in ambient air, 2,440 pulmonary cases and 61,698 cases of Silicosis were detected in the district. The operation of the conveyor belt without CTE and CTO for almost nine years was a major lapse on the part of RO in enforcement of environmental

[76] Occupier in relation to a factory or premises means a person who has control over the affairs of the factory or premises and includes in relation to any hazardous and other wastes, the person in possession of the hazardous or other wastes. - Rule 3 (21)

[77] Operator means a person who owns or operates a facility for collection, reception, treatment, storage and disposal of hazardous and other wastes. - Rule 3 (22)

law. Two mines failed to maintain AAQ standard components of Respiratory Particulate Matter and Suspended Particulate Matter of PM_{10} level during 2016-21.

There were 1,100 renal cases handled at SDH, Bonai due to use of contaminated water of River Brahmani, which flows near RMC and RSP. Due to non-implementation of ZLD by RSP and discharge of effluents to river Brahmani, there were high concentrations of fluoride at five locations. Due to non-establishment of STP, RMC discharged untreated sewage into rivers Brahmani and Koel causing pollution. No STP was constructed by ULBs resulting in discharge of untreated waste water directly into water bodies and open land. Achievement of 100 *per cent* treatment of sewage by March 2020 remained unfulfilled. Due to want of manpower, 100 *per cent* D2D collection of waste remained unachieved as of January 2021. Although eight MCCs were constructed, they could not be operationalised due to want of electricity, water connection, non-installation of machineries *etc.* even after incurring an expenditure of ₹3.40 crore.

Untreated bio-medical waste was stored upto 30 days without treatment. Due to non-establishment of bar-coding with GPS system, HCFs failed to ensure tracking of transportation of BMW and its timely disposal. None of the incinerators was operational as of March 2021 due to want of three-phase power connection rendering the expenditure of ₹97.34 lakh unfruitful. This resulted in burning of bio-waste in open spaces causing environmental hazard. Unsegregated plastic waste mixed with MSW was dumped and disposed of in an unscientific manner creating environmental issues. Although hazardous waste generation was on increasing trend during the period 2016-20, no programme was devised and implemented to reduce or prevent the generation of hazardous waste.

3.8 Recommendations

- The Government may take appropriate action and fix responsibility on the defaulting implementing agencies for lack of compliance of environmental rules, to keep the industrial air pollutants within the prescribed standards.
- The OSPCB may take appropriate action to ensure that the levels of PM_{10} and $PM_{2.5}$ from the industrial air pollutants remain within the prescribed standards of the Ambient Air Quality to reduce pulmonary and silicosis cases in the district. The polluting industries should be fitted with the best available technology and emission control devices and be brought under rigorous continuous emission monitoring and compliance, in order to reduce pollution.
- The OSPCB may take action against defaulting industries, to ensure compliance to CTE and CTO conditions along with realisation of pollution charges and compensation.
- The OSPCB may pursue the issue of effective treatment of sewage, by establishing Sewage Treatment Plant, with the ULBs.

- The OSPCB may pursue the matter of ensuring Zero Liquid Discharge, to prevent cases of renal diseases in the district, with the Rourkela Steel Plant.
- The OSPCB may ensure preparation of Solid Waste Management Plan and door-to-door collection of Municipal Solid Waste, in all Urban Local Bodies.
- The Government may take necessary action to ensure proper disposal of plastic and C&D wastes and stringent action may be taken against the violators.
- The Government may issue directions to discard the e-waste through authorised dealer. The Government may consider making penal provisions for the ULBs and industries which are not complying with the environmental laws.