CHAPTER - VI
SPECIAL WASTE AND CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

Chapter VI

Special waste and Construction and Demolition Waste management

As per Section 7.1 of MSW Manual, 2016, the following wastes are defined as special waste namely (a) Plastic waste, (b) Electric and Electronic waste (E-waste), (c) Bio-medical waste (BMW) and (d) Slaughterhouse waste.

6.1 Plastic Waste Management (PWM)

Ministry of Environment, Forest and Climate Change, GoI notified (February 2011) the Plastic Waste Management (Management and Handling) Rules, 2011 (PWM Rules, 2011). It was replaced by the Plastic Waste Management Rules, 2016 (PWM Rules, 2016) notified by GoI (March 2016). These rules shall apply to every waste generator, local body, manufacturer, importers and producer.

6.1.1 Status of compliance to Plastic waste management Rule by ULBs

Clauses 5 and 6 of PWM Rules, 2016 spell out the responsibility of the municipal authority/local body for plastic waste management. The status of compliance to these provisions in the test-checked ULBs is shown in Table below:

Table 6.1: Status of compliance to PWM Rules 2016

Sl. No.	Requirement	Provision under PWM Rules, 2016	Compliance/Remarks
1	Ensuring segregation, collection, storage, transportation, processing and disposal of plastic waste	Rule 6 (2)(a)	Test checked ULBs were collecting and transporting mixed waste to the landfill site. After implementation of SOP (July 2019/December 2020) ULBs have taken up construction of MCC/MRF projects where plastic wastes were being segregated. As MCC/MRF projects in all the ULBs have not been completed and functional, segregation of plastic wastes is being done partially.
2	Creating awareness among all stakeholders about their responsibilities	Rule 6 (2)(e)	Awareness on use of alternative products in place of plastic was not promoted by the test-checked ULBs.
3	Engaging civil societies or groups working in waste management including waste pickers	Rule 6 (2)(f)	The *Swachha Sathis* from SHG groups were engaged after issue of SOP in July 2019 for waste management. Since MRF projects were not fully functional in the ULBs, rag pickers were not engaged.
4	For setting up of system for plastic waste management, the local body shall seek assistance of producers in line with the principle of Extended Producer Responsibility (EPR)	Rule 6(3)	None of the ULBs (test-checked by Audit) established the EPR based plastic waste management system.
5	The ULBs to frame by-laws incorporating the provisions of PWM rules.	Rule 6(4)	None of the test checked ULBs except BMC, have framed the By-laws incorporating the provisions of PWM Rules. By-laws of BMC were yet to be approved (March 2021).

(Source: Compiled by Audit)

Thus, failure of ULBs to follow prescribed provision in the rules for PWM (2016) resulted in low segregation rate. Thus, unsegregated mixed waste reached the landfill sites. The JPV in all test checked ULBs (December 2020 to September 2021) also showed that banned plastic waste was dumped in the landfill site.

The EO, Rayagada ULB stated (March 2021) that steps would be taken to establish plastic processing facilities. The EOs of Jeypore/ Sambalpur ULBs have noted audit comments.

6.1.2 Use of banned plastic

Clause 5 (c) of PW Rules, 2011 prohibit manufacture, stock, distribution or sale of any carry bag made of virgin or recycled plastic, which is less than 40 microns in thickness. Subsequently, as per Clause 4(c) of PWM Rules, 2016, carry bag made of virgin or recycled plastic, shall not be less than 50 microns in thickness.

Government of Odisha notified (September 2018) ban on manufacture, supply, sale and usage of plastic carry bags, banners, buntings, flex, plastic flags, plastic plates, cups, plastic spoons, cling films and plastic sheets made of thermocol and plastic, which use plastic micro beads in State.

As per Annual Reports (2015-20) submitted by SPCB to CPCB, average 99.90 TPD of plastic waste was generated in the State. To ensure compliance to ban plastic, DMA stated that 114 ULBs had seized 16,286 kg and 34,124 kg of banned plastic and collected ₹36.44 lakh and ₹50.59 lakh towards penalty during 2019-20 and 2020-21 respectively. Test checked 21 ULBs had seized 27,258 kg of banned plastic and collected penalty of ₹45.22 lakh during 2019-21. The banned plastics were stored within premises of ULBs and dry waste collection centres. ULBs were yet to initiate action for disposal of the banned plastic as only two ULBs transmitted 541.38kg (Baragarh 191.38kg, Rourkela 350 kg) to nearest cement factories for processing. Audit observed that banned plastic waste was collected at source from households indicating that plastic ban was not implemented effectively.

6.1.2.1 Produce of plastic less than 50 microns

Clause 13 of PWM Rules, 2016 stipulated that no person should manufacture carry bags or containers irrespective of its size or weight unless the HCEs of the unit had registered with SPCB. As per Clause 4(b) of PWM Rule 2016, no vendor shall use plastic carry bags or products made of recycled plastic and shall not be used for storing, carrying, dispensing or packaging ready to eat or drink food stuff.

Photograph 22: Plastic used for packing of food stuff

Audit observed during Joint Physical Verification (JPV) that despite ban for production of plastic carry bags or containers, they were used for packing food stuffs, vegetables *etc*. There were 99 un-authorised plastic manufacture units in Odisha as of March 2020 as reported by SPCB. The SPCB did not issue any notice to unauthorised plastic manufacturing units to close the units in

violation of rules as of March 2020. It indicates that PWM Rules were not being enforced fully resulting in availability of banned plastic products in the market for carrying materials other than garbage.

6.1.2.2 Use of sachets of plastic

Clause 4(f) (i) of PWM Rule 2016 envisages that sachets using plastic materials shall not be used for storing, packing or selling Gutkha, tobacco and pan masala.

Audit observed during JPV in the markets of all test-checked ULBs that sellers/ vendors were using sachets of plastic material for storing, packing, selling gutkha, tobacco and pan masala indicating laxity in enforcement of the PWM Rule in the State.

The Government stated (May 2022) that ban on plastic was reinforced through a committee constituted at ULB level. Massive awareness through IEC and behavioural change activities are also carried out to make people aware of the banned plastic. However, the fact remained that steps taken have been ineffective in implementation of plastic ban despite five years of implementation of PWM Rules.

6.1.3 Non-use of plastic for alternative users

Clause 5(b) of PWM Rules, 2016 stipulate that municipal authorities/local bodies shall encourage use of plastic waste (preferably the plastic waste which cannot be further recycled) for road construction as per Indian Roads Congress (IRC) guidelines or energy recovery or waste to oil, *etc*. IRC has also issued guidelines for use of waste plastic in hot bituminous mixes in wearing course (IRC-SP-98-2013) for road construction works as plastic waste have great potential for use in bituminous construction. It helps improving stability, strength, and other properties of bituminous mix, leading to improved longevity and pavement performance.

Audit observed that none of the test-checked ULBs adopted use of plastic waste in formation of roads/energy recovery/waste to oil, *etc*. Audit did not come across any instance that seized plastic and plastic waste were being transmitted by ULBs to any Works Wing for usage in laying roads indicating lack of initiation by ULBs.

The Government stated (May 2022) that co-processing of plastic at cement factories is being followed by all the ULBs. The reply was not acceptable as only two out of 21 test-checked ULBs have transmitted plastic waste to nearest cement factories. Moreover, the reply was silent on use of plastic waste in formation of roads/energy recovery/waste to oil, *etc.*

6.1.4 Ingestion of plastic by cattle

As per Schedule II (vii) to MSW Rules, 2000, storage facilities should be maintained in such a way that stray animals do not have access to the waste. Poor segregation at source from households resulted in kitchen waste/discarded food packed in plastic bags being improperly disposed at dumping yard/landfills. Cattle eat leftovers food including the plastic. The GoO, F&E Department issued order (September 2018) that if plastics are swallowed by cattle, it may cause death due to obstruction of their intestines.

Photograph 23: Stray animals feeding plastic waste at Bhuasuni, BMC dumping yard

Photograph 24:Stray animals feeding plastic waste at Baliapanda, Puri dumping yard

During JPV audit noticed that stray animals/cattle were seen feeding at solid waste dumping yard and found pulling out or scattering/consuming food waste that was packed in plastic bags creating untidy and unhygienic surroundings apart from consuming plastic also. In response to the audit query, Chief District Veterinary Officer Puri stated that out of 107 cases of ingestion of plastic by stray animals/cattle during 2015-21, in 84 cases, though surgeries were conducted, the animals had died.

The Government stated (May 2022) that actions were already taken for remediation of dumpsites. The reply was not acceptable as stray animals/cattle were still consuming food waste that was strewn in plastic bags.

6.1.5 Non collection of user fee for plastic waste

As per Clause 8(3) of PWM Rule 2016, all waste generators shall pay such user fee or charges as may be specified in the by-laws of the local bodies for plastic waste management such as waste collection or operation of the facility thereof *etc.*

Audit observed that neither of the ULBs have framed by-laws for Plastic waste management nor collected user fee for plastic waste. Non-framing/non-enforcement of by-laws for PWM led to loss of revenue to the ULBs.

The Government stated (May 2022) that draft by-laws had been framed and vetted by Law Department after insertion of the amendment made by GoI (August 2021) which will be published shortly. However, fact remained that department failed to publish the Plastic waste by-laws for more than five years of implementation of Rules.

6.2 E-waste Management

E-waste (EW) (Management & Handling) Rules were notified in 2011 and came into force with effect from 1st May, 2012. This was replaced by E-waste Management Rules, 2016 which came into effect from 1st October 2016. These rules are applicable to every producer, consumer/bulk consumer, collection centre, dismantler and recycler of E-waste involved in manufacture, sale, and purchase and processing of electrical and electronic equipment or components specified in Schedule-I including their components, consumables, parts and spares which make product operational.

6.2.1 Status of E-waste management

As per information furnished by SPCB, 14,894 MT of E-waste was collected in the State during the period 2015-20 which were not recycled/channelised.

Audit noticed that SPCB issued consent for establishment to five dismantlers, two collection centres, one captive collection centre and Nil recyclers/refurbishers for recycling of E-waste. In absence of recyclers/ refurbishers, E-waste could not be channelised for further processing and finally disposed of to dumpsite. During Entry conference, the DMA, H&UD Department confirmed (February 2021) that ULBs have not implemented E-waste Management Rules.

Government stated (May 2022) that ULBs have taken initiative for collecting e-waste on two dedicated days. However, implementation of e-waste management rules remained lackadaisical.

6.2.2 Retention of E-waste by ULBs

Clause 15 of EWM Rules, 2016, stipulate that every manufacturer, producer, bulk consumer, collection centre, dealer, refurbisher, dismantler and recycler may store the E-waste for a period not exceeding 180 days and shall maintain a record of collection, sale, transfer and storage of E-waste and make these records available for inspection. Retention of huge quantity of E-waste would occupy more space in the premises of ULBs and causes unclean/unhygienic condition in the area. Therefore, periodical disposal of E-waste was required to be done by ULBs.

Audit observed that huge quantity of E-waste generated by the ULBs and H&UD department like tube lights, old monitors/desktop computers/batteries were found dumped within the premises of ULBs as shown in photographs below. This indicates that these are not disposed of by ULBs for years. The retention of E-waste by ULBs for more than 180 days of generation was in contravention of the Rules.

Photograph 25: E Waste deposited inside the Municipality campus store room at Bhadrak

Photograph 26: E Waste deposited inside the Municipality campus store room at Puri

6.2.3 Non-compliance to E-waste management rule by ULBs

Schedule IV(3) of EWM Rules, 2016 stipulates that it is the responsibility of ULBs to ensure that E-waste if found to be mixed with solid waste or pertains to orphan products[35] is properly segregated, collected and channelised to authorised dismantler or recycler.

Audit observed that there were no authorised recyclers in the State for processing/ channelising for E-waste as of March 2021. E-waste was not

[35] Orphan products mean non-branded or assembled electrical and electronic equipment as specified in Schedule-I of the Rules or those produced by a company which has closed its operations or has stopped product support

handed over separately by households in any test-checked ULBs and was getting mixed with solid waste. After Audit commented (January 2021), BMC had initiated (July 2021) campaign to collect E-waste from households. However, initiatives to handhold Non-Government Organisations/Self-Help Groups/Startups/private enterprises to maximise processing of e-waste were absent.

The Government stated (May 2022) that all the ULBs were instructed for collection and disposal of E-waste to authorised dismantlers/recyclers. However, fact remains that none of the test checked ULBs had collected E-waste from the households as of March 2021, indicating lack of commitment for e-waste management.

6.3 Bio Medical Waste Management

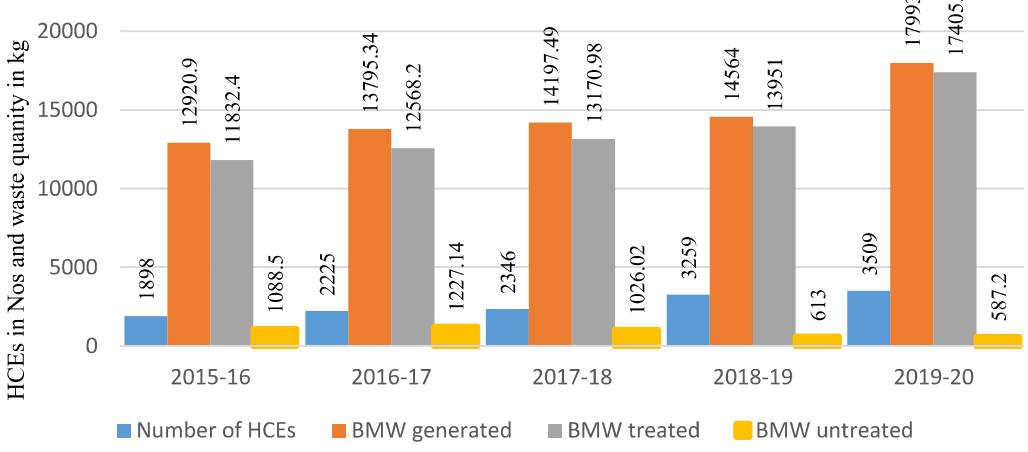
GoI notified (July 1998) Bio-medical Waste (Management and Handling) Rules, 1998 (BMW Rules), which provided a regulatory framework for management of BMW generated in the country. This was replaced by the BMW Rules, 2016 notified (March 2016) by GoI.

SPCB is the authority designated for implementation of provisions of these rules. Every HCEs or operator handling BMW, irrespective of quantity should obtain authorisation from SPCB and shall hand over segregated waste to a Common Bio-Medical Waste Treatment Facility (CBMWTF) for treatment, processing and final disposal. Disposal by deep burial is permitted only in rural or remote areas where there is no access to CBMWTF and needs to be carried out with prior approval from prescribed authority as per the Standards specified.

6.3.1 Status of Bio Medical waste in Odisha

The quantum of BMW generated and disposed of in State during the period 2015-16 to 2019-20 is given in **Chart-2**.

Chart-2: Status of Bio-medical waste generation and treated in Odisha during 2015-20



(Source: As per information furnished by SPCB)

Above Chart indicates that the number of HCEs functioning in State during 2015-16 has been increased from 1,898 to 3,509 (*85 per cent)* during 2019-20 and the quantum of waste generated has increased from 12,921 kg per day to

17,993 kg per day (*39 per cent*). Though there was increase in HCEs and BMW generated, the quantity of untreated BMW declined from nine *per cent* (2015-16) to four *per cent* (2019-20) due to creation of own captive treatment facilities or deep burials and CBMWTFs. The initiative for treatment of BMW by HCEs is commendable.

6.3.2 Status of authorisation of Health care establishments

Audit observed (December 2020) that there were 3,603 Health Care Establishments (HCE) functioning in Odisha as of November 2020, which include hospitals, nursing homes and other units such as veterinary institutes, diagnostic laboratories, clinical research, *etc*. The details of bedded and non-bedded HCEs of Government and Non-Government HCEs having authorisation are given in table below:

Table 6.2: Authorisation status of State Government Health Care Facilities (HCFs)/other than State Government HCFs as of November 2020

Category of Governmen t HCEs	Total HCEs in authorisation administration	HCFs having authorisation (in per cent)	HCFs whose applicatio n are under process	HCFs not applied for renewal of authorisation
Bedded	545	440 (80.73)	87	18
Non-Bedded	1,239	1,233 (99.52)	06	0
Total (A)	**1,784**	**1,673 (93.78)**	**93**	**18**
Authorisation status of HCFs other than State Government				
Bedded	861	677 (78.63)	110 (4 are refused)	74
Non-Bedded	958	886 (92.48)	42	30
Total (B)	**1,819**	**1,563 (85.93)**	**152**	**104**
Total A+B	**3,603**	**3,236 (89.81)**	**245**	**122**

(Source: As per information furnished by SPCB in annual reports and review meetings)

As of December 2020, three *per cent* of HCEs (122) were functioning without a valid authorisation from SPCB. No action so far has been taken by SPCB against HCEs for functioning without valid authorisation. Audit test checked the records of 21 Government hospitals (13[36] DHH, four[37] CHC, two SDH and two[38] medical colleges) located within the jurisdiction of 21 test checked ULBs. Out of 21 test checked HCEs, audit found authorisation deficiencies in 10 HCEs as follows:

[36] DHHs: Puri, Jeypore, Sundargarh, Nuapada, Sambalpur, Ganjam (Berhampur), Jharsuguda, Baragada, Bhadrak, Cuttack, Rayagada, Rourkela Government Hospital , Capital Hospital Bhubaneswar

[37] CHCs: Chandabali, Ranapur, Hinjalicut and Kapileswar UPHC, Choudwar, SDH: Gunupur and Chhatrapur

[38] Medical Colleges: Bhim Bhoi Medical College & Hospital, Bolangir and Pandit Raghunath Murmu Medical College & Hospital, Baripada

Table 6.3: Authorisation status of test checked government HCEs

Name of the HCEs	Authorisation received for operating beds (in number)	Authorisation valid up to	Number of beds operational in HCEs without authorisation
Baragarh	91	31.03.2024	230
Pandit Raghunath Murmu Medical College & Hospital, Baripada	350	31.03.2021	Not renewed
RGH, Rourkela	276	31.03.2023	400
DHH, Puri	270	31.03.2023	450
Bhim Bhoi Medical College & Hospital, Bolangir	440	31.03.2023	550
DHH, Bhadrak	223	31.03.2023	317
Capital Hospital, Bhubaneswar	563	31.03.2021	700
DHH, Rayagada	176	31.03.2023	234
SDH, Hinjilicut	16	31.03.2024	30
DHH, Jharsuguda	300	31.03.2021	Not renewed

(Source: Information furnished by the test checked government HCEs)

While accepting the audit comments, Member Secretary, SPCB stated (February 2021) that HCEs were issued show cause notices for operating without authorisation. The CDMO, DHH, Puri and DMO-cum Superintendent, DHH, Bhadrak stated that they have applied for authorisation to SPCB which was yet to be received. The replies of the CDMO and SPCB were not tenable since HCEs were operating with additional beds without authorisation and generating excess BMW.

6.3.3 Mixing of BMW with solid waste

Schedule-II of MSW Rules 2000 and clause 4 (d) (e) and (f) of BMW Rule 2016, provide that BMW shall not be mixed with solid waste and such wastes shall be disposed of following the Rules separately specified for the purpose. As per Para 8(7) of BMW Rule 2016, untreated BMW shall not be stored beyond a period of forty-eight hours.

Photograph 27: At old dum yard of DHH Jeypore

i. During JPV of four HCEs[39] it was noticed that BMW mixed with solid waste were kept in open and were finally dumped in landfills. It was also noticed at DHH Jeypore, BMW were kept with solid waste for further disposal in different colored containers[40]. During JPV at Bhim Bhoi Medical College & Hospital, Bolangir it was observed that clearance of waste from storage yard was not done within the period prescribed in the Rules. In five out of 21 test checked HCEs[41], the BMW were being lifted between three to 10 days. The

[39] HCEs: Baragarh, Jeypore, CHC, Chandabali, and Bhim Boi Medical Coolege & Hospital, Bolangir

[40] Yellow colour container used for human anatomical waste, Red colour container for contaminated waste, White container for waste sharp items including metals, blue container for glassware and black container for solid waste

[41] Frequency of BMW lifting: RGH, DHH (two to five days) Cuttack(three to four days), SDH Gunupur(twice in a week), Bolanir Medical college (seven days), and SDH Chandabali (10 days)

waste deposited in the dumping yard inside the campus and the outflow from the wastes created insanitary condition emanating foul smell. This not only violated BMW Rules but also caused contamination and public health hazard due to insanitary condition.

Photograph 28:Mixed BMW insisde the campus of BBMC&H Bolangir

Photograph 29: Mixed BMW at open area of SDH Gunupur

The DC Sanitation, CMC and EO Sambalpur have noted (January /April 2021) audit comments. The Superintendent, SDH Gunupur stated that a protection wall existed earlier but JCB machine had broken the protection wall while dumping solid waste. The DMO(MS)-cum-Superintendent, DHH, Koraput at Jeypore stated that outsourcing agency was issued a notice to not use other color containers except black ones for solid waste. The reply was not tenable since BMW waste of empty saline bottles, medicinal strips were mixed with solid waste at dumping place for transportation to landfill.

ii. During JPV of eleven[42] HCEs it was observed that containers were placed in different wards in open and in a unscientific manner. Keeping BMW in open manner may invite health issues to others and was in violation of BMW Rule 2016. It was further noticed that BMW were collected from different wards and kept in open roof of the hospital (CHC,Chandabali) without containers/bags. The periphery of hospital drain (CHC Chandabali) had not been cleaned for months and medicine covers and other medical related waste thrown to drains resulting drain choking, foul smell creating environment pollution. It was, however, further noticed during JPV of SDH, Hinjilicut that daily collected bio medical waste were kept in back side of hospital wall.

Photograph 30: BMW kept in open manner at DHH Sambalpur

Photograph 31: BMW kept in open roof of the CHC Chandabali

[42] DHH Nuapada, Sambalpur, Puri, Cuttack, Bhadrak, Ganjam (Berhampur) SDH Gunupur ,Chhatrapur, Hinjilicut, Chandabali and Pandit Raghunath Murmu Medical College & Hospital, Baripada

The Superintendent of SDH, Gunupur stated that open container was being removed and replaced with a new closed container immediately. The DMO, DHH Bhadrak stated that steps would be taken to observe BMW Rules. The CDMO, DHH Puri stated that care had been taken for the segregation of the Bio-medical Waste and it was not always possible to attain 100 *per cent* segregation due to excessive work load in the ward and due to shortage of nursing and other supportive staff. The reply was not tenable since it indicated laxity of monitoring by hospital authorities and lack of awareness among health workers.

6.3.4 Inadequate common BMW treatment facilities in the State

Clause 7 (i) of BMW Rules 2016 envisaged that BMW shall be treated and disposed of in accordance with Schedule I, and in compliance with standards in Schedule-II. HCEs shall hand over segregated waste as per Schedule-I to CBMWTF for treatment, processing and final disposal. It was further envisaged that the HCEs shall stop operating captive facilities gradually and enroll as members of CBMWTF.

Audit observed that only five CBMWTF[43] have been established in the State as of March 2020. The State has 3,509 HCEs, out of which 694 HCEs were utilising service of CBMWTF, 2,705 HCEs were having their own captive treatment and disposal facilities and the balance 110 HCEs were using deep burials for treatments. No action so far has been taken to include all HCEs into CBMWTF facilities so that captive/ deep burial facilities could be minimised.

The Member Secretary, SPCB stated (February 2021) that on relentless persuasion by the Board, H&FW department initiated steps towards setting up of adequate number of new CBMWTFs distributed throughout the State so that all the HCEs could have access to CBMWTFs and to minimise captive facilities. This indicated laxity of the department in establishment of adequate CBMWTFs even after five years of enactment of BMW Rules.

6.3.4.1 On-site treatment of BMW without shredder and autoclave

Audit observed during JPV at DHH Bhadrak that waste shredder and autoclave machine was not functional since June 2016. A new waste autoclave machine received during August 2020 and installed (September 2020) was without a shredder. Hence the on-site treatment of BMW could not be achieved.

Photograph 32: Non-functional autoclave at DHH Bhadrak

While accepting the audit comments, the DMO, DHH Bhadrak stated that the shredder machine has already been received and is to be installed shortly. The reply was not acceptable since without shedder, possibility of untreated BMW mixed with other waste being handed over to recyclers could not be ruled out.

[43] CBMWT facilities: (i) M/s Sani Clean Pvt Ltd, Khurda (ii) M/s Medi aid Marketing Services, Bhubaneswar at SCB Medical College and Hospitals, Cuttack (iii) M/s Medi aid Marketing Services, Bhubaneswar at Rourkela Government Hospital, Rourkela (iv) M/s Bio-Tech Solutions at VSS Medical College and Hospital, Burla, Sambalpur and (v) M/s Medi aid Marketing Services, Bhubaneswar at MKCG college and hospital, Berhampur

6.3.4.2 Absence of liquid chemical waste treatment system

As per clause 4 (J) and (K) of BMW Rules-2016, it shall be the duty of HCEs to ensure segregation of liquid chemical waste at source and ensure pre-treatment or neutralisation prior to mixing with other effluent generated from HCEs and ensure treatment and disposal of liquid waste in accordance with Water (Prevention and Control of Pollution) Act, 1974.

Audit observed that out of 3,509 HCEs, only 70 HCEs installed liquid waste treatment facility *i.e.,* effluent treatment plants (ETPs)[44] before disposing it to drains and 1,426 HCEs were undertaking pre-treatment for laboratory generated BMWs. The others were directly disposing of contaminated liquid waste to drains without treatment causing harm or injury to public health and animal health. It was further observed that out of 34 sewage treatment plants (STPs) only three STPs, one each in Capital Hospital, Bhubaneswar, DHH Sambalpur and IDH Puri (connected with STP of Puri town) were functional (March 2021).

While accepting audit comments the Deputy Secretary to Government, H&FW Department stated (April 2021) that OWSSB has submitted DPRs for establishment of STPs for which funds would be provided shortly. The reply was not tenable since delay in establishment of STPs consequently delayed in achieving the development goal of sustainable cities.

6.3.5 Handling of Bio Medical Waste

Audit observed the following deficiencies in bio-medical waste

6.3.5.1 Handling of Bio Medical Waste without protective equipment

As per clause 4 (L) of BMW 2016, it shall be the duty of every HCE to ensure occupational safety of all its health care workers and others involved in handling of BMW by providing appropriate and adequate personal protective equipments. Handling of BMW without adequate personal protective equipment may cause infections and health issues to the handlers.

During JPV in five[45] out of 21 test checked HCEs it was observed that officials were handling BMW without wearing personal protective equipment.

The DMO (MS)-cum-Superintendent, DHH, Koraput at Jeypore stated that the official was instructed to use PPE at the time of handling of BMW. The official was issued show cause notice for negligence of duty. While noting audit comments, the CDMO, DHH, Puri admitted that due to lack of awareness, the staff was not using PPE while handling BMW. The reply was not tenable as awareness training for handling of BMW properly was the responsibility of management of the HCEs.

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[44] ETPs are used by leading companies in the pharmaceutical and chemical industry to purify water and remove any toxic and non toxic materials or chemicals from it. These plants are used by all companies for environment protection

[45] DHH Jeypore, Puri, Chhatrapur, Hinjilicut, and Rourkela Government Hospital, Rourkela

6.3.5.2 Handling of syringes for BMW management

As per clause 11 of Part-2 (Schedule-I) of BMW Rule 2016 that syringes should be either mutilated or needles should be cut and stored in tamper proof, leak proof and puncture proof containers for sharp storage. Wherever an HCE is not linked to a disposal facility it shall be the responsibility of HCEs to sterilize and dispose in the manner prescribed.

Photograph 33: At store room of DHH, Jeypore

During JPV in five[46] out of 21 test checked HCEs it was observed that used syringes were not stored in leak proof containers and were scattered in store room violating provisions of BMW Rules.

The DMO (MS)-cum-Superintendent, DHH, Koraput at Jeypore stated that outsourcing agency was instructed to store needles in puncture proof containers in the store room. The CDMO, Puri have noted the audit comments for future guidance. The CDMO, Sambalpur stated that all the staff nurses have been instructed to follow the BMW guidelines.

6.3.5.3 Transport of BMW without Bar-coding

As per Clause 4(i) and 8 (4&5) of BMW Rule- 2016 the vehicles and containers used for transportation of BMW should have bar code and global positioning system.

Photograph 34: BMW containers at Capital Hospital without bar codding

Photograph 35: vehicles carrying BMW of DHH Cuttack without bar coding

It was observed in all 21 test checked HCEs, BMWs were carried in vehicles/bags/containers by service provider without bar coding as shown in photographs. No records for installation of GPS in vehicles carrying BMW were produced to audit. Even after expiry of five years of implementation of the Rules, system of bar-coding and GPS tracking had not yet been started.

The Deputy Secretary to Government, Health & Family Welfare Department stated (April 2021) that during 2019-20, twenty-two districts were provided funds for installation of bar coding and GPS system.

[46] DHH Sambalpur, Jeypore, Puri, and SDH Gunupur and Hinjilicut

6.3.5.4 Dilapidated condition of deep burial site

The clause 5 (5) Schedule –II of BMW Rules-2016 provides for standards for deep burial. As per rule, deep burial site should be relatively impermeable and shallow well should be close to the site. The institution should maintain a record of all pits for deep burial sites.

During JPV it was noticed that SDH Gunupur had a deep burial system for BMW. The cover of pits of deep burial site was in dilapidated condition which could cause health issues. It was further observed that pits of deep burial of CHC, Chandabali remained uncovered.

Photograph 36: Deep burial of SDH Gunupur

Photograph 37: Deep burial of CHC Chandabali

The Superintendent, SDH, Gunupur stated that new hospital building was being constructed at hospital premises. After construction of new building, old deep burial site would be closed. The reply was not tenable since old deep burials were not maintained as per BMW Rule 2016.

6.3.6 Online emission monitoring system at common treatment plant

Clause C (i) of Schedule-II of BWM Rule 2016 stipulates that HCEs or operator of CBMWTF shall install continuous emission monitoring system for the parameters as stipulated by SPCB and transmit the real time data to servers at SPCB and CPCB for monitoring.

Audit observed that out of five CBMWTFs, only one CBMWTF (M/s Sani Clean) had online continuous emission monitoring system. While accepting audit comments, Member Secretary, SPCB stated (February 2021) that others had been issued public notices through newspapers for violation of BMW Rule 2016. The reply was not tenable since SPCB did not follow up for violation and thereby failed to monitor emission continuously and to transmit real time data.

6.4 Sewerage treatment plants in Odisha

As per Sections 25 and 26 of Water Prevention, Control and Pollution Act 1974 (WPCP), no person shall, without previous consent of State Board shall establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land.

6.4.1 Status of Sewerage treatment plants

Audit observed that H&UD department had taken up establishing 12 STPs[47] between March 2006 to February 2020 in four[48] corporations and two

[47] 12 STPs: Bhubaneswar-5, Cuttack -2, Sambalpur-1 , Rourkela-1 , Puri -2 and Talcher-1
[48] Corporations: Bhubaneswar, Cuttack, Sambalpur and Rourkela, Municipality: Puri and Talcher

municipalities at a cost of ₹1,740.83 crore for completion by March 2007 and December 2021. Out of these, five STPs (two at Puri (15+5MLD[49]), Cuttack (two STPs of 16+36 MLD) and Talcher (one STP of 2 MLD) were commissioned between February 2018 and December 2021 and other seven STPs were in progress with an expenditure of ₹1,831.78 crore as of March 2021.

Further, out of the targeted sewer network of 1,308.883 kms covering 4,54,133 households for sewer connection to these STPs, only 965.037 kms (being 74 *per cent)* and 64,222 households (14 *per cent*) could be connected as of March 2021.

It was observed that the progress of works of STPs and sewer network connections was very slow due to which the executing agencies (WATCO and OWS&SB) could not utilise the funds resulting in blockage of funds of ₹582.03 crore[50] as of August 2021.

Due to non-completion of these STPs and sewer network, sewage from households were allowed to nearby water bodies causing water pollution. This was also being reported in the Annual reports of SPCB that water pollution is caused from discharge of untreated domestic water from households/townships to nearby water bodies.

On this being pointed out, Managing Director, WATCO and Project Engineer, OWS&SB stated (March 2021) that completion of projects was slow due to frequent lockdown/night curfew related to COVID 19 Pandemic, and frequent occurrence of cyclone namely *Fani, Phaillin, Hud Hud etc.* The reasons attributable were not tenable as the commencement of construction of STPs was as early as in March 2006.

6.4.2 Sewerage entering water bodies

Audit further noticed that STP (5 MLD) near Bankimuhan, Puri which was commissioned (February 2018) with an expenditure of ₹1.73 crore was not functional and untreated waste water and froth was flowing to Bay of Bengal near Niladri Sea Beach, Puri as shown in **Photograph-38** besides emanating foul odour, rendering the expenditure unfruitful. The mixed solid waste with untreated sewage in the absence of STP was allowed to flow into river Mahanadi by Sambalpur ULB as shown in photograph 39.

Photograph 38: Sewage effluent of Puri allowed to sea at Niladri sea beach, Banki Muhan, Puri

Photograph 39: Solid waste mixed with sewage allowed to river Mahanadi at Sambalpur Ward No 32

[49] MLD: million liters per day

[50] ₹398.54 crore with WATCO for five projects of Cuttack and Bhubaneswar and ₹183.49 crore with OWS&SB for two projects at Rourkela and Sambalpur

In other test-checked ULBs which were not provided with STP facilities for treatment of sewage were directly letting out the sewage to nearby water bodies causing water pollution and health hazards.

The EO Rayagada ULB stated (March 2021) that the construction of STP was under consideration of Government. While noting audit comments, the EO Jeypore ULB stated (March 2021) that proposal for sewage treatment plant would be submitted to Government. The DC Sanitation CMC noted audit comments for future guidance.

6.5 Management of slaughterhouses

Waste material produced in slaughterhouses is of three types: solid, liquid, and gas. Solid waste is generated from manure, intestinal contents, hair, horns, hooves, trimmings, internal organs, condemned carcasses or body parts, carton, and plastics. Liquid wastes of slaughterhouses come from urine, blood, and waste water from slaughter processes. Gaseous waste materials (odour and emissions) are also produced in operations. These waste materials if not handled and managed properly pose a hazard to health and environment. High concentration of animal blood and fat, dirt, and other pollutants in slaughterhouse renders it very toxic and pose hazard to health and environment.

6.5.1 Operation of slaughterhouses without authorisation

Section 25 and 26 of the Water (Prevention and Control of Pollution) Act, 1974, stipulate that any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land is required to obtain Consent for Establishment (CFE) and Consent for Operation(CFO) from OSPCB. Accordingly, slaughterhouses were also required to obtain the consent from OSPCB to operate.

Audit observed that CMC had not obtained CFE and CFO from SPCB though CMC slaughter houses were operational. Operation of slaughterhouses without authorisation of SPCB amounted to illegal slaughtering of animals in the urban limit. This implies that the compliance criteria were not adhered to, which would result in health hazards as well as contamination of the environment.

6.5.2 Non-adherence to the provisions of management of slaughterhouse

Scientific processing and disposal of slaughterhouse waste is essential to recover useful fractions and for safe disposal of residual pathogenic biological waste. In absence of a proper slaughterhouse waste processing or disposal facility, ULBs could practice deep burial of carcasses and animals killed in accidents with adequate precaution (Section 7.6 of MSW Manual, 2016).

Audit observed that none of the slaughterhouses had waste processing and disposal facilities. The liquid waste generated were allowed directly into the drainage system. Solid waste generated in the slaughterhouses and retail mutton/chicken/fish shops, were mixed with solid waste and transported to landfill sites. Deep burial of carcasses and animals was not practiced by ULBs, instead they were disposed to the landfill. In all the test-checked

slaughterhouses, control equipment for odour/ air emissions were not also provided. Thus, the ULBs failed to manage slaughterhouse waste effectively, causing unhygienic conditions and contamination of environment, besides possible threat to health.

While accepting the Audit comments, DC, Sanitation, CMC stated (January 2021) that necessary steps would be taken in the future for management of slaughterhouses.

6.5.3 Idle expenditure on construction of slaughterhouses

Rule 3(1) of Prevention of Cruelty to Animals (Slaughterhouse) Rules, 2001, stipulate that no person shall slaughter any animal within a municipal area except in a slaughterhouse recognised or licensed by the concerned authority empowered under the law for the time being in force to do so. Further, Section 562 of the Odisha Municipal Corporation Act 2003 provides that there shall be complete ban on roadside slaughter of any animal in the corporation areas.

Audit observed that there were six slaughter houses in test checked ULBs (Cuttack-05, Bhubaneswar-01). BMC had constructed a slaughter house at Gadakana (August 2017) at a cost of ₹7.02 crore which remained idle as of January 2021 due to non finalisation of tender for operation and maintenance leading to blockage of funds besides paving way for illegal slaughtering within the urban limits.

Photograph 40: Dilapidated slaughter house at Khannagar of CMC

The other five slaughter houses constructed (1990) by CMCs were in dilapidated conditions due to non-maintenance by the CMC authorities causing foul smell all around it and creating environment pollution. Indecisiveness of BMC and CMC authorities in tendering for O&M of slaughterhouses rendered the premises of slaughterhouses unhygienic and led to illegal slaughtering of animals.

6.6 Management of Construction and Demolition (C&D) Waste

Clause 4.6 of MSWM, 2000 stipulates that C&D waste, being predominantly inert in nature does not create chemical or biochemical pollution. Hence maximum effort should be made to reuse and recycle them. It was only in 2016 that separate rules *viz.,* Construction and Demolition Waste Management Rules, 2016 for Management of C&D waste was notified by GoI. In the meantime, H&UD Department, GoO issued (January 2021) guidelines for strategic management of C&D waste.

The SPCB was not able to provide the details of C & D waste generated and processed in the State during the period 2015-17 for scrutiny. However, as per information furnished by SPCB 24,191 MT of C&D waste was generated during 2017-20.

The C&D waste generated/collected were not recycled or reused and disposed to landfills during 2017-20 since ULBs are yet to establish C&D waste

processing facilities. In the Entry Conference DMA, H&UD Department has confirmed that the department has initiated the C&D waste management only from January 2021.

6.6.1 State Policy for Construction and Demolition Waste

As per Clause 9 (1) of C&D Waste Management Rules 2016, Secretary in charge of the department shall prepare their policy document with respect to management of C&D waste in accordance with provisions of rules within one year from date of notification of rule *i.e.,* February 2017[51].

Audit observed that the Principal Secretary, H&UD Department had not notified a State Policy for C&D waste Management as of December 2020. In the absence of a State Policy, no action plan was developed by the department even after lapse of five years since implementation of the Rule 2016 and C&D waste generated were only disposed of to landfill sites without processing for its reuse.

However, the GoO issued (January 2021) guidelines for strategic management of construction and demolition (C&D) waste which are yet to be implemented by ULBs (March 2021).

6.6.2 Processing units for C&D Waste

Clause 6 (5) and 6(11) of C&D Waste provides that the local authority shall get the collected waste transported to appropriate sites for processing / disposal and make provision for giving incentives for use of material made out of C&D waste in the construction activity.

Audit observed that ULBs had not prepared a comprehensive plan for utilisation of C&D waste, processing facility for its re-use.

The Government stated (May 2022) that the State was at the preliminary stage of implementation of C&D waste. Processing was the next step forward after collection of C&D waste from wards that are being transferred to a dedicated storage point for processing. The fact, however, remained that ULBs failed to prepare a plan for utilisation of C&D waste and establish processing facility even after five years of implementation of the C&D Rules 2016.

6.6.3 Authorisation for C&D Waste management in cities

As per Clause 8(2) of C&D Management Rule 2016, the SPCB shall grant authorisation to C&D waste processing facility in Form- III as specified under rule after examining application received in Form-I.

Audit observed that none of ULBs have applied for authorisation for processing facility of C&D waste resulting C&D waste dumped in open places without any processing or reuse creating environmental pollution.

The Government stated (May 2022) that necessary steps will be taken for applying for authorisation for processing of C&D waste in due course.

[51] Management of C&D Waste Rules given effect from march 2016 by GoI

6.6.4 Non-use of C&D Waste for construction works

Photograph 41:C&D waste deposit site near BPUT at Rourkela

Clause 11 of C&D Waste Management Rules 2016 stipulates that Bureau of Indian Standards (BIS) and Indian Roads Congress (IRC) shall be responsible for preparation of code of practices and standards for use of recycled materials and products of construction and demolition waste in respect of construction activities and the role of IRC shall be specific to the standards and practices pertaining to construction of roads. IRC-121-2017 provided for use of C&D waste in road works.

Audit observed that none of ULBs have utilised C&D waste in construction of road works resulting in dumping of C&D wastes in open area creating environmental hazards.

The Government stated (May 2022) that the quantity of wastes collected was not enough for economically viable project. So, C&D waste are being used in preparation of road subgrade, sub-base, raising low lying areas. The reply was not acceptable since none of the test checked ULBs have utilised C&D waste in construction of road works but were dumped in open area creating environmental hazards.

6.6.5 Non implementation of dust mitigation measures

Photograph 42: Open vehicle used for transportation of construction materials at Rourkela ULB

As per Gazette notification 25th January 2018 (clause 106 and 107), grinding and cutting of building materials in open area and road side storage of construction materials shall be prohibited. No uncovered vehicles carrying construction material and waste shall be permitted. Audit observed that the building construction materials were transported by the public and other establishments without covering the vehicles as shown in Photograph 42. The ULBs have not taken any action for violation of rules causing environment pollution.

Government stated (May 2022) that suitable instruction has been issued to ULBs for needful action.

6.6.6 Non levy of user charges for C&D waste from bulk generators

As per Clause 4(5) of C&D Waste Management Rule 2016, every waste generator shall pay relevant charges for collection, transportation, processing and disposal as notified by the authorities designated by the State Government. Audit observed that none of the ULBs have notified prescribed rate, norms for collection of C&D waste from C&D waste generators.

The Government stated (May 2022) that the ULBs were directed for issuing notification for collection of charges from the C&D waste generators. However, ULBs failed to collect user charges as of March 2021, indicating that the ULBs were not pro-active in own revenue generation and were not stringent towards violators.