

CHAPTER - 6

Bio Medical Waste

Bio Medical Waste (BMW) is the waste generated by hospitals and other Health Care Units (HCUs¹⁵) and consists of discarded drugs, waste sharps, microbiological and biotechnological waste, human anatomical waste, animal waste *etc.* HCUs generate three types of wastes, namely MSW/general waste, infectious waste and liquid waste.

6.1 Regulatory Framework, Policies and Strategies

With a view to controlling indiscriminate disposal of wastes generated at HCUs, GoI enacted Bio Medical Waste (Management & Handling) Rules, 1998 (BMW Rules), under the Environment (Protection) Act 1986. It is the duty of the every HCU, generating BMW, to take all steps to ensure that such waste is handled without any adverse effect to the human health and environment. The infectious wastes are required to be collected, transported, treated and disposed in accordance with the norms laid under the BMW Rules.

UPPCB is the designated authority for enforcement of the provisions of these Rules and according permission for generation, collection, reception, storage, transportation, treatment, disposal and/ or any other form of handling of BMW.

6.2 Operational Management

6.2.1 Incomplete identification of Health Care Units and assessment of BMW

Identification of HCUs and assessment of daily generated BMW is essential for enforcement of the BMW Rules and for providing suitable common Incinerator/Autoclave/Microwave system for disposal of BMW. Scrutiny of the records (July 2010) of UPPCB and LNN revealed that the data maintained by these agencies regarding number of HCUs functioning in the City and quantum of BMW generated by these contained inherent contradictions. While UPPCB authorized 354 HCUs¹⁶, RCUES, while preparing DPR (February 2007) for MSW, had identified (February 2007) 2796 HCUs based on field survey and information furnished by LNN. CMO, Lucknow furnished a list of 836 HCUs registered with him between 2007 and July 2010. The UPPCB, as late as August 2010, requested¹⁷ CMO, Lucknow to ensure that all the hospitals, nursing homes, pathological labs *etc.* had valid authorization of UPPCB.

¹⁵ HCU means blood bank, clinic, dispensary, hospital, nursing home, pathological laboratory, veterinary institution animal house, *etc.*

¹⁶ Those attached to any treatment facility.

¹⁷ UPPCB letter No.71681/C-5/Samanya Bio me we/10 dt. 13.08.2010.

Audit observed (July 2010) that UPPCB had neither developed any mechanism to assess the quantity of BMW generated in the City nor entrusted such work to any authority and consequently the assessed quantity of generated BMW by three authorities showed wide variations as below:

Table 6.1: Assessed quantity of generated BMW

Sl. No.	Name of Agency	Quantity of BMW assessed per day in MT	Basis of assessment
1	RCUES	1.85	470 gm/bed/day based on field survey.
2	CPCB	3.70	Average BMW generation between 240 and 824 gram /bed/day.
3	UPPCB	2.40	200 gm/bed/day.

(Source: LNN, CPCB & UPPCB)

Thus, lack of co-ordination of UPPCB with various agencies in ascertaining the number of HCUs and assessing the quantum of BMW generated resulted in the disposal of untreated BMW, in violation of the Rules, as discussed in the succeeding paragraphs.

The Government stated (August 2011) that it issued a Circular on 21 July 2011 for Government HCUs and a Press note dated 26 July 2011 for private HCUs to get registered under BMW Rules, 1998 in Regional Office, UPPCB, Lucknow.

6.2.2 Inadequate coverage of BMW generating units

As per the time schedule fixed in Schedule VI of the BMW Rules for waste treatment, facilities like incinerator/autoclave/microwave system were required to be made operational in all HCUs of Lucknow City latest by 31 December 2002. LNN is the designated authority for providing the sites for suitable common disposal/incineration of biomedical waste generated.

Audit scrutiny revealed (July 2010) that three Common Bio-medical Waste Treatment Facilities (CBWTF) *i.e.* LNN, Balrampur Hospital and Fatima Hospital were functioning in City up to 2006-07. These facilities, however, catered to only 260 out of 1070 HCUs. In addition, 1726 private practicing doctors did not have the facilities specified in the BMW Rules. It was observed that only 94 more HCUs were connected to CBWTF during 2007-10. As per information furnished by UPPCB (April 2011) the incinerator of LNN was closed since November 2010, while at Balrampur, it was not operational for the last two years. The HCUs connected with these incinerators were now connected with

CBWTF of Faizabad and Barabanki. Hence, neither new CBWTF established in Lucknow City, nor new HCUs were connected with the already existing CBWTF.

Thus, UPPCB neither adhered to the time schedule for covering all HCUs nor took any action against the HCUs not attached with any CBWTF.

6.2.3 Segregation, packaging, transportation and storage of BMW

Schedules II & III of Rule 6 of BMW Rules provide that bio medical waste shall be segregated at the point of generation and kept in yellow, red, blue and black containers/bags prior to its storage, transportation, treatment and disposal. The containers shall be labelled as Bio-hazards and carry/display Cytotoxic hazard symbol.

Joint physical inspection (July 2010) of LNN incinerator with a representative of LNN revealed that the un-segregated BMW was collected and transported by LNN to the incineration site and no prior segregation was being done before incineration.

On this being pointed out in audit, LNN stated (July 2010) that no arrangement was made for segregation of BMW at incinerator site. Audit also observed that separate space had not been provided for storage of untreated bio medical waste as shown in the photographs below:



Untreated bio medical waste stored in open space at LNN Incinerator

6.2.4 Common Bio-medical Waste Treatment Facility

Schedule I of Rule 5 of BMW Rules entails the installation of incinerators, autoclave/microwave and shredder for disposal of microbiological and biotechnological wastes; waste sharps *e.g.* needles, syringes, blades, glass, *etc.*; and solid waste *e.g.* tubing, catheters, intra-venous sets *etc.*

Scrutiny of the records of UPPCB revealed that the CBMWTF,¹⁸ operated by LNN, was handling 1.2 MT/day for 233 BMW generating HCUs with the following shortcomings:

- The autoclave used to disinfect the waste was not installed;
- The shredder by which plastic bottles, intravenous tubes, syringes and needles are shredded was not installed; and
- Effluent Treatment Plant (ETP) had not been installed for purification of the infected water discharged from incinerator.

Joint physical inspection (July 2010) of the CBWTF with a representative of LNN confirmed the above brought out facts.

6.2.5 Handling of BMW without PPE

According to ‘International Hazard Datasheets on Occupation’ the incinerator operators were exposed to a variety of hazardous chemical agents which may cause acute poisoning, chemical accidents, damage to the respiratory system, chronic diseases, *etc.* The operators may also suffer cuts and pricks from sharp tools, glass *etc.* For their safety they should use PPE like safety boots and goggles, chemical resistant clothing, gas masks *etc.*

Joint physical inspection (July 2010) of LNN incinerator with a representative of LNN revealed that the operators were working in the incinerator without PPE as shown in the following photograph:



¹⁸ Authorization expires on 30 June 2010.

LNN stated (April 2011) that it did not purchase any PPE but provided allowances to procure the same. The reply of LNN was not acceptable as it did not ensure the safety of the workers during handling of BMW.

The Government also replied (August 2011) that the CBWTF of LNN at Eldeco Greens, Bheekhampur, Lucknow was closed on 13 November 2010 in compliance of the orders (November 2010) of the Chairman, CPCB, New Delhi. Since then LNN was not collecting, transporting or processing the bio medical wastes. 298 waste generator of BMW registered with the LNN, were being provided services by the operators of the private facilities, operational at Lucknow, Barabanki and Faizabad under the authorization of UPPCB. It was further stated that LNN was in the process of signing an agreement for setting up of CBWTF under PPP mode on Design Build Finance Operate and Transfer (DBFOT) basis with its operations and maintenance for fifteen years.

6.2.6 Disposal of Untreated BMW

Log books of the incineration plant of LNN revealed (July 2010) that the incinerator was out of order for 119 days¹⁹ during 2006. Therefore, BMW weighing 155.23 MT was land filled without treatment in a nearby area. The incinerator was also not operated due to power break down, repair *etc.* for 118 day as shown below:

Table 6.2: Status of BMW treatment at LNN Incinerator during 2008-10

Sl No.	Period		No. of days	Quantity which could not be incinerated (in MT)
	From	To		
1	04.04.2008	18.04.2008	15	6.39
2	09.08.2008	18.08.2008	11	3.48
3	23.11.2008	11.12.2008	19	4.86
4	30.04.2008	04.05.2008	05	1.07
5	02.06.2009	15.06.2009	14	3.78
6	19.12.2009	22.12.2009	04	1.31
7	09.02.2010	04.03.2010	24	5.85
8	14.03.2010	08.04.2010	26	6.51
Total			118	33.25

(Source: Records of LNN)

¹⁹ From 22.02.2006 to 21.06.2006 and 8.11.2006 to 14.11.2006.

The untreated MSW including BMW was dumped outside in the open space as shown in the photograph below:



Untreated MSW including BM waste dumped outside in the open space

The Government did not furnish any reply in this regard.

6.2.7 Running of three major hospitals without proper incinerator

Rule 4 of BMW Rules stipulates that it is the duty of the every occupier of HCU generating BMW to take all steps to ensure that such waste is handled without any adverse effect on human health and environment.

Scrutiny of the records of the UPPCB revealed (July-August 2010) that SGPGI, Lucknow, Ira Medical College and Railway Hospital, Lucknow with 800, 633 and 250 beds respectively were running without a valid authorisation from UPPCB as these did not have proper incineration facility. Further, it was observed that in SGPGI bio medical waste was burnt in an open area. Thus, absence of proper incineration facilities in the above institutes/hospitals had the likely potential of adversely affecting human health and environment.

In reply, UPPCB intimated (August 2010) that notices were issued to all the concerned institutes/hospitals in August 2007. The reply meant nothing as no stipulated legal action was initiated against these hospitals even after lapse of three years.

The Government replied (August 2011) that BMW of SGPGI, Lucknow had never been burnt in an open area. There was a treatment plant for BMW in SGPGI with the facility of Incinerator, Autoclave, Shredder *etc.* Upgradation of the plant of SGPGI for more effective disposal of BMW was under process.

The reply of the Government was incorrect as UPPCB had already issued a notice on 20 August 2007 to SGPGI after conducting a site inspection on 20 July 2007. Besides, the Government did not offer any comment on legal action taken against above mentioned hospitals.

6.3 Recommendations

- *Identification of all the Health Care Units may be ensured and assessment of BMW generated may be made and attachment of all HCUs with incineration facilities may be ensured;*
- *UPPCB may ensure mandatory submission of a copy of log book detailing BMW collected, segregated and incinerated from occupier/operator; and*
- *All safety measures need to be taken for the staff handling BMW and working on the incinerator.*