HEALTH AND FAMILY WELFARE DEPARTMENT, ANIMAL HUSBANDRY AND VETERINARY SERVICES DEPARTMENT AND HOUSING AND ENVIROMENT DEPARTMENT

2.9 Management of Bio-Medical Waste in Government Medical Establishments

2.9.1 Introduction

Bio-Medical Waste (BMW) generated during diagnosis, treatment and immunization of human and animals and during research is harmful to human health. Therefore, proper management and disposal of such waste has become an integral part of health care systems. The Government of India (GoI) has framed the Bio-Medical Waste (Management & Handling) Rules, 1998 (henceforth BMW Rules) under the provisions of Environment (Protection) Act, 1986. The Rules apply to all such occupiers generating or handling BMW in any form are required to obtain authorization from the prescribed authority for dealing with BMW. The BMW shall not be mixed with other wastes and should be segregated into labeled containers/bags at the point of generation prior to its storage, transportation, treatment and disposal. If a container is transported from the point of generation to storage or site of disposal, apart from the label, it should carry information in respect of BMW it contains. Un-treated BMW shall only be transported in vehicles authorized for such purpose by the prescribed authority.

2.9.2 Scope of audit and methodology

In order to verify compliance with the BMW Rules, 11 District Hospitals (DHs) and 11 District Veterinary Hospitals (DVHs) out of 27 DHs and DVHs respectively, 27 Community Health Centres (CHCs) out of 149 and two out of three Medical College Hospitals (MCHs) were selected for audit. A sample of Physical verification of all these selected units was also conducted to check compliance of BMW Rules and the audit findings were discussed during the Exit Conference held on 30 September 2014. Audit criteria adopted are the norms, standards, procedures etc., laid down in Environment (Protection) Act, 1986, Bio-Medical Waste (Management & Handling) Rules 1998, Guidelines issued by Central Pollution Control Board and Chhattisgarh State Nursing & Clinical Establishment Act, 2010.

Audit findings

2.9.3 Role of Chhattisgarh Environment Conservation Board

Under Rule 7(1) of the BMW Rules, every state government is required to establish a prescribed authority for granting authorisation and implementing BMW Rules. In compliance with this codal provision, Chhattisgarh Environment Conservation Board (CGECB) was constituted in 2001. CGECB is responsible for enforcement and monitoring the implementation of these rules in respect of all Health Care Establishments (HCEs), veterinary institutions, animal houses, pathological laboratories and blood banks etc. and to initiate penal action against any contravention.

2.9.3.1 Identification of the Bio-Medical Waste generating establishments

According to Rule 8 (1) of BMW Rules, HCEs dealing with not less than 1000 patients per month, were require to obtain authorisations from CGECB for the management and disposal of BMW. We observed that CGECB did not conduct any survey of such HCEs and therefore, the mode of treatment of BMW generated by them remained unascertained. Directorate of Health Services (DHS) and CGECB were not aware of the number of Private Nursing Homes/Clinics/Pathologies etc. Similarly, the Director of Animal Husbandry and Veterinary Services (DAVS) was not aware of the number of private poultry, Dairy farms, Pig farms, Hatchery etc., in the State.

2.9.3.2 Assessment of the Bio-Medical Waste generation

Physical verification of the selected test-check 51[1] HCEs, revealed that in all the HCEs, no system for assessing the quantum of waste generated is in place. No record is being maintained from which the quantum of BMW generated could be ascertained. The HCEs, those in contract with any of the Common Bio-Medical Waste Treatment Facility (CBMWTF) for disposal of BMW are making payments on the basis of number of beds and not on actual quantum of BMW disposed of.

CGECB, the nodal authority for implementation of BMW Rules in the State has not evolved any mechanism for assessment of the BMW generated in the State. As a result, the number of CBMWTF required in the state could not be assessed.

On this being pointed out, Government stated (October 2014) that CGECB is the main regulatory body which looks after the volume of biomedical waste generated in the State. The generation of BMW is presumed to be 0.5 kg to 1 kg per bed per day and the rule is applicable to both private and government HCEs. In order to establish more number of CBMWTF, tenders have been called for in May 2013. DAVS accepted that they did not have any mechanism to assess the total quantum of BMW generated. CGECB stated that 4.5 tonnes per day BMW is generated in the State. However, it did not provide any basis or details in support of such assessment.

Even though Rule 10 of BMW Rules provides for the HCEs to furnish the generation data annually to the CGECB, non- compliance to this rule coupled with absence of any assessment mechanism and non-identification of units led to CGECB and the State Government remaining unaware of the total number of HCEs in the state, number of HCEs required to obtain authorisation and exact quantum of BMW generated.

2.9.4 Issue of authorisation by Chhattisgarh Environment Conservation Board

As per the BMW Rules, every establishment coming under the purview of BMW Rules shall make an application in Form-I of BMW Rules to the prescribed authority (CGECB) for grant of authorisation for the management and disposal of BMW.

CGECB intimated (July 2014) that there was 490 government as well as private HCEs against which 444 HCEs were issued authorisation by the end of 2012-13. During exit conference, CGECB intimated (September 2014) that 631

[1] 11 DHs, 27 CHCs, 11 DVHs and two Medical College Hospitals

authorisations were issued and further 613 applications pertaining to government HCEs were pending.

2.9.4.1 Delay in issue/renewal of authorisation by Environment Conservation Board

Rule 7(7) of BMW Rules requires that every application for authorisation shall be disposed of by the prescribed authority within 90 days from the date of receipt of the application.

During audit it was noticed that five[2] HCEs (one MCH and four DHs), though deposited the requisite fee have not been issued/renewed authorisation by the CGECB even after a delay ranging from two years to 14 years.

On this being pointed out, Government accepted (October 2014) that presently 613 applications of government HCEs for grant of authorisation/renewal are pending with the CGECB.

This indicates that CGECB did not visit or identify these HCEs for this purpose and was unable to coordinate the enforcement of BMW Rules through its seven Regional Offices.

2.9.4.2 Operation of Health Care Establishments (HCEs) without BMW authorisation

Scrutiny of records in test check units revealed that out of 40 DHs/MCHs/CHCs, 33 HCEs and 11 DVHs had never obtained authorisation from the CGECB. Four[3] DHs and two CHCs (Pali and Katghora) had authorisation but did not renew the same after 2008-09 and 2010 respectively. Hence, all these DHs/CHCs were operating without authorisation (October 2014). Late Baliram Kashyap Memorial Medical College-cum-Maharani Hospital, Jagdalpur (380 bedded) obtained a provisional authorisation in 2009, but did not renew it till date (October 2014). Thus, out of the 51 test checked HCEs, none was having a valid authorisation.

On this being pointed out, Government stated (October 2014) that in 2013-14 funds were transferred from NRHM for this purpose and various meetings were held with CGECB besides instructing CMHOs to get the authorisation. It has also been stated that CGECB had granted authorisation to 631 HCEs.

The reply is not acceptable as the CGECB failed to provide the list of 631 units and none of the 51 government units test checked had a valid authorisation.

Since, authorisation specifies the compliance criteria and is subject to verification by CGECB, those HCEs running without authorisation indicates that the compliance criteria had not been monitored and adhered to by the CGECB, which might result in hazards to public health as well as pollution of the environment.

CGECB being the nodal agency should ensure strict implementation of the BMW Rules, so that no HCE can operate without a valid authorisation.

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[2] (1) Dr.BR Ambedkar M.H.Raipur paid ₹.60000 in Jan.2000 (2) DH Jashpur ₹.17000 in July 2008+17500 in May 2014 (3) DH Dantewara ₹.40000 in June 2012 (4) DH Korba ₹.4000 in Jan-2012 (5) DH Durg ₹.90000 in Aug-2012 paid to the CGECB .

[3] Durg, Bilaspur, Kondagaon and Korba

2.9.4.3 No penal action against HCEs for violations

Rule 19 of the Environment Conservation Act 1986, provides for legal action against the occupier (any HCE generating BMW) for non compliance with the BMW Rules.

During audit we observed that none of the 51 test checked units had a valid authorization. However, CGECB had issued notices to only 20 HCEs during 2010-11, but none to the test checked HCEs. Information in respect of later years was not provided by the CGECB. Hence, it is evident that there was lack of initiation on the part of CGECB in implementation of BMW Rules. Similarly, the DHS did not have any mechanism to check violation of the Rules.

On this being pointed out, Government stated (October 2014) that CGECB had initiated steps to issue notices to ensure that corrective measures are being taken.

Reply is not acceptable as the entire test checked HCEs were operating without a valid authorisation.

2.9.4.4 Non-maintenance of record

Rule 11 of BMW Rules provides that every authorised occupier shall maintain records relating to generation, collection, reception, storage, transportation, treatment and/or any form of handling of BMW.

During test check of 51 HCEs, it was noticed that though these units were responsible for generation, collection, segregation, handling and disposal of BMW, they however, did not maintain any records. Due to non-maintenance of records, assessment of waste in each unit and in the State as a whole was not ascertainable. As a result, neither a proper management plan could be developed nor pollution of environment be assessed.

In reply, Government stated (October 2014) that audit findings would be made available to all the seven Regional Offices for taking necessary corrective measures.

CGECB should enforce upon the HCEs to maintain records in proper format so as to facilitate actual assessment of BMWs in the State.

2.9.4.5 Non-submission of Annual Report to Central Pollution Control Board

Rule 10 of BMW Rules requires that every occupier/operator of BMW shall submit an annual report to the prescribed authority in Form 11 by 31 January every year to include information about the categories and quantities of BMW handled during the preceding year. CGECB shall send this information in a compiled form to the Central Pollution Control Board (CPCB).

During audit, it was observed that 46 out of 51 test checked HCEs did not submit such annual reports to the CGECB. It was also observed (July 2014) that CGECB had not submitted the consolidated Annual Report for the year 2011-14 to the CPCB. In previous years, the reports were sent on the basis of data received from a few major private HCEs.

On this being pointed out, the Government stated (October 2014) that the Annual Reports for submission to CPCB for the period 2011-14 were under compilation.

CGECB should obtain the report and where found necessary issue legal notice or file legal cases against those HCEs which are not submitting the annual report.

2.9.5 State Advisory Committee

Rule 9 of BMW Rules required that the government of every State/UT shall constitute an Advisory Committee to aid and advise the government and the prescribed authority on matters related to implementation of these Rules. The committee will include expert in the field of medical and health, animal husbandry and veterinary sciences, environmental management, municipal administration, and any other related department or organization including non-governmental organizations and representative from the environmental conservation board.

The State Government constituted (March 2002) a State Advisory Committee headed by Additional Chief Secretary, Public Health and Family Welfare Department. However, its first meeting was held only in May 2014, i.e., after a lapse of 12 years. Thus, the Department of Health and Family Welfare and the CGECB was functioning without any guidance from the Advisory Committee.

On this being pointed out, though Government had stated that their first meeting was held during April 2006, no documentary evidence was however, furnished to this effect. It was also stated that meetings of the committee could not take place in the past few years.

The state advisory committee should meet at regular intervals to advise the Government as well as the CGECB for the effective implementation of the BMW Rules.

2.9.6 Segregation of Bio-Medical Waste

Proper segregation of category wise BMW at the point of generation is a must for its appropriate treatment and disposal. However, we observed the following shortcomings:

2.9.6.1 Mixing of Bio-Medical Waste with general waste

Rule 6 (1) of BMW Rules provides that BMW shall not be mixed with other wastes. However, joint physical inspection of 40 HCEs revealed that in three CHCs[4], BMW was being thrown into the municipal garbage tank provided inside the hospital premises. Except five[5] units availing CBMWTF, in remaining 32 units all categories of waste are being disposed of in the same deep-pit. Mixing of BMW with municipal garbage has direct adverse effect on human health as well as on the environment.

On this being pointed out, the Government stated that detailed instructions had been issued to the HCEs. It was also stated that the department would organise workshop/ seminars/ training programmes at regular intervals for all the staff of government HCEs, for proper implementation of BMW Rules.

2.9.6.2 Non-segregation of Bio-Medical Waste

Rule 6 (2) of BMW Rules provides that BMW shall be segregated into containers/ bags at the point of generation in accordance with Schedule II to the

[4] Katghora (district Korba), Akaltara (district Janjgir champa), Pallari (district Baloda Bazar)

[5] Dr. B R Ambedkar Memorial Hospital, Raipur; DH, Durg; DH, Korba; DH, Bilaspur and DH, Raigarh

Rules, prior to its storage, transportation, treatment and disposal. It also prescribes that there should be four types of color coded containers each for different categories of wastes and the containers shall be labeled as 'BIO-HAZARD' & 'CYTOTOXIC'.

During joint physical verification of 40[6] HCEs, we found that in five DHs and 15 CHCs, only one to three colour coded containers were being used resulting in improper segregation of BMWs. Only paper labelling on the containers were found in three DHs and seven CHCs. In case of DVHs, no container was found in use for collection of BMWs.

On this being pointed out, Government stated that funds for purchase of color coded bins at ₹ 3700 per block along-with necessary IEC and other training materials were provided to the DHs and other HCEs. However, the CGECB stated that all the staff of government hospitals needs adequate training and knowledge of the said Rules so as to ensure proper compliance.

CGECB should ensure proper segregation of waste at the point of generation by the HCEs before their disposal, so that BMW does not go untreated, causing health hazard.

2.9.7 Disposal of Bio-Medical Waste

2.9.7.1 Non-mutilation/shredding of Bio-Medical Waste

Rule 5 (Schedule I) of BMW Rules provides that BMW such as waste sharps (Needles, syringes, scalpels, blades, glass etc) and solid waste (wastes generated from disposable items other than the waste sharps such as tubings, catheters, intravenous sets etc.) requires to be mutilated/shredded before its final disposal.

During physical verification of 11 DHs, 27 CHCs and two Medical College Hospitals, it was noticed that un-mutilated/shredded needle, syringes, glass, plastic, bottles, IV sets, catheters etc., were being collected and disposed of in deep pits. In DHs, Bemetara and Janjgir Champa as well as CHCs, Pamgarh, Akaltara and Katghora we also noticed that the un-treated waste were scattered in the hospital building premises.

None of the test checked HCEs, including DHs and Medical College Hospitals were having a shredding machine.

On this being pointed out, Government stated (October 2014) that detailed instructions have been issued to the HCEs and the audit findings would be made available to all the seven Regional Offices for taking necessary corrective measures.

2.9.7.2 Idle expenditure on incinerators

Rule 5, Schedule-I BMW Rules provides that incinerator is the most preferred way for disposal of BMW, as five[7] out of ten types of waste can be disposed of with the help of an incinerator.

During audit of DH, Korba it was found that an incinerator in the hospital premises, which was established prior to 2007-08 by the DHS, remained unutilised. The details like year of establishment, source of fund, work agency

[6] Two medical colleges, 11 District Hospitals and 27 Community Health Centers

[7] 1. Human Anatomical Waste 2. Animal Waste 3. Microbiology & Biotechnology waste 4. Discarded medicines and cytotoxic drugs and 5. Solid waste are disposed of with the help of Incinerator.

etc., though called for (April 2014) were not made available to audit. It was, however, noted from records that a private firm approached (July 2008) the Civil Surgeon DH, Korba for running and maintaining the incinerator, but the hospital administration did not consent to the proposal. DH, Korba stated that though the plant was established in its premise, it was never handed over to the DH, hence was not made use of.

Similarly, the incinerator in the premise of DH, Jagdalpur was taken over (2006) by the Medical College-cum-Maharani Hospital, Jagdalpur in a non-working condition and the status remained same even after a lapse of seven years. Details regarding year of construction, cost, construction agency etc. was not made available to audit.

In Kanker district, the incinerator established in 2011-12 at a cost of ₹ 20.48 lakh remained non-functional as CGECB refused to award authorisation on the ground that the height of the chimney is less than the prescribed norms, resulting in idle investment and non-achievement of intended objective.

Incinerator lying idle in the premises of DH- Korba

On this being pointed out, Government replied that the incinerator in Kanker will be taken into use shortly, however no comments were offered in respect of the idle incinerators at Korba and Jagdalpur.

Fact remains that the CGECB did not initiate adequate measures to utilise the available infrastructure rendering them idle and the State is forced to manage with only one incinerator at Durg district, which was inadequate.

2.9.7.3 Non–utilisation of deep burial pit

Rule 5 Schedule-V of BMW Rules provides the standard for digging and utilization of deep burial pit, which is an option for disposal of BMW other than liquid and chemical waste, in towns with population less than five lakh and in rural areas**.** The Standard Operating Procedure by the DHS, prescribe that a deep burial pit should be a ditch of minimum two metre each length, width and depth, the pit should be fenced from all sides and should be covered to prevent entry of street dogs, rodents and other scavengers. After every burial, the pit should be closed with 10 cm of soil layer and 10 cm of lime layer.

Physical verification of DH, Mungeli and Janjgir Champa revealed that there is no provision of deep pit, BMW including syringes, needles, gloves etc., were thrown in open field within the hospital campus. In another 33 units we found that the available deep pits were not as per the prescribed standard and BMW was dumped in a single open pit within the hospital premises and burnt in irregular intervals. Hence, such violation of BMW Rules possesses threat not only to human health but also to surface/ground water and environment as a whole. Only five units were availing the services of CBMWTF.

BMW thrown in open field behind the hospital building DH- Janjgir champa.

During visit of eleven test checked DVHs, it was observed that in 10 units, the BMW were thrown in open ground as the hospitals neither had a deep pit nor any other facility for disposal of such waste. In DVH, Baloda Bazar, the BMW was being collected in a Jute bag and card board box and thrown in an un-designated place in violation of the BMW Rules.

On this being pointed out, Government stated (October 2014) that detailed instructions have been issued to the HCEs and audit findings would be made available to all the seven Regional Offices for taking necessary corrective measures.

2.9.7.4 Irregular disposal of Radio-Active Waste

Although the BMW Rules 1998 includes waste such as chemical waste (from laboratory cultures etc.,) and infectious waste (vaccines, human and animal cell culture used in research and infectious agents), it does not include radioactive waste. X-Ray films are developed with the help of multi user liquid called Hypo-fixer and Developer. The used Hypo-fixer contains radio-active particles which are washed off from X-ray films.

During audit of Maharani Medical College, Jagdalpur, DHs of Raigarh, Durg, Korba, Mungeli and five CHCs, it was noticed that such radio-active wastes were sold to a private firm without ensuring whether the firm was a registered/authorised one to handle such hazardous waste. In four other DHs of Bemetara, Dantewara, Kondagaon and Dhamtari as well as six CHCs, the hypo-fixer was being collected in drums or in open buckets where the possibility of them being sold cannot be ruled out. In rest of the units these hazardous waste are either being flushed out in the open drains or thrown in open ground/deep-pit, which may have serious health problems to the local people.

Hypo-fixer stored in open bucket, DH- Bemetara

On this being pointed out, Government stated (October 2014) that instructions received from CPCB regarding disposal of X-Ray films and Hypo solution were conveyed (December 2012) to all seven Regional Offices.

Fact remains that the radio-active wastes were not being disposed of in appropriate manner posing threat to health workers as well as common people. This also indicates that no action on CGECB's instructions was being initiated by the Regional Offices.

2.9.8 Conclusion

- Chhattisgarh Environment Conservation Board, the nodal agency did not conduct any survey to identify the actual number of HCEs at public and private sectors as well as number of Veterinary units in the State requiring authorisation for the management and disposal of BMW. Due to this, the quantum of BMW generated could not be assessed.

- 51 test-checked HCEs were operating without valid authorisation for handling of BMWs. Legal action against such HCEs for not adhering to BMW Rules was not being initiated by CGECB.

- In none of the test checked HCEs, segregation of BMWs and disposal of wastes were being done as per the BMW guidelines.

- Government should provide shredding machines to HCEs to ensure proper disposal of BMW.

- Despite incinerator being the most preferred way for disposal of BMW, the State has one private incinerator which is in operation whereas three government owned incinerators at Korba, Jagdalpur and Kanker remained idle.