

Biomedical waste disposal: the way forward

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INTRODUCTION

In the course of their normal functioning, all health care establishments (HCEs) like hospitals, dispensaries, laboratories and blood banks produce variable amounts of biomedical waste (BMW) which is hazardous to all who come in contact with it.¹ BMW is defined as “any waste which is generated during the diagnosis, treatment or immunisation of human beings or animals or in research activities pertaining thereto or in the production or testing of biological.”² However, the necessity to treat such waste with caution and as a separate entity from normal municipal waste, dawned in India only on 28 July 1998, with the promulgation of the BMW (management and handling rules) 1998 made under the provisions of Sections 6, 8 and 25 of the Environment Protection Act 1986 of the Government of India.³ These were to be implemented in the country by December 2002. As per these exhaustive regulations the onus is on the “Occupier” of the HCE to ensure that BMW is handled without any adverse effect to human health and environment.

LEAD TAKEN BY ARMED FORCES MEDICAL SERVICES (AFMS)

The AFMS have always taken the lead in conceptualising and implementing all national initiatives in the health sector. We were the first to plan a strategy for prevention of HIV/AIDS in the Armed Forces by establishment of the AIDS Control Organisation (ACO) as early as 1992.⁴ Therefore, in this case too by an amendment made to the Gazette notification on BMW rules in 2003, the government of India appointed the DGAFMS as the “prescribed authority” for enforcing the provisions of the Rules for all establishments of the Ministry of Defence.⁵ This accorded statutory powers to the DGAFMS to licence and monitor implementation of the BMW Rules in the HCEs of the three services and the veterinary establishments. Accordingly, detailed guidelines were issued for BMW management and handling in the Armed Forces in 2003 itself.⁶ These guidelines exhaustively outlined the organisational setup for

BMW management, methodology of segregation, collection, handling, transportation, final disposal of BMW of all service HCEs, waste audit and reports, and returns. It laid down specific scales of BMW equipment for all levels of HCEs which included personal protective equipment for handlers, equipment for collection and transportation to the kerb site. These guidelines specifically scaled service HCEs for developing in-house capacity for final treatment facilities like waste steriliser, microwave, plastic shredder, incinerator, etc. Based on feedback received, these guidelines were reviewed in 2008, with a provision that the next review would be in 2011.⁷ The concept of central biomedical waste treatment facility (CBWTF) was introduced in the services by directing all peripheral MI Rooms and Field Hospitals to use the final treatment facility of the local service hospital. Due to effective implementation of our own policy guidelines and effective monitoring at all levels, the BMW disposal in the Armed Forces has been satisfactory and better than our civilian counterparts.

NEWER DEVELOPMENTS IN THE CIVIL SECTOR

As public awareness regarding the hazards of BMW increased and due to stricter monitoring by the state pollution control boards (State PCBs) under the aegis of the central pollution control board (CPCB), the civil health care establishments have made steady progress in implementing the BMW Rules. In addition there has been a huge addition in the number of HCEs in India due to the ever increasing demand for medical care. Realising a huge lucrative business opportunity, a large number of vendors have established CBWTFs for final disposal of BMW in almost all cities across the length and breadth of the country.⁸ The rates to be charged from HCEs for utilisation of these CBWTFs have been duly approved by the State PCBs and the local civic bodies. The equipment for final disposal includes incinerators with pollution controlling wet ventury scrubber conforming to pollution control norms, waste autoclave, waste shredder, gas monitoring device, effluent treatment plant, land refill areas and specialised vans for exclusively carrying BMW from kerb site of HCEs for final disposal.⁹ The CBWTFs have capability to accord final treatment to the BMW generated by an entire city.

Most corporate hospitals and private HCEs have taken advantage of these developments and created in-house facility for BMW only till their kerb site. From kerb site to final treatment, the services have been outsourced to the local approved vendor. In fact, AIIMS New Delhi, though being a government hospital, has gone a step further and outsourced the BMW management

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from the point of generation in wards, ICU, OT, dispensaries itself. Gradually, most Government hospitals are also outsourcing BMW from their kerb site to the authorised vendor. This is because outsourcing not only reduced the hospital workload but also ensured that they complied with the existing legislations, thus reducing their legal liability.

ISSUES TO BE ADDRESSED BY POLLUTION CONTROL BOARD

Based on feedback and in the light of development of newer technologies and disposal systems in the field of BMW management, it is felt that the PCB needs to review the following issues:

1. *Colour coding of bags and containers.* The present colour coding as per BMW Rules is confusing, as it gives multiple coding options for similar category of waste.³ It may be noted that most part of the BMW is handled by a less educated health care worker (HCW), who genuinely finds it difficult to decode the present options. The categorisation of wastes needs to be reviewed in the light of the fact that one category of waste should go to only one coding option. This will not only have a uniform functional pattern of coding across all States, but also make it simpler for the HCW to decide the bag and the container wherein a particular BMW is to be placed.
2. *Use of combination technologies.* Combination technologies for final disposal of BMW like combinations of chemical and shredder or shredder and autoclave, etc. would be more ideal and viable options for small HCEs. However, industry has not developed these equipments indigenously, probably as the present BMW rules do not permit the use of combination technology. PCB could consider permitting the same with adequate safeguards. In case it is introduced, the AFMS could also consider their use in field areas and ships where no civil outsourcing facility is available.
3. *Amendment in the BMW Rules to reduce liability of “occupier.”* The present rules define the liability of the “occupier” as “ensuring that BMW is handled without any adverse effect to human health and environment.” Now, with CBWTFs being developed by vendors the responsibility of the “occupier” needs to be restricted to ensuring proper BMW management till his kerb site, in case he has outsourced final disposal. The “vendor” should in turn be made liable for BMW management from kerb site onwards as he is being paid by the HCE for the same. This will inter alia ensure high compliance standards by the vendor.

ROADMAP FOR SERVICE HOSPITALS

The existing equipment for management of BMW from the source of generation to the hospital kerb site needs to be

upgraded based on availability of newer technologies. Moreover, in the light of the deliberations above, where a State PCB approved vendor is available for outsourcing final disposal of BMW, the service hospitals could enter into a rate contract based on the rate approved by the local civic body. Outsourcing could be considered from our kerb site onwards only due to security reasons. The basis of calculation could be the average bed occupancy over the last three years. The reasons for suggesting this are:

1. In almost all our peace stations, facilities for outsourcing exist.
2. With the pollutions norms for incinerators becoming more and more stringent, it would be economically and legally unviable for every hospital to have its own incinerator. Moreover, as our service hospitals are now located in the vicinity of civil areas, the local civil bodies may not permit new incinerators in our set up.

In Field areas and places not having outsourcing facilities for final disposal, in-house facilities from kerb site onwards will have to continue to be maintained. However, for the incinerable wastes, after the existing incinerators have outlived their lives, the service hospitals should use CBWTFs of the local civil hospitals. In case the same is not available, then deep burial could be considered a more viable and eco-friendly option.

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