

Bio-medical waste

Centralised Solution for a Decentralised Problem

What is a common waste facility and why is it needed?

A common bio-medical waste treatment facility (CBWTF) is set up where bio-medical waste, generated from a number of healthcare facilities, is imparted necessary treatment to reduce all adverse affect that such waste may pose. The treated waste may finally be sent for landfilling or other recycling purposes. Installation of individual treatment facilities by small healthcare establishments requires comparatively high capital investment. In addition, it requires separate manpower and infrastructure development for the proper operations and maintenance of treatment systems.

The concept of centralised facilities emerged as a necessity since having individual treatment technologies was very difficult even for very large set-ups. Setting up and running treatment technologies requires space, huge investment, high operation and maintenance charges, technically qualified staff, waste to the maximum capacity of the machine to bring down the per kg treatment cost, etc. In comparison, if the waste from a number of healthcare establishments is brought at a centralised facility, all the above problems get scaled down. In fact, it can become a commercial venture.

The concept of CBWTF not only addresses these problems but also prevents scattering of treatment equipment in the city. Moreover, monitoring these facilities is much easier and one can ensure that the best and cleanest technologies with adequate pollution control devices are installed.

In last few years various centralised facilities have come up all around the country. In most cases all the stakeholders, including the facility

owner, the local medical association, NGOs and State Pollution Control Boards were involved.

What do our regulations say?

The first draft rules on bio-medical waste suggested that hospitals with 50 beds or more should install an incinerator for treatment of bio-medical waste. When this clause was challenged in the court, it was changed to “incinerator or any other alternative technology.” The hospitals were also given an option of not having treatment technologies in their premises, but to sharing them. The Bio-medical Waste (Management & Handling) Rules, 1998, give an option to the bio-medical waste generator that such wastes can also be treated at the common bio-medical waste treatment facility (CWTF). The Second Amendment of the Rules in June 2000 further eased the bottleneck in upbringng the CWTF by making the local

AT A GLANCE

- ❖ Of the 47 facilities operational in the country, a majority rely on incineration, even though a very small part of the waste is recommended for burning
- ❖ Once an incinerator is installed, it inevitably leads to burning of all kinds of waste, resulting in air pollution
- ❖ Even though a number of centralised facilities have come up in the country, in the absence of clear guidelines, they do not follow any standards



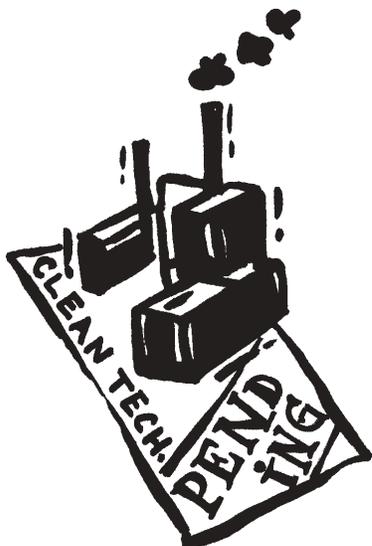
authority responsible for providing a suitable site within its jurisdiction. This is how the concept of a centralised facility came into being

The new CWTF guidelines

With the concept of centralised facilities gaining wider acceptance, and more and more facilities coming up across the nation, it was realised that in the absence of any guidelines, the facilities were not following any standards or standard protocols.

Therefore, the CPCB has come up with draft guidelines on centralised facilities, the summary of which is given in the box below.

What is the preferred technology in CWTF-



Installing an incinerator now leads to the impression that the problem is solved, whereas in practice the clean technology solution is delayed forever.

Zero Incineration?

Of the 47 facilities being operated in the country, the majority have incineration as one of the technologies being used. This is despite the fact that a very small part of the waste is body parts, which is recommended for incineration. However, such waste can also be deep buried, cremated, and even treated by some new emerging technologies.

From our experience, once an incinerator is installed, then it leads to the majority of the waste being 'burned', leading to serious air pollution.

As has been stated by Srishti as well as other groups, we do not support incineration includ-

Draft guidelines for common Bio-medical Waste Treatment Facility, CPCB

1. Treatment facility

I. Following treatment facilities shall be provided in any common facility:

- a) Autoclave (Pre-vacuum horizontal feeding/ hydroclave/microwave/any other treatment technology approved by CPCB (for about 90% of the total bio-medical waste)
- b) Incineration (for about 10% of the total bio-medical waste)
- c) Shredder
- d) Sharp pit (with drawing details)/encapsulation/ recovery of metal in some factory may be looked into
- e) Facility for bin washing, floor washing, vehicle washing
- f) Effluent treatment plan
- g) Secured landfill (Until a secured landfill comes up in the area, space within the CBWTF facility shall be used)
- h) Chemical disinfection not an option for centralised facilities

II. Only Waste Category 1 and 2 and cytotoxic wastes shall be incinerated. Cytotoxic waste can also be disposed in a secured landfill and category 1 and 2 can be deep buried in cities with population of less than 5 lakh.

III. All other infected waste shall be imparted

autoclaving/ hydroclaving/microwaving as applicable under the BMW Rules

IV. Incinerator should be provided with venturi scrubber using alkali solution

V. Incinerator, autoclave/hydroclave/microwave shall be PLC-based with temper-proof control panel and recording devices

2. Location

- I. At least 1 km away from residential areas
- II. Acceptable in industrial area

3. Land

I. Preferably 1 acre land may be required to set up all the requisite facilities

4. Coverage area

I. In any area, one operator may be allowed to cater to up to 10,000 beds at the approved rate by the prescribed authority

II.a Allowed to cater health care facilities situated within a radius of 150 km

5. Segregation

I. Segregation shall be as per the BMW Rules as well as compatible with collection facilities of CBWTF

II. Generator is responsible for providing segregated waste to the operator

III. The operator shall reject unsegregated waste and report the matter to the prescribed authority.

ing in common facilities, and believe that zero incineration facilities are needed, and are indeed possible. Installing an incinerator now leads to the impression that the problem is solved, whereas in practice, the clean technology solution is delayed forever.

Centralised facilities should have a provision for a stand by, in case of breakdown of the equipment being used.

What is the Indian experience with CWTFs?

According to a CPCB compilation, 47 centralised facilities are already in place in the country and seven others are in the process of being set up. Since the concept of centralised facilities in India is still at an emerging stage,

the facility operators as well as the regulatory agencies are facing the initial problems.

According to the facility owners, the major concern in running a centralised facility is the subscription charge. According to them the charge is insufficient, and often, the facility providers incur losses. They feel the standard charges of Rs 2-2.50 per bed should be raised to enable them to enhance their service-quality as well as leave margins for profits.

The facility providers face another problem: they set up the facility on the expectation of catering to a large number of beds. However, once functional, they often do not get the expected numbers. Therefore, they demand an assured number of beds. For instance, each



The level of awareness in hospitals should be increased so that the problem of receiving mixed waste can be avoided.

6. Collection

- I. Respective coloured bags should be kept in similar coloured container – not directly kept on vehicles
- II. Sharps shall be collected in puncture resistant containers in the vehicles
- III. Temporary storage at healthcare facility shall be designated

7. Transport vehicle

- I. Dedicated vehicle for the collection of waste
- II. The vehicle should have secondary contaminant system
- III. Inner body of the vehicle should have minimum joints to prevent harbouring of microorganisms
- IV. Bio-medical hazard sign, name, address and phone no. of the operator shall be displayed on the vehicle
- V. It should be a closed vehicle
- VI. The inner covering of the vehicle shall be smooth

8. Storage

- I. Sufficient ventilated storage space for untreated and treated bio-medical waste shall be provided
- II. The flooring and walls (to a height of 2 metres) shall be finished with smooth and fine material. There shall be minimum number of joints
- III. Interim storage spaces can be provided in the city for easing out transportation

9. Record keeping

- I. Documents such as collection advice taken from

- healthcare units for each category of waste, record of treatment given to each category of waste, operating record of all equipment, record of disposal of each category of waste, shall be maintained
- II. All the records shall be available at the common facility site for inspection.

10. Disposal

- I. Incineration ash – disposal at secured landfill
- II. Treated soiled waste – municipal landfill
- III. Plastic waste, after disinfection and shredding – municipal landfill or recycle
- IV. Sharps, after disinfection (if encapsulated) – municipal landfill
- V. Treated wastewater – to sewer or drain
- VI. Oil and grease - incineration

11. Setting up and operation of CBWTF

- I. Each Prescribed Authority shall constitute a committee comprising of atleast one SPCB/PCC expert in bio-medical waste management and an official from CPCB
- II. The proponent shall submit detailed working plan of the proposed CBWTF to the Prescribed Authority for issuance of consent to establish/ NOC.
- III. Effluent tests and validation tests to be performed quarterly



While developed countries are turning away from incineration, it is being aggressively promoted in developing countries. In Bangladesh and Sri Lanka there are proposals of setting up hundreds of on-site incinerators to treat bio-medical waste.

facility should cater to 10,000 beds so that it can be run properly as per standards.

The facility providers also feel that the State Pollution Control Boards should be more collaborative and responsible in their approach. They feel there is often a lack of cooperation from pollution control boards as they do not distinguish between good facilities and bad facilities and the same kind of treatment is meted out to both.

The facility operators express the need for an effective and quick grievance addressal system; often they have to go through channels of corruption, etc, to deal with government officials. The providers feel the level of awareness in the hospitals should be increased so that the problem of receiving mixed waste can be avoided.

The facility providers find their problem very complex. They cannot report the hospitals sending mixed waste for treatment because of the fear of losing their clientele and, if they burn mixed waste, they violate the law.

The hospital authorities are quite satisfied with the services provided. The centralised facility van picks up the waste regularly from the hospital at a fixed time. The hospitals, on their part, have to arrange for a storing space and assign staff for handing over the waste and maintaining the record of the quantity of waste handed over every day.

The government is of the view that the centralised facility owners should be more professional in their approach. The reason for setting up the facility is, after all, business oriented.

According to them, when the providers come up with the facility they do not have any resource or space constraints. They start their business as professionals. Therefore, their motto should be to render perfect services.

The government also denies allegations that the venture is not profitable as per the centralised facility operators' claims. Most operators achieve a break-even point within an year of running the venture, claims the government.

The government feels that there are situations where they compromise as they know that the operators are treating waste from around 1400-1500 beds and if their services are

withdrawn the process of waste treatment would receive a set-back. However, the government is not willing to give up if the environmental standards and Biomedical Waste (Management & Handling) Rules are not being complied with.

The government understands the problem of centralised facility operators receiving mixed waste and feel a dual approach of repeated awareness and training of the hospital staff as well as commitment from the top management would ensure that this is overcome. Regular inspections by the government would also help in solving the problem.

Way forward in the developing countries

While the developed countries are turning away from incineration because the public and policy makers have learnt of its dangers and health hazards, incineration is rampantly being promoted in the developing countries. Therefore, in Bangladesh and Sri Lanka and other developing nations, there are proposals of setting up hundreds of on-site incinerators to treat bio-medical waste. In developing countries, economic and environmental problems of incinerators are further magnified. Among the reasons for this exacerbation are inadequate legislative infrastructures, a lack of facilities to adequately monitor emissions and residues, less transparency and fewer opportunities for public participation, different waste content and greater budget uncertainties which adversely affect maintenance of facilities. Thus, these countries should establish model facilities with zero incineration so that the waste generated from various hospitals could be treated at centralised locations to bring down the cost of treatment and also favour easy regulatory controls.

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