Whether waste is a wasteful topic to discuss? Answer is definitely “no”. In fact it is the need of the hour. But, are we really concerned? Are we really willing to discuss issues related to biomedical waste? While it is the statutory requirement of the Health Care Establishments (HCEs) to treat and dispose their biomedical waste in an environmentally sound manner, it is up to the health care industry at large to see that proper monitoring and surveillance is carried out in this regard. As an inevitable part of this industry it is obligatory for us that we discuss biomedical waste issues.

Is the current law up to the mark and precise in guiding what should be followed ideally? Whether the legal guideline is clear and unambiguous from all aspects? Is there any confusion over how to follow the rule? If there are some grey areas or some confusion, what are the lacunae in the current law - “Biomedical Waste (Management & Handling) Rules, 1998”? (1) Is this not the ideal time to halt and review our policy on biomedical waste for proper follow-up and implementation of the law? Let’s have a critical discussion on these issues.

Biomedical waste management should ideally go beyond just acquisition of better equipments, data compilation and doing a finishing work on paper. This article is particularly written not only to clarify some of the issues related to the biomedical waste but also to arouse interest and initiate an in-depth debate in medical fraternity to guide towards a better solution. The larger interest however is to prepare a ground for smooth and easy implementation of the rule at all levels.

**Requirement of Authorization:**
Although the rule is applicable to all persons who generate, collect, receive, store, transport, treat, dispose, or handle biomedical waste in any form; the requirement of an authorization from the prescribed authority is only applicable if the said HCE is catering services to more than 1000 patients a month. Naturally, the HCEs, hospitals, nursing homes, clinics, dispensaries, laboratories, blood banks, veterinary institutions, animal houses who are falling in the borderline area conveniently dodge and stay away from requirement of authorization by showing their services to less than that of the limit and thus they tend to stay away from requirement of permissions and authorization. Still this would have been fine if the rules are followed completely at all the HCEs irrespective of an authorization. However, the fact that in the absence of an authorization such HCEs do not stay in the prospective HCEs for monitoring and surveillance for proper implementation of the Biomedical Waste (Management & Handling) Rules 1998. In the background of a resource deficit infrastructural setup, a relatively new rule, complicated procedural setup and poorly defined surveillance authority to review the implementation of the rule, such HCE enjoy unlimited freedom not to follow the rule without having any fear of review or punishment under the law.

**Categories of Biomedical Waste:**
Although, a clear definition and a broad vision are included in the rule to cover all categories of biomedical waste, there are categories of waste which are not usually generated by any of the HCE. This also unduly complicates the rule with higher number of waste categories in schedule-I. Incineration Ash (Category no. 9) for example, is produced only on burning of waste in an incineration. Barring a handful of gigantic hospitals across India who have their own incineration plant, incineration ash is not a part of biomedical waste for most of the HCEs. Incineration ash is hazardous through bioconcentration and/or bioaccumulation due to burning of biomedical waste containing heavy metals in an incineration plant. However, still it has very little or no applicability in Biomedical Waste (Management & Handling) Rules, 1998.

**Color coding:**
In a country like India with a wide variation between Rural and Urban setup over multiple different states and vast differences in available resources, it is really unique idea and concept not to enforce but to give choices to the HCEs to use a specified colour code for particular category of waste (Schedule-II). However this option of giving choices to use a color code (depending on the terminal treatment option available / opted) seems to create confusion due to overlapping choices. Biomedical waste category no. 3 (Microbiology & biotechnology Waste), 6 (Soiled Waste) & 7 (Solid Waste) are such categories which have dual options. All these three categories are
covered under “Red” color and also have an alternate option of Yellow (Category No. 3 & 6) or Blue (Category no. 7).

This idea of giving choices also defeats the basic scientific concept and principle of Uniform Segregation of biomedical waste. The confusion of color code may lead to mixing of various categories of biomedical waste affecting not only quantum of waste but also further complicating its treatment before final disposal. For example, infectious cotton waste (category no. 6 – Soiled waste) when collected in a Yellow bag, need no pretreatment before final disposal by incineration. However, the same infectious cotton waste when collected in a Red bag needs disinfection as a pretreatment. This is also mutually contradictory to the basic objective of uniform color code system under the law. The objective of having single uniform color code system across the country (although not mentioned as such, directly in the rule) was to have a similar procedural system related to biomedical waste so that all health care functionaries (from doctors to workers) and establishments follow similar pattern of procedures for treatment and disposal as a part of segregation management system to help proper waste management across the country.

**Issues of syringes:** Schedule-I of biomedical waste clearly mentions examples of biomedical waste considered in each of the waste category. Needles and syringes, both are clearly mentioned in the biomedical waste category No. 4 (waste sharps). However still there seems to be some confusion over this issue. Syringes are often considered in the biomedical waste category no. 7 (solid waste) and are collected in Red colored bag. Even the additional supportive government guidelines for managing immunization waste mentions Red colored bag for the collection of used and cut syringes. If waste category no. 7 is also covered only under “blue” it would have resolved the confusion, but with an option of Blue or Red the confusion mounts higher. However, looking to the clear indication in the law (Schedule-I), syringes are part of biomedical waste category no. 4 (sharps) which does not have dual option and are covered only with Blue color. There is a need to include detailed examples of syringes in the waste category in schedule-I to clarify such doubts. This is more so because while it is clear that syringes with fixed needles and glass syringes are covered under biomedical waste category no. 4 (sharps), there is ambiguity in the health care staff regarding the applicable biomedical waste category for disposable syringes without a fixed needle.

**Recording quantities of waste**

It is quite obvious that when fewer colors are used for multiple categories of waste there will be more than one category of biomedical waste that is covered under one color. At each and every HCE it is also not possible to have multiple biomedical waste bins of the same color to collect different categories of biomedical waste separately. Thus it is clear that a biomedical waste bin of a particular color would have more than one categories of biomedical waste. For example, yellow colored biomedical dustbin would collect wastes from category no. 1 (Human anatomical waste), 2 (animal waste), 3 (Microbiology & Biotechnology Waste) & 6 (Soiled waste) as per the applicability under the law and the final treatment and disposal is followed accordingly. Once wastes from different biomedical waste categories is collected at the source or point of generation, they are treated as per the recommendations and it is sent for final disposal after treatment but must never be further separated/ segregated into applicable biomedical waste categories. In such an event weighing of a colored bag would be possible but separate weighing would not be possible for each of the waste category covered in that colored waste bag. So it is practical and feasible to note and record weight of each of the colored bag but not possible at all to record separate weight of each biomedical waste category.

Similar is the issue of biomedical waste category no. 8 (Liquid Waste) & no. 10 (Chemical waste). A part of biomedical waste category no. 10 & entire category no. 8 would be liquid and so weighing is not possible. Even measuring these liquid wastes by volume would have other issues. This is because whether concentrated chemical preparation is to be measured or diluted one (after chemical disinfection) is not defined or clearly mentioned.

In spite of the above facts, record keeping under the biomedical waste rule requires waste category wise weights for the annual reporting. During renewal of authorization also such records of past years are required to be submitted. This continues to be a dogmatic requirement under the law.

**HCE-CBWTF relationship:**

The existing relationship of HCEs and Common Biomedical Waste Treatment Facility (CBWTF) Operator reflects shunning the responsibilities on one another. On one hand the HCE handover the unconditional responsibility of the entire biomedical waste generated at their facility to the CBWTF. On the other hand, the CBWTF operator takes no responsibility of mixing and/or pre-treatment of the biomedical waste collected from different HCEs.
This attitude of staying away and shunning the responsibility leads to an unhealthy environment between them which exist only & only because of a law and which grows more on commercial basis than on a professional basis. Given a condition that the law does not exist, probably no HCEs would like to have continued relationship with their CBWTF operator. Similarly, no CBWTF operator would have been able to survive and succeed in the absence of a legal provision. Healthy HCE-CBWTF operator relationship is a necessity and need of current time but is on a fragile platform in a hostile environment right now. This highlights the need of legal modifications, updates, amendments or changes in the law that add equal independence and reciprocal obligations to the already mutually dependent relationship between the HCEs & the CBWTF operators.

At present, there is no inbuilt mechanism in the law/system that checks monitoring of roles and duties of both by one another. There is no provision whereby the problems faced by one due to the other can be reported to a third, higher and implementing government agency or controlling authority. It is aptly needed that a HCE reports non-collection of waste and other misconduct of CBWTF immediately to a third agency while the CBWTF needs to inform a misconduct of HCE if mixing of waste is seen or improperly treated waste is handed over to CBWTF for final treatment and disposal. Until there is a legal provision for reporting misconduct of one by the other, the relationship between the two is less likely to survive and develop over a long run.

When there are only a few CBWTF Operators particularly in a remote rural area, the HCEs do not have any other choice to join the CBWTF agency for treatment and disposal of their biomedical waste. Furthermore, instead of competition, the issue of making a cartel and driving the BMW management industry in an area leaves behind the HCEs with no other choice but to join and continue with them even if poor and infrequent services with low quality is provided at a very high rate. Certainly, a role of local agency as well as controlling authority at state level needs to be strengthened with more powers to regulate the CBWTF agencies for their contractual rates, requirements and the service standards.

Unclear role of local authorities:
It is clear without any doubt that the regulatory authority should monitor and supervise all HCEs, government as well as private, for proper implementation of the law. While the regulatory authority tries to look upon this issue in the government HCEs through regular visit although infrequent; the same issues in the private HCE remain in no one’s perview. Given the fact that there are a large number of HCEs and other medical facilities operating in every nook and corner of cities, towns and villages it is very difficult for the regulatory bodies to keep a nook on their activities. Also considering the capacity of regulators as well as the broad gamut and scope over their shoulders to regulate, it is more likely to remain a paper work than actual action on ground level. Thus while the role of regulatory authority in monitoring the implementation of the law is clear; the role of local authority in monitoring implementation of biomedical waste remains unclear.

Training:
Now let’s shift our attention from macro issues to some micro issues like training. The Rules merely mention proper training but there are no details as such on what kind of training should be imparted to the health care workers. A manual needs to be prepared by the health and safety experts. There should also be a benchmark for training imparted to health care workers of both the HCEs and CBWTF which would facilitate entry of people of right competence in BMW management. Such guidelines are missing from the rules. Because thinking about waste is not a waste of time, they are raised and shared on this platform as a “food for thought”. These few points critically raised on the current Biomedical Waste Management covered “NOT ALL” but “ONLY few” important issues. Though these issues are identified but they still remain unresolved as of now. These are known to the authorities and implementing agencies. These are only partially addressed through a new DRAFT rule “Biomedical Waste (Management & Handling) Rules, 2011. It has not yet passed by the parliament and has not taken a shape of a new law.

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[N.B. - The authors have technical expertise as well as extensive field experience in the subject to critically review the law. Feedback received during field monitoring and supportive supervision as well as questions raised by various health care workers at different levels are summed up here for wider discussion and clarification.]

References: