ANDHRA PRADESH POLLUTION CONTROL BOARD
Implementation of Bar Code / QR Code Based Biomedical Waste Management System
(Health Care Facilities (HCFs) and the Operator of Common Bio-medical Waste Treatment Facility (CBWTF))

e-Tender Document
Issued on 07.09.2019

PURCHASER:

Address: Member Secretary
ANDHRA PRADESH POLLUTION CONTROL BOARD
Door No. 33-26-14D/2, Near Sunrise Hospital,
Kasturibaipet, Vijayawada - 520010, Andhra Pradesh.

Telephone: +91-866-2463200 ext 232 / 250

e- mail: itcell-ee1@appcb.gov.in

Website: https://pcb.ap.gov.in/
## Implementation of Bar Code / QR Code Based Biomedical Waste Management System

<table>
<thead>
<tr>
<th>Tender schedule :</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tender Reference</strong>:</td>
</tr>
<tr>
<td><strong>Bid Document download start date and time</strong>:</td>
</tr>
<tr>
<td><strong>Date of pre bid meeting</strong>:</td>
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<tr>
<td><strong>Bid document download end date and time</strong>:</td>
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<td><strong>Bid submission closing date and time</strong>:</td>
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<tr>
<td><strong>Technical bid opening</strong>:</td>
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<tr>
<td><strong>Technical presentation on implementation methodology &amp; work plan of the technically qualified bidders and financial bid opening</strong>:</td>
</tr>
<tr>
<td><strong>Place of opening of technical bid</strong>:</td>
</tr>
<tr>
<td><strong>Address for communication</strong>:</td>
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<tr>
<td><strong>Cost of tender document</strong>:</td>
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<td><strong>EMD</strong>:</td>
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</tbody>
</table>

**Important Note:** Prospective Software/Application Developer (Bidder) are requested to remain updated for any notices/amendments/clarifications etc. to the Tender Document through the website [https://pcb.ap.gov.in](https://pcb.ap.gov.in) and e tender portal. No separate notifications will be issued for such notices/amendments/clarifications etc. in the print media or individually.
INVITATION OF BIDS
THROUGH e-PROCUREMENT PLATFORM

Tender Notice No.27/APPCB/ IT/BMW-QR code/2019  Date: 07.09.2019

1. Andhra Pradesh Pollution Control Board (APPCB) invites online bids through e-Procurement platform from reputed firm / companies for providing software for Barcode / QR Code based Biomedical Waste Management as per Bio-medical Waste Management Rules 2016 & its amendments thereof.

2. A complete set of bidding documents can be downloaded from https://tender.apeprocurement.gov.in from 07.09.2019 to 23.09.2019 before 2.00 PM. However, a scanned copy of the Demand Draft for Rs.1,000/- drawn in favor of Member Secretary, Andhra Pradesh State Pollution Control Board shall be uploaded towards cost of Tender Document along with the bid, failing which the bid will be disqualified.

3. Issuance of Bidding Documents will not be construed to mean that such bidders are automatically considered qualified.

4. All bids must be submitted on or before 05:00 PM (IST) 23.09.2019 through e-Procurement platform only (online).

5. APPCB will not be responsible for any costs or expenses incurred by bidders in connection with the preparation or delivery of bids.

6. In the event of date being declared as a closed holiday, the date for submission of bids and opening of bids will be the following working day at the appointed time.

7. The Tender Document is not transferable.

8. The proposal document shall be signed by the proposer in all the pages with official seal.

9. Prices shall not be indicated anywhere in the technical bid. If the price is indicated anywhere in the technical bid, their offer will be rejected.

10. Bidders are expected to examine all instructions, forms, terms specifications etc.in the Bidding documents. Failure to furnish all information as stipulated in the Bidding Documents or submission of a Bid not in compliance to the Bidding Documents will be at the Bidder’s risk and may result in rejection of its bid.

11. Tenderers / bidders or their authorized agents alone are allowed to participate in the opening of the tender.

12. All charges on account of sales tax, income tax, and other duties etc., shall be borne by the tenderer /bidder towards the said tender.
13. In the event of the tender / bid being accepted, the contract must be signed by the tenderer / bidder and in the case of a registered partnership firm, the tender should be signed by the managing partner or authorized signatory or in the case of company, tender should be signed by its secretary or authorized signatory.

14. The proper training has to be given to the Employer staff and CBMWTF staff for operating the Bar Code / QR Code based system of biomedical waste management.

15. In the event of a dispute between client and agency, the dispute would be subject to the jurisdiction of the courts in <Vijayawada> city.

16. The contractor / Bidder shall not assign or sublet his contract.

17. The Contractor / Bidder shall carry out the work as detailed in the schedule accompanying the tender notification & documents.

18. If the contractor / bidder fail to comply with the requirements of the schedule / contract agreement, the institute has the right to terminate the contract with the prior one month notice and after recovery of the amounts that are due from the contractor / bidder towards the institute.

19. Tenderers of only those Tenders who fulfil the terms and conditions of this tender will be considered for evaluation. The tenderers will undergo evaluation at every stage of processing and any tenderer found at any stage, not in conformity with the stipulated tender conditions including specification / found to be having defective and incomplete documents will be rejected.

Note: For assistance in the online submission issues, the bidder may contact the help desk of M/s. Vupadhi Techno Services Pvt. Ltd. (eProcurement) at their email address: eprocsupport@vupadhi.com or on the Phone No: 08645-246370 / 71 / 72 / 73 / 74

20. **Procedure for offer submission:**

The Bidders shall submit their response through e-Procurement platform at https://tender.apeprocurement.gov.in or http://www.apeprocurement.gov.in/ by following the procedure given below.

The Bidders would be required to register on the e-procurement market place http://www.apeprocurement.gov.in or https://tender.apeprocurement.gov.in and submit their bids online.

Offline bids will not be entertained by the Tender Inviting Authority for the tenders published in e-Procurement platform.

The Bidders shall submit their eligibility and qualification details, Technical bid, Financial bid etc., in the online standard formats displayed in e-Procurement website.

The Bidders shall upload the scanned copies of all the relevant certificates, documents, etc., in support of their eligibility criteria/technical bids and other certificates/documents in the e-Procurement website.
The Bidders shall sign on the statements, documents, certificates, uploaded by them, owning responsibility for their correctness/authenticity.

The Bidders shall attach all the required documents for the specific tender after uploading the same during the bid submission as per the Tender Notice and Bid Document.

21. **Registration with e-Procurement platform:**
For registration and online bid submission, Bidders may contact HELP DESK of M/s. Vupadhi Techno Services Private Limited or [https://tender.apeprocurement.gov.in](https://tender.apeprocurement.gov.in).

22. **Digital Certificate Authentication:**
The Bidders shall authenticate the bid with their Digital Certificates for submitting the bid electronically on e-Procurement platform and the bids not authenticated by digital certificate of the Bidders will not be accepted on the e-Procurement platform.

23. **Submission of Hard Copies:**
The scanned copies of DD towards tender document fee and EMD shall be uploaded along with the bid through e-Procurement platform online. After submission of bid online, the Bidders are requested to submit the originals of technical bid document, photo type presentation on the implementation methodology, work plan, etc., DD / BG towards EMD and tender document fee to the Tender Inviting Authority on or before the opening of financial bids. The Tender Inviting Authority will consider only the bids submitted through on-line over the copies of the paper based bids.

APPCB shall not take any responsibility for any delay or non-receipt. If any of the documents furnished by the Bidders are found to be false/fabricated/bogus, such Bidders are liable for blacklisting, forfeiture of the EMD, cancellation of work and criminal prosecution.

The Bidders are requested to get a confirmed acknowledgement from the Tender Inviting Authority as a proof of submission of Hard Copies to avoid any discrepancy. The Bidders have to attach the required documents after uploading the same as required by Tender Inviting Authority in the tender conditions.

24. **Payment of Transaction Fee:**
All the participating bidders have to electronically pay a non-refundable transaction fee to M/s. APTS, the service provider through "Payment Gateway Service on E-Procurement platform", as per the Government Orders placed on the e-procurement website.

25. **Tender Document:**
The Bidders are requested to download the Tender Document and read all the terms and conditions mentioned in the Tender Document and seek clarification, if any, from the Tender Inviting Authority. **Any offline bid submission clause in the tender document could be neglected.** The Bidders have to keep track of any changes by viewing the Addenda / Corrigenda issued by the Tender Inviting Authority from time-to-time, in the e-
Procurement platform. The Department calling for Tenders shall not be responsible for any claims / problems arising out of this.

26. **Bid Submission Acknowledgement:**
The Bidders shall complete all the processes and steps required for Bid submission. The system will generate an acknowledgement with a unique bid submission number after completing all the prescribed steps and processes by the Bidders. Users may also note that the bids for which an acknowledgement is not generated by the e-Procurement system are treated as invalid or not saved in the system. Such invalid bids are not made available to the Tender Inviting Authority for processing the bids. The Andhra Pradesh Pollution Control Board and M/s. APTS are not responsible for incomplete bid submission by users.

**HOW TO APPLY**

- Click at [http://www.apeprocurement.gov.in](http://www.apeprocurement.gov.in) or [https://tender.apeprocurement.gov.in](https://tender.apeprocurement.gov.in) to download e-Procurement notification
- Read the complete document carefully
- Technical & Price Bid shall be submitted online only
- The system will generate an acknowledgement with a unique offer submission number on successful completion of the above process.

For any help or technical support on e-Procurement, Bidders may contact M/s Vupadhi Techno Services Private Limited over phone or in person or their helpdesk at:

**e-Procurement Help Desk**

**M/s. Vupadhi Techno Services Pvt. Ltd.**

Flat No : 407, Sreeram's Sneha Avenue,
Near Aravinda School, Kunchanapalli,
Tadepalli (M), Guntur (Dist) - 522501.
Andhra Pradesh.

Phone No: **08645-246370 / 71 / 72 / 73 / 74**

**Sd/-**

**Member Secretary**
INSTRUCTION TO BIDDER

1. EVALUATION CRITERIA: Based upon an examination of the documentary evidence of the bidders qualification uploaded by the bidder, Employer will determine the capabilities with respect of technical, production and manpower etc,
   a. The decision of the Employer in selection of agency shall be final and binding on the participating agencies.
   b. Even though an applicant may satisfy the above requirements, he would be liable to disqualification if he has:
      i. Made misleading or false representation or deliberately suppressed the information in the forms, statements and enclosures required in the technical bid document.
      ii. Record of poor performance such as abandoning work, not properly completing the contract or financial failures/weaknesses etc.

2. PERIOD OF VALIDITY OF BIDS:
   a. Bids shall remain valid for 90 days from the date of opening of tender. A Bid expressed to be valid for a shorter period may be rejected by the Owner / Employer as non – responsive.
   b. In exceptional circumstances, the Owner / Employer may solicit the Bidders consent to an extension of the period of validity. The request and the response thereto shall be made in writing or by cable. Bidder may refuse the request without thereby forfeiting their Bid security. A bidder granting their request will not be required nor permitted to modify its Bid.

3. OPENING OF BIDS BY EMPLOYER
   a. Employer will open the technical bids on the date prescribed in the tender document.
   b. Commercial Bids of Bidders whose offers (Technical Bid) are found technically substantially responsive to the Bid Documents will be opened on a date to be intimated later to these Bidders. All other Bids shall be deemed to have been rejected for any further consideration / evaluation.
   c. Financial Bids of Bidders whose offers (Technical Bid & Commercial Bid) are found technically and commercially substantially responsive to the Bid Documents will be opened on a date to be intimated later to these Bidders. All other Bids shall be deemed to have been rejected for any further consideration / evaluation.
   d. Financial Bids of Bidders whose Techno – Commercial Bids have been rejected shall not be opened and shall not be considered further for re-evaluation irrespective of the circumstances.

4. AWARD OF CONTRACT:
   a. The institute reserves the right to accept or reject any bid without assigning any reason thereof.
b. In case of two or more agencies quoting similar identical rates for the services, then the final decision shall be taken by taking into consideration of the additional facilities provided to the institute.

5. **DURATION AND TERMINATION:**
   
a. Duration period – 36 months
   
b. The Owner/Employer shall be entitled to unilaterally terminate the contract granted to the contractor without assigning any reasons thereof by giving one calendar months’ notice.
   
c. Notwithstanding the above, the institute shall be entitled to terminate the contract forthwith in the event of contractor committing breach of any of the terms and conditions of this agreement. The decision of the Director of the Institute that the contractor has committed such breach shall be final and binding on the contractor.

6. **EARNEST MONEY DEPOSIT:**
   
a. The Bidder shall upload as part of its bid an EMD of Rs.10,000 (Rupees ten thousand only).
   
b. The EMD is required to protect the Employer against the risk of Bidder’s conduct, which warrants security’s forfeiture.
   
c. The EMD of unsuccessful tenderers will be refunded after the tenders are finalized. The EMD shall not bear any interest.
   
d. The Earnest Money Deposit of the successful bidder will be refunded after the receipt of performance security deposit along with contract agreement.
   
e. EMD may be forfeited:
      
      i. If the bidder withdraws or its bid during the period of bid validity or
      ii. In the case of successful bidder, if the bidder fails to sign the contract in accordance with tender clause.

7. **PERFORMANCE SECURITY:**
   
a. Within 15 days after receipt of the letter of award from the employer, the Demand Draft an amount equivalent to 5% of the contract price in accordance with the conditions of the contract.
   
b. In case of unsatisfactory services, the performance security will be forfeited and in this regard the decision of the Tender Accepting Authority is final.
   
c. Failure of the successful bidder shall furnish the employer a performance security in the form of bank guarantee.
   
d. The successful bidder to comply with the requirements sub clause above shall constitute sufficient grounds for cancellation of the award and forfeiture of the bid security.

8. **OWNERS RIGHT TO ACCEPT OR REJECT ANY OR ALL BIDS:**

   The owner / Employer reserves the right to accept or reject any Bid
a. During the Bidding process and reject all Bids at any time prior to award of contract, without thereby incurring any liability to the affected Bidder or Bidders on the grounds of the Employers action.

b. The Owner/Employer is not bound to accept the lowest or any bid.

9. **NOTIFICATION OF AWARD AND SIGNING OF CONTRACT**: Prior to the expiry of the period of Bid validity, the owner / Employer will notify the successful Bidder by registered post / mail that its Bid has been accepted by enclosing detailed order copy in duplicate. This will constitute the formation of the contract and the date of the contract shall be the date of such notification.

10. Agency will be held responsible for any legal cases arise for non-compliance of basic facilities as per the labour act and all the facilities shall be given to the operating staff.

TERMS OF REFERENCE:

I. Background:
Andhra Pradesh Pollution Control Board is the apex body created under Air and Water (Prevention & Control) of Pollution Act. The responsibility has been further emphasized under the Environment (Protection) Act. The Board has 3 Zonal Offices and 13 Regional Offices in the State of Andhra Pradesh.

Bio-medical Waste Management Rules, 2016 were notified on 28.03.2016 under the Environment (Protection) Act, 1986, stipulates that it is the duty of every Health Care Facility (HCF) to establish a barcode system for bags or containers containing biomedical waste (BMW) to be sent out of the premises or place for any purpose. Also, Rule 5 of the BMWM Rules, 2016 stipulates that it is the duty of every Operator of Common Bio-medical Waste Treatment Facility (CBWTF) to establish the barcode system for handling of biomedical waste.

II. Eligibility criteria:

1. The bidder must be a company registered in India under the Companies Act, 1956 for at least last 3 years’ experience in Software Development with the necessary Income Tax, GST registrations.
2. Bidder should have successfully executed similar nature projects in the last 3 years. Preference will be given who have completed similar nature of projects.
3. Joint ventures or Consortiums or Sub contracting are NOT allowed to bid or meet the above eligibility criterion. Bidder should bid on own strength and meet all eligibility criterions.
4. The bidder shall submit a self-declaration for being not under legal action for corrupt or fraudulent practices (blacklisted) by any Ministry/State/ Central Govt./ UT Administration/ Semi Government Organization/ PSU.
5. Average Annual Turnover of the Bidder during last three financial years shall not be less than 20 lakhs.
6. Priority will be given to the firms, who have already developed similar application duly following “Guidelines for Bar Code System for Effective Management of Bio-medical Waste” issued by the CPCB.
7. The bidder must have its own development team.
8. Other Documents (to be submitted by the Pre-qualification criterion for the Bidder
along with the proposal).

III. **Timeline and Deliverables**

- Requirement study, Design, Development and Deployment (go live) of the project should be completed within 2 months
- **Maintenance period of project period - 10 months.**
- Agency has to share the Design Documents based on the APPCB Requirement document for APPCB Review & Sign-off.
- Application Code, Web API’s.
- Deployment document

IV. **PAYMENT**

Payment will be made in following stages.

- 60% of the contract value (plus taxes thereof, less deduction if any) would be released on successful development, implementation, deployment & Go live as per scope of works and acceptance by APPCB.
- 40% of the contract value (plus taxes thereof, less deductions if any) would be released on completion of 12 months from date of award and successful resolution of all issues upto satisfaction of APPCB.

V. **SCOPE OF WORK**

1. Development of an mobile application (Android) and web application for Implementation of Barcode / QR Code Based Bio Medical Waste Management System as per the “Guidelines for Bar Code System for Effective Management of Bio-medical Waste” issued by the CPCB during April-2018. (Annexure- F)
2. The mobile application should be able to integrate to the blue tooth weighing machine to record the weight of the waste.
3. Mobile application shall be able to capture the details of HCF and waste by scanning the bar code / QR code.
4. The software shall be hosted in the APPCB server / cloud after support / maintenance period of 1 year
5. All the data should be stored in the cloud storage space provided by APPCB and shall be made available to all the users at least for a period of five years after the initial maintenance period.
6. GPS location shall be captured whenever scanning of Bar code / QR code to validate the locations of the HCF and CBWTF.
7. Continuous GPS Tracking of vehicles through GPS fixed in the vehicles
8. Capturing of the stack data, incinerator parameters of the CBMWTFs and generation of reports when parameters exceeds the standards stipulated by the APPCB.
9. User should be given an option to export or download all the reports in excel compatible format and also in the mobile application.

10. Consolidation of data generated by the CBWTFs based on barcoding and shall generate day wise / month wise / year wise summary.

11. Capturing of data of IP cameras provided in the CBMWTFs.

12. Auto generation of notices to the HCF, if they do not handover BMW once in 2 days based on barcode/QR code data of CBMWTF.

13. Development of Web APIs as per the requirements to integrate other applications of the APPCB (dash board) if required.

14. Dashboard
   User should be given an option to view the Dashboard for the data summarized and graphically represented.

15. Reports.
   The software should be able to generate with all types of combination like collection reports, missing reports, NIL report, overall reports using the parameters like category of waste, route wise, weight wise, day, month, year wise, location wise etc.

16. Generation any other information as and when requested by APPCB during the maintenance.

17. The Intellectual Property Rights of the application will rest with APPCB. The vendor will provide the source code of the application to APPCB at the time of sign-off.

18. The developer shall interact with APPCB officials and incorporate any suggestions / modifications without any extra cost.
ANNEXURE – A

PRICE BID

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<th>Sl.No.</th>
<th>Description of Item</th>
<th>No.</th>
<th>Amount (in Rs.)</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>Software design, development, and implementation for web Application &amp; mobile application including Security Audit and SSL certificate with 1 year maintenance / support</td>
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<td>2.</td>
<td>Cost per year for Maintenance of software after completion of 1 year support for 3 years</td>
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<td></td>
<td><strong>Total</strong></td>
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Annexure –B

UNDEARTAKING

To

The Member Secretary,
Andhra Pradesh Pollution Control Board,
Tender No.______________
For______________

Sir,

I, Shri ____________________________, on behalf of M/s. ______ ____________________________, having registered office at ____________________________ and branch office at------------------------, do hereby declare that I have gone through the terms and conditions mentioned for the above and undertake to comply with all tender terms and conditions. The rates quoted by me/us are valid and binding on me/us for acceptance for a period of ___year from the date of award of contract to us.

We agree to the conditions of the tender under which the EARNEST MONEY DEPOSIT and PERFORMANCE SECURITY DEPOSIT shall be forfeited by us.

The tender inviting authority has the right to accept or reject any or all the tenders without assigning any reason.

We understand all the terms and conditions of the contract and bind myself/ourselves to abide by them.

We hereby declare that there is no vigilance/CBI or court case pending/contemplated against us at the moment.

SIGNATURE : 

NAME & DESIGNATION : 

DATE : 

NAME & ADDRESS OF THE FIRM :
### Annexure C

**Information of the Bidder**

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1</td>
<td>Name of the Bidder</td>
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<td>Registration No and Valid Up to</td>
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<td>3</td>
<td>Address of the Registered Office</td>
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<td>Official Email ID:</td>
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<td>4</td>
<td>Year of Establishment</td>
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<td>5</td>
<td>Type of Organization (Govt. Undertaking/ Corporation/ Public Limited/ Private Limited)</td>
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<td>6</td>
<td>Name &amp; Designation of the Authorized Signatory</td>
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<td>7</td>
<td>Contact Person</td>
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<td>8</td>
<td>Website</td>
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<tr>
<td>9</td>
<td>Date of Operational of Service in India</td>
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<tr>
<td>10</td>
<td>Brief Description of the organization</td>
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</tbody>
</table>
**Annexure D**

Detail list of Projects related to implementation of bio medical waste management in software/mobile app development/tracking/bar code system development:

<table>
<thead>
<tr>
<th>Sl</th>
<th>Name of the Project</th>
<th>Project executed for</th>
<th>Brief Description of the Project</th>
<th>Technical Specification including technology used</th>
<th>Duration of the Project</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
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**Note:** Supporting documents like present works under execution/under contract, Completion Certificate, satisfactory certificates in the similar field at least.

**Annexure E**

**Annual Turnover Statement**

The Annual Turnover of M/s_________________________ for the past three years and concurrent commitment for the current financial year are given below and certified that the statement is true and correct.

<table>
<thead>
<tr>
<th>Sl</th>
<th>Year</th>
<th>Turnover (Rs. In Lakh)</th>
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<td></td>
<td></td>
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<td>3</td>
<td></td>
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<tr>
<td></td>
<td>Total</td>
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</tbody>
</table>

Average turnover per annum

Date: __________________________

Signature of Auditor/Chartered Accountant

Seal: __________________________

(Name in Capital)
## Annexure- F

### Extract of the CPCB Guidelines for Bar Code System for Effective Management of Bio-medical Waste

#### CONTENTS

<table>
<thead>
<tr>
<th>S.No</th>
<th>Particulars</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Need for the Bar Code System</td>
</tr>
<tr>
<td>3</td>
<td>Stakeholders responsible for Implementation of the Bar Code System</td>
</tr>
<tr>
<td>4</td>
<td>Bar Code Label</td>
</tr>
<tr>
<td>5</td>
<td>Implementation of Bar Code Based Waste Management System</td>
</tr>
<tr>
<td>6</td>
<td>Specifications of the Bar code Scanner and/or App based mobile scanner</td>
</tr>
<tr>
<td>7</td>
<td>Responsibility of the Occupier/Operator of a CBWTF</td>
</tr>
<tr>
<td>8</td>
<td>Flow-chart of implementing Bar coding system</td>
</tr>
<tr>
<td>9</td>
<td>Time frame for compliance to the Guidelines</td>
</tr>
<tr>
<td>10</td>
<td>Actions in case of violation of bar code system</td>
</tr>
<tr>
<td>11</td>
<td>Data maintenance and output formats</td>
</tr>
<tr>
<td>12</td>
<td>Additional Optional Features</td>
</tr>
</tbody>
</table>

#### List of Figures

- **Figure 1.** Typical Bar Code or QR Code label
- **Figure 2.** Dedicated App based Mobile barcode scanner
- **Figure 3.** Dedicated bar code scanner used for collection of waste from HCFs
- **Figure 4.** Responsible agencies for implementation of the Bar Code System
- **Figure 5.** Implementation of the Bar Code System

#### List of Annexures

- **Annexure-I:** Name of the State and the respective Code
- **Annexure-II:** Format for Daily Report of BMW Management
Guidelines for Bar Code System for Effective Management of Bio-medical Waste

1. Introduction

Bio-medical Waste Management Rules, 2016 notified on 28.03.2016 and as amended thereof under the Environment (Protection) Act, 1986, stipulates that it is the duty of every Health Care Facility (HCF) to establish a bar code system for bags or containers containing biomedical waste (BMW) to be sent out of the premises or place for any purpose, by 27.03.2019. Also, Rule 5 of the BMWM Rules, 2016 stipulates that it is the duty of the every Operator of Common Bio-medical Waste Treatment Facility (CBWTF) to establish bar code system for handling of bio-medical waste.

These guidelines have been prepared to facilitate and provide guidance to both the Occupier as well as Operator of CBWTF to establish bar code system and also to have uniformity in adoption of the bar code system throughout the country, thereby ensuring effective enforcement of the BMWM Rules, 2016.

2. Need for Bar Code System

Bar code system would help in accounting the quantity of biomedical waste being collected, treated and disposed. This system would also help the prescribed authorities in monitoring the implementation of BMWM Rules, 2016. The benefits of Bar code system are summarised below;

(i) Tracking of biomedical waste from source of generation to intended destination for final treatment and disposal;
(ii) Daily check on the Occupier, transporter (involved in transportation of bio-medical waste within HCF as well as transportation of bio-medical waste from HCF to the CBWTF premises) and Operator of a CBWTF;
(iii) Preventing pilferage of bio-medical waste at HCFs as well as during transportation of waste from HCF to the CBWTF;
(iv) Keeping record of visits made by CBWTF to the member HCFs for collection of waste;
(v) Identification of source of generation of bio-medical waste in case waste is disposed of improperly;
(vi) Creates real time online monitoring of waste generation, collection, transportation, treatment and disposal; and
(vii) Quantification of bio-medical waste generated, colour coding-wise waste handed over to the CBWTF operator by the Occupier and waste collected daily by the Operator of a CBWTF from the member HCFs for further treatment and disposal.

3. Stakeholders responsible for Implementation of the Bar Code System

According to BMWM Rules, 2016 as amended, following stakeholders are responsible for implementation of the Bar Code system as detailed below:

(a) Prescribed Authority: The State Pollution Control Board (SPCB) in respect of the State, Pollution Control Committee (PCC) in respect of the Union Territory (UT) and Director General, Armed Forces Medical Services (DGAFMS) in respect of Armed Forces Health Care Establishments fall under the jurisdiction of the Ministry of Defense are the prescribed authority for overall enforcement of the BMWM Rules, 2016 including implementation of Bar code system.

(b) Health Care Facility: The person having administrative control over the institution and the premises generating bio-medical waste, which includes a hospital, nursing home, clinic, dispensary, veterinary institution, animal house, pathological laboratory, blood bank, health care facility and clinical establishment, is responsible to implement bar code labelling system.

(c) Operator of a Common Bio-medical Waste Treatment Facility (CBWTF): The person who owns or controls a Common Bio-medical Waste Treatment Facility (CBWTF) for the collection, reception, storage, transport, treatment and disposal or any other form of handling of bio-medical waste is also responsible for implementing a Bar coding system.

BMWM Rules does not stipulate any responsibility to the bar code vendor (that is a person supplying and distributing bar coded bags or container with bar coded labels). However, such vendors may provide bar code labels compatible with bar-code management system software and in accordance with these guidelines.

4. Bar Code Label

1. Bar code labeling may be of two types as given below

(i) Bar code or QR code label can be pre-printed directly on the designated colour coded bags /containers, which may be procured by HCF through the Operator of a CBWTF providing services to them or through any vendor, fulfilling the specifications stipulated under these guidelines; or
Bar code or QR code labels can be pasted on the designated colour coded bags/containers, which can be procured by the HCF either through the Operator of a CBWTF providing treatment services to the HCF or through Vendor.

In both cases, thickness of colour coded bag used for segregation and handling of bio-medical waste should be as per Plastic Waste Management Rules, 2016 as amended thereof i.e. equal to or more than 50 µ.

The charges for bar coded labels or pre-printed bar coded label or QR code label may be levied by the Operator of a CBWTF or a Vendor as per the prevailing rates to the Occupier or as per the agreement between the Occupier and Operator of CBWTF/Vendor. Vendors shall consult the CBWTF and the Software Provider so as to ensure compatibility with software system being adopted by Operator of CBWTF.

2. Specifications of Bar-code or QR Code label:-

The Bar code label for use on the colour coded bags or containers for handling bio-medical waste should have following specifications;

a) **Colour mark on the label:** A colour mark or text is required on bar code label for easy identification of the bar code (by the workers handling bio-medical waste) with designated colour coded bag or container. The bar code should have a colour mark (in Yellow/Red/White/Blue) in the form of block of size at least 7 mm X 7 mm or Text of font size 12 specifying the colour of the BMW in the bags or containers. The colour mark or Text shall be placed at the top left corner of the bar code label.

| YELLOW | OR | RED | OR | WHITE | OR | BLUE | OR | C |

In case of cytotoxic drugs, the alphabet ‘C’ should be printed on yellow colour block.

In case of B/W label, colour mark can be specified in the form of ‘Text’ specifying the colour of BMW waste as “YELLOW” / “RED” / “WHITE” / “BLUE” printed on top left side of the bar code label.

| YELLOW | OR | RED | OR | WHITE | OR | BLUE | OR | YELLOW(C) |
b) **Unique Number of the HCF and its specification:** Unique number to each HCF shall be developed and provided by concerned SPCB/PCC/DGAFMS. Unique number can be produced based on following criteria:-

i. **Name of the Health Care Facility (HCF):** The name of the HCF shall be indicated by first five alphabets in the name of the by the HCF. In case the name of HCF is less than 5 letters, the rest of spaces may be filled with *. (E.g., All India Institute of Medical Sciences-ALLIN). Followed by;

ii. **Name of the Place where HCF is located:** Name of the place where HCF is located shall be indicated by 6 digit local Pincode provided by Postal department. Followed by;

iii. **Name of the State/UT :** Name of the State/UT should be in the form of two digit alphabetical number (as given at Annexure-I). Followed by;

iv. **Type of HCF:** Type of HCF should be in the form of alphabetical number in capital but not more than two letter i.e., first two letters of a type of HCF/first letter in two words of a HCF) as given below:

<table>
<thead>
<tr>
<th>BH</th>
<th>Bedded Hospital</th>
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<tbody>
<tr>
<td>CL</td>
<td>Clinic</td>
</tr>
<tr>
<td>DI</td>
<td>Dispensary</td>
</tr>
<tr>
<td>HO</td>
<td>Homeopathy</td>
</tr>
<tr>
<td>MH</td>
<td>Mobile Hospital</td>
</tr>
<tr>
<td>SI</td>
<td>Siddha</td>
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<tr>
<td>UN</td>
<td>Unani</td>
</tr>
<tr>
<td>VH</td>
<td>Veterinary Hospital</td>
</tr>
<tr>
<td>YO</td>
<td>Yoga</td>
</tr>
<tr>
<td>AH</td>
<td>Animal House</td>
</tr>
<tr>
<td>BB</td>
<td>Blood Bank</td>
</tr>
<tr>
<td>DH</td>
<td>Dental Hospital</td>
</tr>
<tr>
<td>NH</td>
<td>Nursing Home</td>
</tr>
<tr>
<td>PL</td>
<td>Pathological Laboratory</td>
</tr>
<tr>
<td>FA</td>
<td>Institutions/Schools/Companies etc. with First Aid facilities</td>
</tr>
<tr>
<td>HC</td>
<td>Health Camp</td>
</tr>
</tbody>
</table>

and followed by;
v. **Numerical Number of the HCF:** Numerical number of the health care facility shall not be more than five numerical numbers to be assigned to the HCF in between i.e., 00001 to 99999.

vi. Concerned SPCB/PCC shall upload a list of HCFs along with their unique number of HCF at their website. In case of long list, SPCBs may provide search option on their website for retrieving unique code vis-à-vis name of HCF.

c) **Label sequence Number:** CBWTFs should use central software to generate unique label sequential number. The operator of CBWTF should provide range of such sequence numbers to label vendors to produce labels or produce labels by themselves. The records of label sequence numbers and to whom allotted should be maintained for verification of SPCBs/PCCs.

**Eg.** *For handling of yellow colour bio-medical waste bag by a bedded hospital viz., All India Institute of Medical Sciences (ALLIN) located at New Delhi, Delhi State (DH) and having unique number (say 00578), in such a case, the bar code or QR code label shall be as given in Figure 1 below*

![Figure 1. Typical Bar code or QR Code label](image)

**d) Specifications for the bar code label:** In addition to the specification of Bar code as given at Sl.No. 4 (a), the bar code label should have following specifications as detailed below:

i. The bar code label should be pasted only at the centre or close to centre of the colour coded bag or container prescribed under the BMWM Rules, 2016 and further amendments made thereof.
ii. Size of bar code label should be such that it should be able to accommodate desired information specified in this section.

iii. The bar code / QR code should be black in colour and its background should be white colour and it should be clearly legible on the label.

iv. The bar code label should be tamper proof, water proof and its colour should not be faded in due course of at least for 48 hours after its use.

v. The bar code label should be able to resist the prevailing atmospheric temperatures and should not fade its colour till its end of life.

vi. Bar code labels should not have any traces of heavy metals or any other objectionable chemical constituent.

vii. All bar coded labels should be of good quality preferably avery chromo paper label having specifications prescribed under these guidelines.

viii. The adhesive used for bar code label should be pressure sensitive, tear resistance and should be of acrylic based adhesive and after use of labels on the colour coded bag (s) or container (s), the label should not peel off on its own or by normal abrasion during handling.

5. Implementation of Bar Code Based Waste Management System

Implementation of the bar code system is the joint responsibility of the Occupier as well as Operator of a CBWTF as prescribed under the BMWM Rules, 2016 as amended thereof. Bar Code Based Waste Management software should be installed and operated by the CBWTF who is providing services of bio-medical waste treatment and disposal. Each member HCF shall obtain access to the Bar Code Based Waste Management System from the facility operator. Requirements of barcode based waste management system and the role of HCFs and the Operator of CBWTF are given below:

(a) Healthcare Facilities;

i. In case of Health Care Facilities (HCFs) having 30 or more no. of beds shall have to procure their own digital weighing machine and bar code scanner (scanning equipment or app based mobile scanner). The weighing machine and scanner unit shall have wired or wireless connection and the data pertaining to the weight of the scanned bags should get transferred automatically. Also, the HCF is required to
scan all the bar coded bags containing bio-medical waste. Upon scanning of all the bags by the HCF, the data shall be transmitted to the data base of bar code waste management system, however, the data gets lodged into the data base only after the operator of the facility accepts the waste on his console and generates waste acceptance receipt. The waste acceptance receipt shall be printed (it should be clearly legible and should not fade atleast for a period of five years) on the spot and handed over to the HCF before departure of the transportation vehicle from the premises. Such receipt can also be generated digitally and sent by e-mail to all the concerned.

ii. Whereas, HCFs having < 30 no. of beds as well as all other Occupiers as defined under the BMWM Rules, 2016, are not required to scan their bags containing biomedical waste. Same shall be done by the CBWTF operator on arrival at the premises. The CBWTF shall always carry scanning and weighing machines alongwith portable printer (connected with wired or wireless systems with automatic transfer of data pertaining to weight of scanned bags). The Occupier shall obtain receipt printed by facility operator prior to his departure from HCF premises (the receipt should be clearly legible and should not fade atleast for a period of five years). The data gets lodged into the data base once the waste picker (CBWTF Operator) generates waste acceptance receipt.

iii. Obtain access Login and password for Bar Code Based Waste Management System software from the CBWTF Operator.

iv. Collect proof (counter signed by the CBWTF Operator) of waste collection or Waste acceptance receipt comprise of date, time, no. of bags, total weight of colour coded bags/containers.

v. Generate reports from Bar Code Based Waste Management System and maintain records periodically and update in the website.

vi. In case of non-availability of wireless weighing machine, the scanner system should have an option of manual entry of data pertaining to weight of scanned bags using conventional weighing machine.

(b) Operator of CBWTFs

i. The Operator of a CBWTF should purchase and operate Bar Code Based Waste Management System software. The software should support multiple user logins for each HCF (Occupier), admin login and regulatory login for respective SPCB/PCC/DGAFMS, CPCB, MoEF & CC, Central/State Health Departments. Such logins should be provided to the regulatory authorities voluntarily without any
charges. The application software should be loaded at any cloud server or servers of SPCB/PCC as per the discretion of SPCBs/PCCs.

ii. The CBWTF Operator shall procure dedicated bar code scanners or develop suitable app for scanning with mobile phone and integration with central software.

iii. In case of hospitals i.e., < 30 no. of beds and other HCFs as defined under the BMWM Rules, 2016 and further amendments made thereof, the Operator of a CBWTF providing treatment services to such HCFs shall scan the bar coded bags/containers containing bio-medical waste.

iv. The CBWTF Operator shall have to carry scanner along with printer and weighing machine in its transportation vehicle while it is used for collection of waste from member HCFs in accordance with BMWM Rules, 2016 and further amendments made thereof and the CBWTF Operator shall maintain all the records as per BMWM Rules.

v. Upon completion of scanning and weighing all bags/containers, the scanner system should generate print of a waste receipt automatically which shall be signed and handed over to the HCF immediately. The Operator shall also send the daily waste collection statement or monthly comprehensive statement by email periodically to the Occupier and such data to be maintained in the bar code waste management system.

vi. Upon receipt of the waste at the facility, each bag shall have to be scanned by the CBWTF Operator prior to its treatment so as to ensure no pilferage during transportation between HCFs and CBWTF premises and updating of data in the bar code waste management system. For this purpose, the CBWTF operator may explore possibility of installation of automatically scanned verifiers if feasible.

vii. In case of failure to re-scan of waste at CBWTF for more than 24 hours after collection, an alert should be sent to SPCBs/PCCs.

viii. The Operator of a CBWTF should have adequate hardware and all necessary provision for maintaining the bar code based waste management system.

ix. The CBWTF Operator shall have to maintain all the records for a period of five years as per BMWM Rules, 2016.

6. Specifications of the Bar code Scanner and/or App based mobile scanner
Dedicated Bar code Scanner and/or Bar Code Scanner Based Mobile App should have the following provisions:

i. The bar code scanner should have the provision of data storage (in case of problem in server connectivity) for its retrieval, as and when required. Once the server system is restored, stored data should be transferred immediately to the server.

ii. Bar code Scanner and/or Bar Code Scanner Based Mobile App. should preferably have connectivity (wire or wireless) with the digital weighing machine.

iii. For each bag scanned by the Bar code scanner and/or Bar Code Scanner Based Mobile App. should automatically transfer the information (which include label information, date, time and weight of each bag/container) to centrally located Bar Code Based Waste Management System software. There should not be any scope for manual intervention of the Occupier/Operator of a CBWTF with respect to the data transfer.

iv. If the barcode scanner/app has any breakdown due to problem in network or app or scanner software in transferring the data to the server, in such a case there should be a provision for updating the information through alternate means with prior intimation by the Operator of a CBWTF to SPCB/PCC/DGAFMS.

v. Upon scanning the barcode label, the software system should capture fixed barcode label data (sequence number of label, name of HCF, code of HCF, type of HCF, colour code of waste and location) along with dynamic data pertaining to weight, date, time and GPS coordinates of each bag/container scanned.

vi. There should preferably be wire or wireless based connectivity between bar code scanner and weighing machine. The Bar code waste management system should also support manual data entry only in case of weight input, where digital weighing machines could not be provided by CBWTF operator or procured by the Occupier.

vii. Upon receipt of waste by the CBWTF operator, the system should generate print out of waste receipt at the designated waste collection point or shall send auto-generated receipt by e-mail to the concerned Health Care Facility.

(i) App based Mobile bar code scanner

In this system, app based mobile bar code scanner automatically synchronizes with Android phone and the user can capture bar code or QR code data and weight automatically. There can also be a provision for manual entry of weight data. App based
mobile bar code scanner is given in Figure 2. Also, the app based mobile bar code scanner should require following hardware:-

- 1 GB and above internal memory or minimum memory should be able to retrieve the 2 to 3 months data
- 5+ MP camera
- AGPS or GPS supported
- Internet 2G and GPRS
- Bluetooth 2.0

![Figure 2: Dedicated App based Mobile barcode scanner](image)

(ii) Dedicated bar code scanner

In this system, the bag is kept on weighing scale and scanned by scanner device by the person collecting waste. Weight of bio-medical waste is automatically transferred from weighing scale to device along with bar code or QR code information. There can also be a provision of manual entry of weight data. A dedicated bar code scanner is given in Figure 3. Also, the bar code scanner should require following hardware:-

- 1 GB and above internal memory or minimum memory should be able to retrieve the 2 to 3 months data
- 2G and GPRS
- AGPS or GPS supported

![Figure 3: Dedicated bar code scanner used for collection of waste from HCFs](image)
(iii) Digital Printer

Dedicated bar code scanner can have a provision of in-built printer or it can have wired or wireless connectivity to printer. App based bar code scanner if used by facility operator should also have provision of printing receipts.

(iv) Weighing machine

Weighing machine should be able to weigh about 25 Kg (max.), with 0.05 Kg accuracy and have provision for connectivity with bar-code scanner.

7. Responsibility of the Occupier/Operator of a CBWTF

Responsibility of the Occupier and Operator of a CBWTF with regard to the implementation of Bar Code system is given Figure 4 as well as details are given in the subsequent paras:

![Figure 4. Responsibilities agencies for implementation of the Bar Code System](image)

(i) Responsibility of the Occupier w.r.to the Bar Code System
- Procurement of the Bar Coded Labels or Pre-printed colour coded Bags and containers fulfilling the specification as given under these guidelines from the vendor (s) or the operator of CBWTF on charge basis is the sole responsibility of the occupier;

- Intimate prescribed authority about the bar coded labels or pre-printed bar coded bags or containers as and when procured.

- Ensure use of bar coded label or pre-printed bar coded and specified colour coded bag or container for segregation of waste at source of its generation.

- A representative of HCF to ensure that all the bags and containers are scanned at waste collection point. He shall also collect waste collection receipt generated by waste picker (CBWTF Operator).

- In case of Health Care Facility (with less than 30 beds) or clinics or laboratories, concerned HCF /Clinic/Laboratory is not required to pre-scan the bags, the same shall be carried out by waste picker after arrival at site.

- In case of Health Care Facility (with more than 30 beds) it is the responsibility of the Occupier to scan the bags containing bio-medical waste.

- In any State/UT, where CBWTF is not accessible to the HCFs, in such a case, the respective HCF is required to scan the bar coded bags on their own prior to disposal at their captive facilities. In such case, the bar code waste management system operated by SPCB/PCC / DGAFS shall receive the data.

- While scanning the bar coded bags (more than 30 bed HCFs), it shall be ensured that the waste handlers shall have adequate PPEs (gloves, goggles, mask, aprons and safety shoes).

(ii) Responsibility of the Operator of CBWTF w.r.to the Bar Code System

- Supply of Bar Coded Labels or Pre-printed colour coded Bags and containers fulfilling the specification as given under these guidelines to the Occupier (s) or member HCFs of the facility, on charge basis, and on demand. However, the Occupier may also opt to procure directly from the vendors.

- Intimate prescribed authority (i.e., SPCB/PCC) about the launch of bar coded based waste management system.

- To accept only the specified colour coded bags or containers labelled with indicated bar code system or pre-printed bar coded specified colour coded bag or container.
Scan all such bio-medical waste collected in the specified colour coded bags or container at the waste collection point only and generate waste acceptance receipt.

Ensure that all the data should be stored and made available to all the users or member HCFs, atleast for a period of five years.

Access to the software system should be provided to the prescribed authority i.e. SPCB/PCC, CPCB, MoEF & CC, Central/State Health Departments) voluntarily.

To ensure procurement of standby or spare hardware like Bar-code scanners and weighing balance etc. to ensure hassle free collection of bio-medical waste in case of break-down.

In case of bedded Health Care Facility (with more than 30 no. of beds), the hospital authorities are responsible for scanning of all the bar coded bags/containers containing bio-medical waste.

The Operator is required to re-scan all the bags at the facility to report the activity of final treatment or disposal.

While scanning the bar coded bags (more than 30 bed HCFs), it shall be ensured that the representative of the CBWTF Operator (waste pickers) shall have adequate PPEs (gloves, goggles, mask, aprons and safety shoes).

(iii) **Responsibility of the supplier or vendor of the Bar Code System:**

The vendor can supply bar coded label or Pre-printed bar coded Bags and containers fulfilling the specification as given in these guidelines. Such labels should be printed only in consultation with CBWTF Operator who has installed bar code based waste management software.

8. **Flow-chart of implementing Bar coding system**

For easy understanding of the bar coding system for its implementation, the procedure to be adopted by the Occupier or Operator of a CBWTF is shown in a flow-chart given at Figure 5 below
9. **Time frame for compliance to the Guidelines**

As per BMWM Rules, 2016 as amended all the Occupiers and Operator of a CBWTF are required to implement barcode system by 27/03/2019.

10. **Actions in case of violation of bar code system**

In case of improper operation of the Bar-code Based Software by either occupier /operator of CBWTF, the Prescribed Authority may take action against the responsible person(s) as per Rule 18 of the BMW Rules, 2016 and further amendments made thereof.

11. **Data maintenance and output formats**

Barcode system should have quarry menu for verification or tracking of waste bags through bar-code label information. The software system should also generate standard reports as may be required for SPCBs/PCCs.
A format for generating daily report on biomedical waste generated, collected and treated or disposed by a CBWTF is given at Annexure-II. The software should also have features for generating user specific reports both in the form of data sheets as well as graphs.

12. Additional Optional Features

The software provided for tracking of bio-medical waste using bar code system can have an additional features for tracking bar coded bags or containers within the HCF prior to hand over to the representative of the CBWTF (waste picker). Such tracking would avoid pilferage of recyclable bio-medical waste (red category) prior to reaching waste collection point.

--- OO ---

Annexure-I

Name of the State/UT and the respective Code

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the State/UT</th>
<th>State/UT Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Andhra Pradesh</td>
<td>AP</td>
</tr>
</tbody>
</table>
## Format for Daily Report of BMW Management

<table>
<thead>
<tr>
<th>S. No</th>
<th>Name &amp; Address of the HCF</th>
<th>Type of HCF</th>
<th>Details of Bio medical Generated by the HCF (Qty. of BMW in Kg)</th>
<th>Details of Bio medical Waste received by the CBWTF</th>
<th>Difference in waste collected and received (+/- in Kg)</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td>Date</td>
<td>Time</td>
<td>No of Bags</td>
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### Notes
- Date: 
- Time: 
- Yellow: No of Bags, Quantity
- Red: No of Bags, Quantity
- White: No of Bags, Quantity
- Blue: No of Bags, Quantity
- Yellow: No of Bags, Quantity
- Red: No of Bags, Quantity
- White: No of Bags, Quantity
- Blue: No of Bags, Quantity
- Difference: (+/- in Kg)
**Checklist to Bidders:**

I. Annexure – A : Price Bid
II. Annexure – B : Undertaking
III. Annexure – C : Information of the bidder
IV. Annexure – D : Detail list of projects related to implementation of BMW
V. Annexure – E : Annual Turn over statement
VI. Tender document fee
VII. DD / BG for EMD
VIII. Self declaration (corrupt or fraudulent practices)
IX. Photo type presentation on implementation of Methodology, Work plan etc.
X. Any other documents as per the tender document
XI. Submission of technical bid to the tender inviting authority