



**Revised National Tuberculosis
Control Programme**

**ENVIRONMENT ASSESSMENT AND BIOMEDICAL WASTE MANAGEMENT
REPORT**



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ENVIRONMENTAL ASSESSMENT REPORT

Introduction

Biomedical Waste Management (BMWM) is a priority for all federal and state health programs within the Indian health system infrastructure. Bio-medical waste refers to all wastes generated from healthcare and health research facilities and associated laboratories. While most of this is communal waste, a small percentage can be deemed infectious and/or hazardous. These include infected sharps and wastes with infectious, hazardous, radioactive, or genotoxic characteristics, which if inadequately treated and managed can have adverse impact on the environment and on public health through air, land and water pollution. Therefore institutionalizing effective waste management systems in all healthcare facilities is a key prerequisite to improving efficiency and effectiveness of healthcare.

The regulatory framework for environmental management in the health sector in India is provided by the Bio-Medical Waste (Management and Handling) Rules (2011)¹, which apply to every occupier/operator generating biomedical waste (other than radioactive waste, hazardous waste, municipal solid waste and battery waste which is dealt under respective rules) irrespective of the quantum of wastes generated. The Rules define bio-medical waste as “any waste which is generated during diagnosis, treatment or immunization of human beings or animals, or in research activities or in the production or testing of biological and including categories mentioned in schedule-I of the rules”. The Rules, besides identifying eight categories of waste, also recommend treatment and disposal methods and the standards to be laid down for the same.

In 2007, the National Rural Health Mission (NRHM) under MOHFW, with technical and financial support of the World Bank and the Department of International Development (DFID), India, developed and adopted an Infection Management and Environment Plan² (IMEP) which defines a framework for implementation of infection control and waste management in healthcare facilities. The IMEP contains a Policy Framework as well as the operational guidelines for Sub Centres (SCs), Primary Health Centres (PHCs) and Community Health centres (CHCs) to manage infectious waste in a hygienic, safe and environmentally sound manner. The budget codes of A.9.4 (for IMEP training) and B16.1.4 (for procurement of goods, consumables and services) have been instituted within the NRHM budget, allowing states to seek central financing for implementation of IMEP activities.

The Indian Public Health Standards (IPHS)³ are a set of uniform standards developed and adopted to improve the quality of health care delivery in the public health care settings in India. IPHS for Sub-centres, Primary Health Centres (PHCs), Community Health Centres

¹ <http://moef.nic.in/downloads/public-information/salient-features-draft-bmwmb.pdf>. The Government of India has notified the new bio-medical waste (management and handling) Rules, 2011 under the Environment (Protection) Act, 1986 to replace the earlier Bio-Medical Waste (Management and Handling) Rules, 1998 and the amendments thereof.

² <http://nrhm.gov.in/about-nrhm/guidelines/nrhm-guidelines/infection-management-and-environment-plan-imep.html>

³ <http://nrhm.gov.in/about-nrhm/guidelines/indian-public-health-standards.html>

(CHCs), Sub-District and District Hospitals, first developed in 2007 and revised in 2012, serve as a reference point for public health care infrastructure planning and up-gradation under NRHM. The IPHS provides detailed guidance to public health facilities on infection control and waste management, by way of (i) categorization, segregation, collection, storage, transportation and treatment of bio-medical wastes; (ii) list of furniture, equipment, consumables, reagents and diagnostic kits for IMEP implementation; (iii) universal precautions that must be followed for IMEP; (iii) checklists for internal monitoring of waste disposal; (iv) guidelines for airborne infection control; (v) guidelines on reduction of environmental pollution due to mercury waste; (vi) standards for establishing supportive infrastructure for bio-medical waste management including burial pits and waste storage facilities; (vii) list of statutory compliances including authorisations that must be secured in support of IMEP; and (viii) proformas for facility surveys on IPHS.

The IPHS and the IMEP framework and guidelines are a basis for health facilities to articulate their human resources, capacity building and infrastructural needs for bio-medical waste management in health facility implementation plans. These plans are aggregated at the block, district and then state level into annual state implementation plans. Based on the approval of the annual implementation plans by NRHM, MoHFW, states through centralized procurement and quarterly delivery of goods/consumables/reagents and decentralized allocation of flexi funds, enable implementation of activities for IMEP and adherence to IPHS.

RNTCP I and II

The first phase of the Revised National Tuberculosis Control Program (RNTCP) (1997-2005), with World Bank financing aimed at ensuring the expansion of quality Directly Observed Treatment Short-course (DOTS) services across the country. The Government of India's (GOI) Eleventh Five Year Plan (2007-12) included continued commitment to TB control and emphasized integration of RNTCP and other disease-specific programs into the National Rural Health Mission (NRHM) that was launched in 2005 (GOI Planning Commission, 2008). The program in its second phase (2006-12) with the World Bank support targeted universal access to quality diagnostics and treatment by consolidating RNTCP services and reaching special groups with quality service provision. Both the programs met with considerable success, evaluating over 55 million people for TB and initiating treatment for over 16 million. Additionally, the program has achieved global targets for 70% case detection rate and 85% cure rate (72% and 88% in 2011 respectively).

National Strategic Plan for TB Control (2012-17)

Building on the success of RNTCP I and II, the National Strategic Plan (2012-17) has been developed with the goal of universal access to quality TB diagnosis and treatment for all TB patients in the community. This entails sustaining the achievements till date, finding unreached TB cases before they can transmit infection, treating TB cases more effectively, and scaling up the response to MDR-TB. To reach these goals, RNTCP will pursue the following objectives:

- Ensure early and improved diagnosis of all TB patients including drug resistant and HIV-associated TB.

- Provide access to high-quality treatment for all diagnosed cases of TB.
- Scale-up access to effective treatment for drug-resistant TB.
- Decrease the morbidity and mortality of HIV-associated TB.
- Extend RNTCP services to patients diagnosed and treated in the private sector.

To achieve the objectives, the plan has identified interventions that have yielded success during RNTCP I and II and ensured that these are either continued or where required, strengthened/intensified to maintain successes in outcomes. Also, challenges faced by the program in key areas of implementation earmarked, and in consultation with various stakeholders interventions proposed to counter them.

The key strategies that have been identified within the NSP include

- Finding more cases earlier;
- Improving access to diagnostic services;
- Making treatment more patient friendly;
- Re-engineering RNTCP systems for NRHM alignment and health systems development;
- Public Private Engagement;
- Expanding urban TB services; and
- Supervision, monitoring, and operations research.

Biomedical Waste Management under RNTCP

The RNTCP, as an integral part of the NRHM is implemented through India's public health system. All disease specific programs integrated under the NRHM are committed to adoption of the IPHS and implementation of the Biomedical Waste Management Rules and the IMEP. The main types of waste generated through RNTCP include human/biological waste (sputum), sharps (needles, glass slides etc.), blister packs and packaging material, plastic residual (disposable syringes, cups, glasses etc.), laboratory and general waste and, construction waste. Treatment of multi-drug resistant TB (MDR-TB) includes inpatient care for which the program is supporting establishment of MDR-TB wards in tertiary care hospitals. This entails airborne infection control measures for the protection of health care staff and other patients following RNTCP guidelines.⁴

As part of second phase of the Bank supported RNTCP, the Central TB Division (CTD) of the MOHFW, developed an Environmental and Bio-medical Waste Management (BMWM) Plan in May 2005. This plan was in line with the IMEP operational guidelines and policy framework and included specific activities to be achieved within agreed time lines. As of 2012, the following progress was achieved by the program in the area of Environment Management:

- 1) Revision of training modules for Medical Officers and Laboratory Technicians with the support of World Health Organization (WHO).

⁴ http://www.tbcindia.nic.in/pdfs/Guidelines_on_Airborne_Infection_Control_April2010Provisional.pdf

- 2) Training of all cadres of health staff using a Training of Trainers approach. This remains an ongoing activity with states using customized approaches to build capacities of health care service providers by leveraging qualified professionals from State Institutes of Health and Family Welfare, State Health Systems Resource Centres, State Pollution Control Boards, Departments of Environment and Forests, relevant departments of recognized universities, technical expertise vested with development partners to train health staff from public health facilities in robust biomedical waste handling and management.
- 3) Centralized procurement of equipment, supplies and consumables for labs, (sputum cups and plastic bags) at the state level with quarterly distribution as per the needs articulated in the annual implementation plans of districts/blocks and health facilities.
- 4) Construction of labs and sputum collection centres in full compliance with the RNTCP guidelines. For proposed new centres, review and approval by a team headed by the State Tuberculosis Officer to ensure compliance with requisite RNTCP guidelines and provides approvals.
- 5) Prioritized Hepatitis B vaccination for all health staff as a preventive/protective measure.
- 6) Dissemination of guidelines, standards, protocols to health facilities to enhance knowledge of health workers and support implementation of IMEP.
- 7) A system for recording and monitoring of waste disposal was initiated in October 2006, and has been continued since.

Monitoring under RNTCP

Bio-medical Waste Management (BMWM) practices are reviewed and monitored during various Common Review Missions (CRM) of NRHM. RNTCP also monitors this through its Joint Monitoring Missions (JMM), Central Internal Evaluations (CIE) as well as during routine field visits.

Environment Assessment 2012

MOHFW had sought an Additional Financing for the second phase of the World Bank engagement with RNTCP in 2011 with a two year extension of the project implementation period. An assessment was undertaken to review implementation of the environmental management under RNTCP. Data from a sample of 40 health facilities where the RNTCP is implemented, across 10 districts (of which, one was tribal) of the country was conducted. Findings from this assessment, updated with the discussions/agreements from the stakeholder consultation held in Delhi on October 24, 2013 provide the status of environment management under NRHM (and through it, RNTCP) with identification areas of focus, under the proposed new World Bank engagement.

Key Findings

- Average inflow of patients in RNTCP centres is 40-45 patients/day.

- **Institutional Set Up:** 59% of the assessed institutions have Bio-Medical Waste Management Monitoring Committee (BMWMC) with a membership of 3-5 persons. In 70% of the institutions where BMWMC is in place, monthly meetings are conducted to review progress and performance with respect to infection control and waste management. In rest of the places meetings are not conducted because of lack of guidance. Jharkhand was the only state found during the assessment having no BMWMC in any of the centres.
- Around 85% of the assessed facilities have secured authorization from respective State Pollution Control Board (SPCB) or have applied for authorization.
- **Knowledge, Attitude & Practices (KAP) and Training of health care providers:** Training materials in support of biomedical waste management were available at hospitals and facilities. The following cadres of health personnel were trained in bio-medical waste management: doctors, staff nurses, pharmacists, lab technicians and institution workers and sanitary workers. Of a total of 2,327 health care providers available at the surveyed health facilities, 1,335 were trained on Bio Medical Waste Management (BMWM). In Jharkhand none of the staff was found trained. Medical Officers at more than 90% of the centres reported that KAP of personnel with respect to BMWM were good. KAP of all the cadres of staff at a few centres in Delhi and Andhra Pradesh was found to be average.
- **Information Education and Communication:** 65% of the surveyed facilities reported that they adequate quantities of IEC materials related to IMEP, while 100% of these have displayed the materials at different sites.
- **Supply of Materials:** In more than 50% of the surveyed institutions, supply of colour coded bins and bags was adequate. Andhra Pradesh and Jharkhand reported inadequate supply of these goods. All the surveyed centres had positioned these bags and bins in strategic locations. 65% of the surveyed institutions had needle destroyers available with them. In over 70% of the centres bags, aprons, masks and gloves were found to be in adequate numbers. Shortages of these were found in some centres of Jharkhand, Andhra Pradesh and one centre of Delhi. Only 40% of surveyed institutions were supplied with a trolley for waste collection. Similarly less than 40% of institutions had a store room for the storage of waste.
- **Planning and Reporting:** Around 65-79% of the surveyed facilities have sanitation and bin plans. Work plan for collection and disposal of waste is prepared at only 50% of the facilities. Post Exposure Prophylaxis (PEP) was available only at only 16% of the surveyed centres. However, 100% of facilities reported having contingency plan for PEP. This facility is generally provided at the nearest ART centres. As part of reporting requirements, needle stick injury registers are maintained at only 37.5% of the centres. All RNTCP facilities maintain four separate registers for recording weight of bio-medical waste collected, lifted by Common Treatment Facilities (CTF) and needle stick injuries amongst staff.

- **Collection of Wastes:** More than 50% of the assessed institutions have contracts with CTFs. Jharkhand was the only state with complete lack of CTF connectivity with institutions. Only 40% of facilities connected with Common Treatment Facilities (CTFs) reported that wastes are collected by the on daily basis while the rest reported that wastes are collected on alternate day basis.
- **Financial Management:** Very few facilities -about 29% - reported that fund release from the NRHM flexipool was irregular and hence payments to CTF were often delayed. Some facilities also reported that CTFs do not submit bills regularly.

Conclusions

- All RNTCP centres are currently practicing bio-medical waste management within the resources made available to them.
- There is variation in the availability of formalized structures within health facilities for planning, coordination, implementation and review of biomedical waste management.
- There is variable knowledge, attitude and practices of both IPHS and IMEP within intra and inter-state health facilities.
- While IEC materials and training modules representative of IPHS and IMEP are available in most states, quality and frequency of training needs to be strengthened to cover the entire health personnel pool and also to institutionalize practices.
- Most health facilities have provision for goods, consumables and reagents supporting implementation of IMEP, however, not in quantities sufficient for entire year of operations quantities.
- There is variable capacity within institutions to effectively plan for and articulate the requirement of resources for robust implementation of IMEP.
- Reporting on bio-medical waste management as an institutional practise requires strengthening.

Recommendations:

As a disease control program under the aegis of NRHM, RNTCP remains committed to adoption of IPHS and implementation of IMEP in all institutions engaged in service delivery under the program. NRHM, through existing mechanisms of training, communication and monitoring and evaluation, would strengthen implementation of IMEP. The specific activities which will be undertaken by RNTCP in coordination with NRHM are enumerated in the Action Plan below.

Stakeholder consultations

The participating stakeholders during a consultation held on October 24, 2013, endorsed the commitment of RNTCP to IPHS and implementation of IMEP for improved quality of care and services under the program. In addition to the activities implemented by public health care facilities in support of IPHS and IMEP, and the emphasis on the recommendations from the environment assessment, the stakeholders suggested additional areas of intervention which could be supported under RNTCP.

Action Plan

S. No.	Activity	Timeline
1.	Coordinate with NRHM to guide health facilities/health personnel to effectively implement IPHS and IMEP biomedical waste management standards	Continuous
2.	Coordinate with NRHM on updating IPHS and IMEP to reflect newly notified Biomedical Waste (Management and Handling) Rules, 2011	September 30, 2014
3.	Coordinate with NRHM on training of health staff in updated IMEP and IPHS guidelines	After guidelines updated
4.	Coordinate with NRHM during PIP preparation trainings to include planning for IMEP implementation	Annual
5.	Incorporate in internal and external reviews of the program, assessment of biomedical waste management and airborne infection control measures as well as administrator and staff feedback	June 30, 2014
6.	Ensure that inpatient wards and labs serving multi-drug resistant TB patients comply with guidelines for airborne infection control	March 31, 2017
7.	Advocate with NRHM for standard specifications so that states are able to procure Quality assured personnel protective equipments.	June 30, 2014
8.	Design and implement mechanisms for surveillance of TB status of health service providers	September 30, 2015
9.	Complete assessment of performance of IMEP implementation utilizing mechanism of Centralized Internal Evaluation	December 31, 2016

Key stakeholders for the implementation IMEP

Levels	Key Stakeholders
National	NRHM and all other programs under it, National Reference Laboratory, National Tuberculosis Institute, Technical Support Group (TSG)
State	NRHM, Hospitals, Intermediate Reference Laboratories, State AIDS Control Society, Public Private Interface Agency (PPIA)
District	Common treatment facilities (CTF), NGOs, District Health Societies , District AIDS Prevention and Control Society (DAPCUs)

Monitoring Mechanism

Both internal and external mechanisms will be leveraged to monitor and review performance of IMEP at health facilities within the RNTCP. Apart from the routine monitoring through Central Internal Evaluations (CIE), the Common Review Missions, Joint Monitoring Missions, and Joint Review Missions will also emphasize review of bio-medical waste management practices.

Financial Implications

Since RNTCTP is a part of general health system, conforming to IPHS and implementation of IMEP is the responsibility of each health facility under the public health system. With the enhancement in capacities of health managers/administrators, health facilities will be better positioned to develop and articulate plans and budgetary requirements in their annual plans for robust implementation of IMEP. The Central TB Division will allocate sufficient budget to support monitoring and review of bio-medical waste management practices through central internal evaluations under the program. Implementation of airborne infection control measures for MDR-TB inpatient wards will be financed under RNTCP's Programmatic Management of Drug-Resistant TB (PMDT) activities.

**Minutes of Stakeholder Consultation for Environment Management Plan for
Accelerating Universal Access to TB Care
October 24, 2013**

Objective: To discuss and update the Environment Management Plan prepared in 2012 for the Additional Financing phase of TB II project by Central TB Division.

Participants: Participant list provided in Annex II

- Minutes:**
- The Additional Deputy Director General, Central TB Division welcomed all stakeholders to the consultation and briefed them about the request from Ministry of Health and Family Welfare to the World Bank for a US\$ 350 million financing in support of the remaining phase of the National Strategic Plan (2012-17) of Revised National Tuberculosis Control Program (RNTCP).
 - The Bank's responsibilities to ensure that all its engagements complied with its safeguards policies were clarified to all stakeholders. The two specific policies which were triggered in the RNTCP II engagement--environment assessment and indigenous peoples were enumerated. The stakeholders were informed of the processes followed by Bank during project preparation to ensure due diligence was done when assessing, planning and reviewing for safeguards compliance.
 - A brief presentation was made to all stakeholders on the activities undertaken within the Environment Management Plan under the World Bank supported RNTCP II (2006-12). The endline environment assessment undertaken by CTD in 2012 to understand knowledge, behaviors and practices of the RNTCP with respect to infection control and waste management, and the constraints in implementation of Infection Management and Environment Plan (IMEP) and the Indian Public Health Standards (IPHS) was discussed with the findings from the assessment and the recommendations to RNTCP shared in detail.
 - It was concurred that RNTCP being under the National Rural Health Mission was committed to implementing the IMEP and the IPHS. It was noted that with the revision in the Biomedical Waste Management Rules in 2011, the guidance on infection control and waste management on IMEP and IPHS is due for revision. It was agreed that RNTCP would facilitate training of all health care staff in the revised guidance and coordinate with NRHM to ensure revision of training modules for health staff. The provision of a budget code available under NRHM to plan and budget for infection control and waste management in the State Project Implementation Plans (PIPs) was highlighted.
 - The need for a consistent focus on infection control and waste management was raised. The importance of surveillance of healthcare workers on a periodic basis and ensuring mechanisms available to healthcare workers to also access preventive care and/or treatment at public health facilities was indicated as an

area that must be prioritized.

- It was agreed that surveillance of health care workers would be introduced in the program in a phased manner.
- The issue of implementation of air borne infection control in Multi-Drug Resistant and Extremely Drug Resistant TB wards as per the policy on air borne infection control was discussed.
- It was agreed that RNTCP would ensure that Air Borne Infection Control guidelines will be diligently applied in the new wards and buildings for MDR and XDR TB.
- The lack of assured supply of personal protective equipment/supplies for health workers was also discussed. The possibility of centralized procurement of PPE/supplies, which could be pursued to ensure consistency in quality and assurance of supply was considered.
- It was agreed to work towards consultation and coordination with NRHM for centralized procurement of PPE/supplies
- The possibility of harnessing the provision of centralized internal evaluation to assess performance of health care providers/health facilities with respect to infection control and waste management was also discussed.
- It was agreed that RNTCP will use the facility to assess practices, identify gaps and offer specific recommendations to both service providers as well as for adoption by RNTCP and NRHM to strengthen infection control and waste management practices under the program.
- The need to review infection control and waste management during internal and external reviews (Joint Review Mission, Common Review Mission etc.) and provide ongoing guidance to public health providers to improve practices was raised. It was recommended that states be provided pointed guidance during the preparation of annual project implementation plans to budget for IMEP with strong justification, such that funds are available to them to implement the EMP.
- The recommendation was positively considered and it was agreed that steps would be taken to strengthen state capacity to plan for and implement IMEP and IPHS
- It was confirmed that the Environment Management Plan developed by CTD would be up dated to reflect the discussions of the day, followed by its disclosure on the www.tbcindia.org site. Simultaneously, the updated plan would be shared with the Bank's Safeguards Specialist and the Regional Safeguards Advisor for their review and No Objection, prior to disclosure by the Bank's Infoshop.

Annex II

**Participants of the Stakeholder Consultation for Environment Action Plan for TB II
October 24, 2013**

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