

## DISPOSAL SYSTEMS

- what exists and at what scale?

TABLE 1: MENSTRUAL WASTE DISPOSAL PRACTICES AMONG ADOLESCENT GIRLS IN INDIA<sup>4</sup>

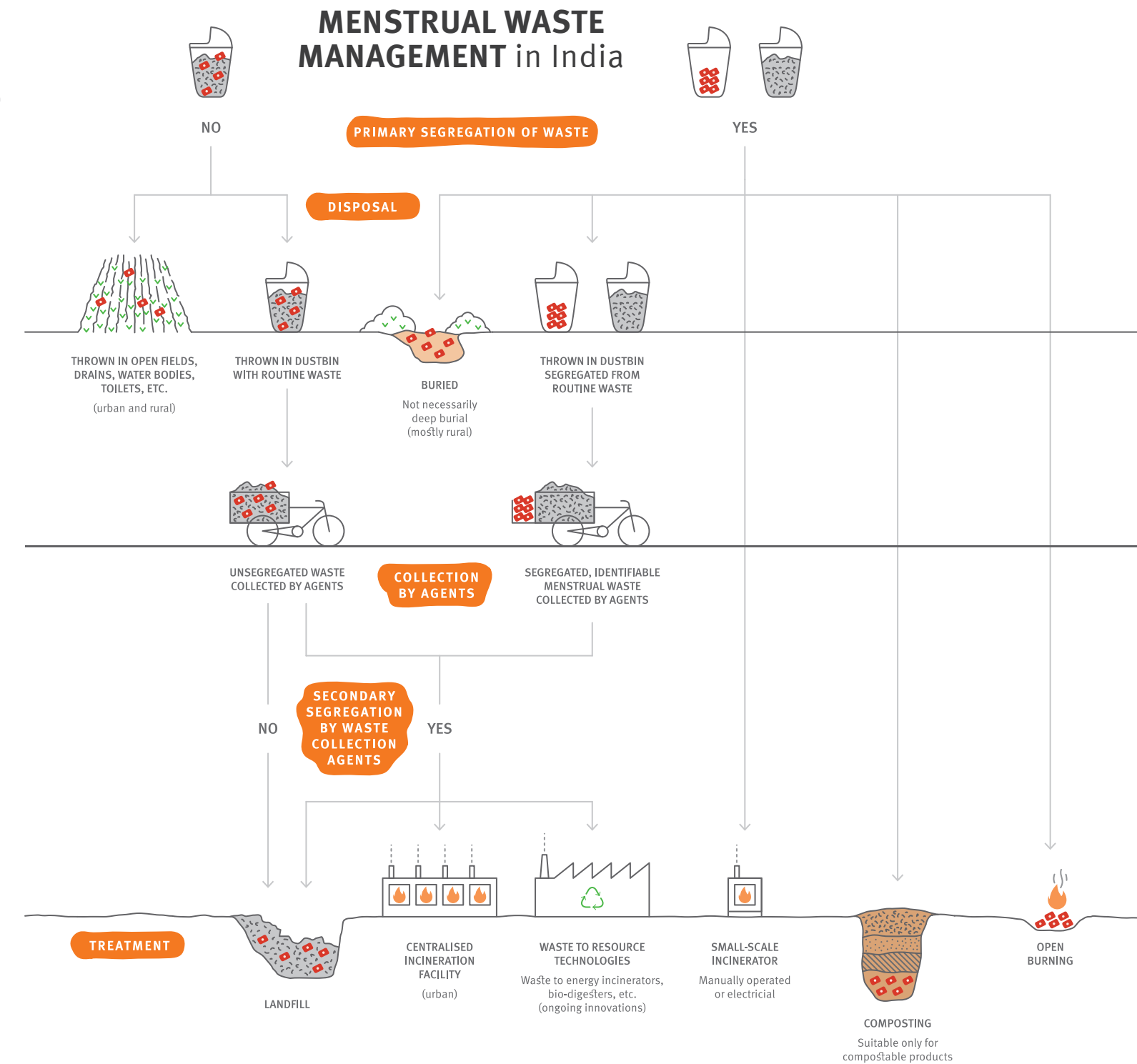
Disposal of menstrual absorbent	Total pooled proportion*	Rural pooled proportion*	Urban pooled proportion*	Slum pooled proportion*	Concerns with disposal method
Throw with routine waste/dustbin	45	28	70	51	Menstrual waste enters the solid waste stream and is subject to the same treatment as other solid waste – placed in landfills to disintegrate over hundreds of years
Thrown away in the open (open spaces, rivers, lakes, wells, roadside etc.)	23	28	15	30	Menstrual waste can contaminate water sources, clog drains
Burning (open)	17	15	23	-	Burning of commercially available pads at low temperatures can create odours and expose nearby population
Burying	25	33	12	-	Burial is not done effectively, and without appropriate composting, waste will take hundreds of years to degrade
In toilets (flushing down the toilet, throwing in pit latrine)	9	10	7	-	Used pads mixed with faecal sludge, complicates disposal of that sludge (in the case of septic tanks) or interferes with the production of usable manure (in the case of leach pits)

Source: van Eijk et al (2016). Menstrual Hygiene management among adolescent girls in India: a systematic review and meta-analysis

\*Pooled proportion is a percentage that has been derived from data in studies included in the above systematic review.

to manage menstrual waste appropriately. However, challenges exist in terms of cost and variations in incinerator technologies and their effectiveness in emission reductions, scale of operations, product use and environmental impact (refer Table 2). What is clear is that the management of menstrual waste is lagging far behind the fast growing

disposable product market. If sanitary pads are to be a safe, hygienic option for girls and women, safe management of menstrual waste must be part of programmatic and policy dialogues. The voices of girls and women, as well as of waste collectors need to be incorporated to ensure that appropriate solutions are implemented.



## • POLICY CONSIDERATION

- Classification of menstrual waste as solid waste, bio-medical waste has implications for how it can be disposed of, transported, contained and finally treated
- Prioritise waste management objective from amongst volume reduction, sterilisation, and changing the physical nature of waste
- Appropriate and safe disposal and treatment value chain needed for urban and rural settings, communities and institutions
- Menstrual waste disposal to consider use of non-biodegradable sanitary pads (increasingly available and preferred for use) as well as bio-degradable, compostable products
- Waste management recommendations to consider effects of disposal and treatment on user as well as the environment
- Test/pilot innovations that are potentially environmentally sound (e.g., waste to energy incinerators, treatment systems that can produce productive waste)

Pushing the Boundaries on the MHM Dialogue in India

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Disposal and Treatment

## MANAGEMENT OF MENSTRUAL WASTE

### Calls to Action

- Management of menstrual waste to include the entire value chain including awareness, access, use, and waste management across urban and rural settings, and communities and institutions.
- Menstrual hygiene management programs to incorporate effects of disposal and treatment for the complete range of menstrual hygiene products (reusable, compostable and non-compostable disposable products) on users and on the environment.
- Clarity and agreement needed on classification of menstrual waste as solid waste or bio-medical waste across government departments and other stakeholders.
- Uniform standards and guidelines to be drafted and implemented for currently available menstrual waste management technologies, especially incinerators, composting pits, and waste to resource technologies
- Catalyse support for research and development of environmentally sound waste management

<sup>4</sup> van Eijk AM, Sivakami M, Thakkar MB, et al. Menstrual hygiene management among adolescent girls in India: a systematic review and metaanalysis. BMJ Open 2016;6: e010290. doi:10.1136/ bmjopen-2015-010290

**INCREASED AWARENESS OF AND ACCESS TO SAFE AND HYGIENIC MENSTRUAL ABSORBENTS IS ESSENTIAL TO PROMOTE MENSTRUAL HYGIENE. THE MENSTRUAL PRODUCT LANDSCAPE IS RAPIDLY CHANGING IN INDIA, WITH MORE GIRLS AND WOMEN OF REPRODUCTIVE AGE HAVING ACCESS TO AND USING DISPOSABLE SANITARY PADS THAN EVER BEFORE.**

The government of India has been a global leader in its concerted efforts to make sanitary pads available to young women across the country, and sanitary pad manufacturers are making a variety of products available in urban as well as rural settings. The latest National Family Health Survey 4 survey (2015-16) reflects such efforts with 57.6 percent of women aged 15-24 years reporting the current use of safe, hygienic products<sup>1</sup>.

Increased availability and use of disposable sanitary pads underscores the need for appropriate and safe management of menstrual waste.

**Two main concerns are central to the management of menstrual waste in India: first, many girls and women lack access to appropriate waste management options that may lead to the unhygienic use of safe absorbents, for instance, girls using a single pad for 12 hours<sup>2</sup>.**

Secondly, the paucity of disposal and treatment options may lead to the unsafe management of a mounting volume of menstrual waste.

If an estimated 121 million girls and women are currently using an average of eight disposable (non-compostable) sanitary pads a month, the waste load generated in India is estimated to be<sup>3</sup>:

• **1.021 BILLION PADS DISPOSED MONTHLY**

• **12.3 BILLION PADS DISPOSED ANNUALLY**

• **113,000 TONNES OF MENSTRUAL WASTE ANNUALLY**

Against this backdrop, two solutions currently exist. Incinerators have emerged as a favoured disposal and treatment option, particularly in schools. With impetus from the Swachh Bharat Mission, specifically the MHM Guidelines for Schools and the recently released gender guidelines by the Ministry of Drinking Water and Sanitation, the use of incinerators is likely to grow. On the other hand, cities like Bangalore and Pune are implementing solid waste interventions to effectively segregate and identify menstrual waste during routine garbage collection. These two solutions meet a growing need

<sup>1</sup> International Institute for Population Sciences (2017). National Family Health Survey -4, 2015-2016: India Fact Sheet.

<sup>2</sup> Based on anecdotal evidence from MHM interventions in India

<sup>3</sup> These figures have been calculated based on the National Family Health Survey 4 data, market penetration data, and census data.

**TABLE 2: OPTIONS FOR MANAGEMENT OF MENSTRUAL WASTE**

	Waste management option	Advantages	Disadvantages	Critical considerations for use
Incinerators	Clay pots (matka)	<ul style="list-style-type: none"> <li>Low-cost</li> <li>Matkas easily available in neighbourhood markets</li> <li>Easy to use, particularly in rural households</li> <li>Use locally available fuel (e.g., paper, kerosene, wood)</li> </ul>	<ul style="list-style-type: none"> <li>No measures to control toxic emissions produced when burning plastics and chlorinated products used in bleaching cellulose. Toxic emissions potentially harmful to human health, especially when incinerator is stalled in populated areas or in households, schools</li> <li>Burns at low temperatures not exceeding 300 degrees Celsius and may not be efficient burners (residues may include ash, crystals, and even charred plastic). Depending on moisture content, may take considerable time to burn. More suitable for unbleached pads and those with high cellulose content, not those with SAP.</li> <li>Ash may not be safe to use for gardening purposes</li> <li>High variability in design- do not adhere to CPCB* standards for emissions</li> <li>Best suited for pads with high cellulose content, not those that have SAP**</li> </ul>	<ul style="list-style-type: none"> <li>Type and composition of product disposed of</li> <li>Setting for use and placement of incinerator in setting</li> <li>Volume of product to be incinerated at one go</li> <li>Minimum and maximum burning temperatures</li> <li>Emission control measures, adherence to CBCP standards</li> <li>Cost</li> <li>Operations and maintenance</li> </ul>
	Low-cost, locally made incinerators <ul style="list-style-type: none"> <li>Ashudhshinashak incinerator</li> <li>Manually operated, fire based incinerators (MHM Guidelines, Technical Guide 2)</li> </ul>	<ul style="list-style-type: none"> <li>Low-cost</li> <li>Easy to install in institutional settings: schools, community toilet complexes</li> <li>Easy to use and maintain</li> <li>Use locally available fuel (e.g., paper)</li> </ul>		
	Electric incinerators <ul style="list-style-type: none"> <li>Lakshmi Associates</li> <li>E.R Ventures</li> <li>Hindustan LifeCell</li> <li>Wager Hygiene</li> </ul>	<ul style="list-style-type: none"> <li>The more expensive incinerators have emission control features (e.g., filters)</li> <li>Runs on electricity, no need for other fuels</li> <li>Installed in institutional settings: schools</li> <li>Some models have quality certifications</li> </ul>	<ul style="list-style-type: none"> <li>Dependent on electricity supply</li> <li>Costly</li> <li>Unclear whether they can efficiently burn pads with high moisture content and SAP</li> <li>Variation in the extent to which these incinerators adhere to CPCB* standards</li> <li>Require trained operator and routine operations and maintenance</li> <li>No standard quality certification</li> </ul>	
	High-temperature incinerators for bio-medical waste <ul style="list-style-type: none"> <li>Bio-medical waste treatment facilities</li> </ul>	<ul style="list-style-type: none"> <li>Waste burned in large scale incinerators designed to deal with bio-medical waste</li> <li>Waste burned together at a central incinerator facility typically located away from populated areas</li> <li>Can incinerate all types of pads (those with high cellulose content, high moisture content, and those with SAP)</li> </ul>	<ul style="list-style-type: none"> <li>Requires collection, storage, transportation of segregated menstrual waste to the central bio-medical waste treatment facility for incineration. Limited facilities exist in India at present</li> <li>Would necessitate classification of menstrual waste as bio-medical waste requiring treatment by all stakeholders</li> </ul>	
	Incinerators with waste to energy technology <ul style="list-style-type: none"> <li>RTI International</li> <li>Shubhankar Gupta and colleagues in West Bengal</li> </ul>	<ul style="list-style-type: none"> <li>Waste is incinerated to produce energy/electricity (i.e., productive use of waste)</li> <li>Combustion happens in highly controlled environments carefully regulating temperature and pressure, potentially controlling for emissions even at low temperatures</li> <li>Innovations in waste to energy incinerators for community and institutional use are underway.</li> <li>Can incinerate all types of pads (those with high cellulose content and those with SAP)</li> </ul>	<ul style="list-style-type: none"> <li>Few waste to energy plants exist in the country, and those that do operate at a large scale at select locations</li> <li>Costly</li> <li>Waste to energy innovations applicable to community and institutional settings are still under development and will take time to pilot, test for efficiency and safety, and be available in the market</li> </ul>	
	Segregation and identification of menstrual waste <ul style="list-style-type: none"> <li>Red Dot Campaign</li> </ul>	<ul style="list-style-type: none"> <li>Used pads are wrapped individually and segregated at source (by the waste generator) to allow for safe collection by waste collectors. Campaigns such as Red Dot Campaign (Pune) call for the identification of menstrual waste with a red dot to alert waste pickers of the nature of waste.</li> <li>Secondary segregation at waste collection centres further separate menstrual waste for final disposal or treatment (i.e., landfill or incineration at a central facility)</li> <li>Option to deal with all types of pads (those with high cellulose content and those with SAP)</li> </ul>	<ul style="list-style-type: none"> <li>Calls for waste generators to be committed to segregating waste, and for producers of disposable sanitary pads to provide covers for easy wrapping and disposal.</li> <li>Less focus on final disposal or effective treatment of segregated menstrual waste – once collected, majority of this waste still goes to a landfill and will take years to disintegrate.</li> <li>Concentrated in select metro cities, with little or no penetration in a majority of cities and rural areas.</li> </ul>	<ul style="list-style-type: none"> <li>Effective source segregation of menstrual products</li> <li>Collection and transportation of segregated waste to central facility</li> <li>Secondary segregation</li> <li>Safe and effective treatment of segregated waste</li> </ul>
	Composting pits for biodegradable menstrual products	Composting pits can be made in communities (both urban and rural), and schools, encouraging for community based and community led composting	Composting a feasible option only for compostable sanitary pads (e.g., made of natural fibres), not pads made of bleached cellulose, SAP, and plastic covering.	<ul style="list-style-type: none"> <li>Type and composition of product disposed of</li> <li>Composting pits constructed according to specifications to facilitate composting</li> </ul>
	Technologies that make productive use of waste/waste to resource technologies <ul style="list-style-type: none"> <li>Bio-digester technology for (compostable) menstrual waste</li> <li>Recycling of menstrual waste</li> <li>Vermiculture</li> </ul>	Can potentially be a sustainable solution for compostable menstrual waste	<ul style="list-style-type: none"> <li>Not much is known about these innovative methods, requires research and development</li> <li>Likely dependent on the use of compostable pads</li> </ul>	<ul style="list-style-type: none"> <li>Type and composition of product disposed of</li> </ul>